

Graduate School in Political Science, European Politics and International Relations

University of Siena, Sant'Anna School of Advanced Studies,
University of Florence and University of Pisa

QUANTITATIVE METHODS

2015-2016, 2nd Term

Centre for the Study of Political Change
Via Mattioli 10, Siena

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Lesson Hours: January 11-18: Monday 10AM-12PM, Computer Lab (2nd floor)
January 26-March 22: Tuesday 12PM-2PM, Aula Seminario (2nd floor)

Student Hours: Monday 12PM-1PM, Tuesday 2PM-3PM, or by appointment

Course description

The course offers a treatment of quantitative methods in political science research. The focus, in particular, will be on causal inference and the use of regression analysis. About one half of the articles in a typical recent issue of APSR, AJPS or EJPR make use of regression analysis or a closely related technique. This class is designed to give you the tools to forcefully critique a very large amount of political science research across most major subfields in political science. As a very useful by-product of all this, you will also become proficient at using quantitative analysis to answer practical questions.

To truly master the material in this course students need to analyse different data. For this reason, we will be getting our hands dirty with real data as much and as soon as possible. The emphasis is on learning by doing: I expect you to spend a large portion of your free time analysing both simulated and real data, so that you gain more practical experience and intuition about the topics covered in class.

Requirements

The course requires the use of the computer and a good familiarity with data management and analysis in STATA. Students need a laptop or, alternatively, a pen drive to safely store their data and work assignments and have them at hand for class. Each student should, by January 23, find a satisfactory dataset to work with for homework assignments, to be given about once a week.

Students will also have the opportunity to use software for quantitative textual analysis: WordStat for STATA. This software combines natural language processing, content analysis and statistical techniques to quickly extract topics, patterns and relationships in large amount of text - See more at: <http://provalisresearch.com/products/content-analysis-software/wordstat-for-stata/#sthash.x4beeXSX.dpuf>

Method of evaluation

Performance of weekly assignments will determine two-thirds of the student's grade. Note that weekly assignments are due on Sunday before the day of class and will be used in class discussion. A final homework will be due on the last day of class and will determine one-third of the student's grade.

Assignments must include all programming and procedure commands that were executed (syntax file).

Failure to complete these assignments on time will have a detrimental impact on your grade!

IMPORTANT!! All assignments sent through files have to use the following filename: *AssignN[umber of assignment]_LastName.doc* NEVER use my last name for labelling files sent to me.

Readings

Readings for the sessions, homework assignments, data sets, overhead projector slides used during the lectures, and an assortment of links to other political science research sites will be made available by the instructor.

Reference Text

Warner, Rebecca M. (2013) *Applied Statistics. From Bivariate Through Multivariate Techniques*. 2nd edition, Thousand Oaks, CA: SAGE.

The book is designed for a two quarters course. Our class last one quarter (10 weeks) and we will not cover the full book, but approximately 2/3 of it. Although SPSS examples are used throughout the book, the conceptual material is helpful for users of different programmes.

Each week I also include a list of specific readings to dig a bit deeper in each of the topics. I would be happy to provide more extensive list of references if needed. Datasets and codebooks for exercises in class will be provided before class. As mentioned above, each student should, by January 23, find a satisfactory dataset to work with for homework assignments.

STATA reference

Pollock, Philip H. III (2015). *A STATA Companion to Political Analysis*. 3rd edition, Washington, DC: CQ Press.

See also "Resources to help you learn and use Stata" (<http://www.ats.ucla.edu/stat/stata/>)

Course schedule

Week 1. January 11, 2016: Basic Statistical Theory

Assigned Readings:

- Warner (2013): [Chps.1 and 4](#)
- Pollock (2015): [Chp.2](#)

Specific Readings:

- Lewis-Beck, Michael (1995) *Data Analysis: An Introduction*, SAGE University Papers Series on Quantitative Applications in the Social Sciences n.103, Thousand Oaks, CA: SAGE: [Chps.1-3](#).

