

SPS Seminar 1<sup>st</sup> term 2013-2014

## ***Introduction to Quantitative Methods***

Organised by Fabrizio Bernardi

Mondays 11:00 – 13:00

Seminar Room 2, Badia Fiesolana

Please register with: [Monika.Rzemieniecka@EUI.eu](mailto:Monika.Rzemieniecka@EUI.eu)

### ***Introduction and Aim***

The aim of this seminar is to give researchers in sociology and political sciences practical knowledge of the application of basic quantitative techniques, which are commonly used in sociology and political sciences, while using one of the major statistical software packages STATA. The seminar centers on the linear regression model. A correct understanding of its proper functioning and limitations is an essential precondition for venturing into more advanced techniques. It also provides an introduction to the logistic regression model.

In this seminar, therefore, you can expect to learn:

- How to estimate a multivariate linear regression model and interpret correctly its results
- How to estimate and correctly interpret interaction effects
- How to apply regression diagnostics tools
- How to estimate a logistic regression and interpret its results

### ***Basic references***

Treiman, D. (2009). *Quantitative Data Analysis. Doing Research to Test Ideas*, Jossey Bass.

Firebaugh, G. (2008). *Seven Rules for Social Research*, Princeton, NJ: Princeton University Press.

The EUI library has a number of copies of these books on the seminar shelf.

### ***Organization***

You should bring your laptop to the seminar because part of the teaching will consist of interactive examples using STATA in the class. The most important part of the seminar is not attending the two-hour sessions, but making the exercises that are assigned each week. A

special *dropbox* folder will be created where you will find the weekly exercises and the materials used in class. The teacher assistants for this seminar are Liliya Leopold ([Liliya.Leopold@EUI.eu](mailto:Liliya.Leopold@EUI.eu)) and Enrique Hernández Pérez ([Enrique.Hernandez@EUI.eu](mailto:Enrique.Hernandez@EUI.eu)), both second year SPS researchers. Participants will be divided in two groups and the TAs will provide feedback on your exercises. The TAs will also have office hours to provide assistance with STATA and with the making of the exercises (again time and place tbc).

Starting from class 6, the class will be divided in two groups. The advanced group (group A) will go through the full program up to the logistic regression. The other group (group B) will spend three classes (6, 7 and 8) with additional practical exercises on data management, multiple regression and statistical inference. The last two classes for group B will deal with interactions. See the schedules below.

### *Credits*

Complying with the attendance requirements and making all exercises is the condition for being awarded the seminar credits. These exercises have to be posted in a dedicated folder of the seminar dropbox 24 