Week 2. January 18, 2016: Measures of association

Assigned Readings:

- Warner (2013): Chps.7-8
- Pollock (2015): Chp.7

Specific Readings:

- Lewis-Beck, Michael (1995) *Data Analysis: An Introduction*, SAGE University Papers Series on Quantitative Applications in the Social Sciences n.103, Thousand Oaks, CA: SAGE: Chp.4

Week 3. January 26, 2016: Statistical significance testing

Assigned Readings:

- Warner (2013): Chps.2-3

Specific Readings:

- Lewis-Beck, Michael (1995) *Data Analysis: An Introduction*, SAGE University Papers Series on Quantitative Applications in the Social Sciences n.103, Thousand Oaks, CA: SAGE: Chp.5

Week 4. February 2, 2016: Bivariate regression

Assigned Readings:

- Warner (2013): Chp.9
- Pollock (2015): Chp.8

Specific Readings:

- Lewis-Beck, Michael (1995) *Data Analysis: An Introduction*, SAGE University Papers Series on Quantitative Applications in the Social Sciences n.103, Thousand Oaks, CA: SAGE: Chp.6
- Lewis-Beck, Michael (2015) *Applied Regression: An Introduction*, SAGE University Papers Series on Quantitative Applications in the Social Sciences n.22, Thousand Oaks, CA: SAGE: Chps.1-2

Week 5. February 9, 2016: Multiple regression pt.1

Assigned Readings:

- Warner (2013): Chp.10

Specific Readings:

- Lewis-Beck, Michael (1995) *Data Analysis: An Introduction*, SAGE University Papers Series on Quantitative Applications in the Social Sciences n.103, Thousand Oaks, CA: SAGE: Chp.7.
- Lewis-Beck, Michael (2015) *Applied Regression: An Introduction*, SAGE University Papers Series on Quantitative Applications in the Social Sciences n.22, Thousand Oaks, CA: SAGE: Chp.3
- Chen, Xiao, Philip B. Ender, Michael Mitchell and Christine Wells (2003) *Regression with Stata: Short Outline*, Stata web books, Chp.1, available at <http://www.ats.ucla.edu/stat/stata/webbooks/reg/default.htm>

Week 6. February 16, 2016: Regression Assumptions

Assigned Readings:

- Lewis-Beck, Michael (1995) *Data Analysis: An Introduction*, SAGE University Papers Series on Quantitative Applications in the Social Sciences n.103, Thousand Oaks, CA: SAGE: Chps.8-9.
- Berry, William D. (1993). *Understanding Regression Assumptions*. SAGE University Papers Series on Quantitative Applications in the Social Sciences n.92, Thousand Oaks, CA: SAGE.

Specific Readings:

- Fox, John (1991). *Regression Diagnostics*. SAGE University Papers Series on Quantitative Applications in the Social Sciences n.79, Thousand Oaks, CA: SAGE.
- Chen, Xiao, Philip B. Ender, Michael Mitchell and Christine Wells (2003) *Regression with Stata: Short Outline*, Stata web books, [Chp.2](http://www.ats.ucla.edu/stat/stata/webbooks/reg/default.htm), available at <http://www.ats.ucla.edu/stat/stata/webbooks/reg/default.htm>

Week 7. February 23, 2016: Multiple regression pt.2

Assigned Readings:

- Warner (2013): [Chps.11-12 and 14](#)
- Pollock (2015): [Chps.9-10](#)

Specific Readings:

- Hardy, Melissa A. (1993) *Regression With Dummy Variables*, SAGE University Papers Series on Quantitative Applications in the Social Sciences n.93, Thousand Oaks, CA: SAGE: [Chps.2-3](#).
- Chen, Xiao, Philip B. Ender, Michael Mitchell and Christine Wells (2003) *Regression with Stata: Short Outline*, Stata web books, [Chp.3](http://www.ats.ucla.edu/stat/stata/webbooks/reg/default.htm), available at <http://www.ats.ucla.edu/stat/stata/webbooks/reg/default.htm>

Week 8. March 1, 2016: Interaction effects in multiple regression

Assigned Readings:

- Warner (2013): [Chps.15-16](#)
- Pollock (2015): [Chp.9](#)

Week 9. March 8, 2016: Binary logistic regression

Assigned Readings:

- Warner (2013): [Chp.23](#)

Week 10. March 22, 2016: A deliberative choice among:

1) Ordered logistic regression

Assigned Readings:

O'Connell, Ann A. (2006) *Logistic Regression Models for Ordinal Response Variables*, SAGE University Papers Series on Quantitative Applications in the Social Sciences n.146, Thousand Oaks, CA: SAGE.

2) Multinomial logistic regression

Assigned Readings:

Long, J. Scott (1997) *Regression Models for Categorical and Limited Dependent Variables*, Thousand Oaks, CA: SAGE.

3) A primer to quantitative textual analysis

Assigned Readings:

Krippendorff, Klaus (2013). *Content Analysis: An Introduction to Its Methodology*. 3rd edition, Thousand Oaks, CA: SAGE.

Specific Readings:

Provalis Research (2014) *WordStat7: User's guide*, available at <http://provalisresearch.com/Documents/WordStat7.pdf>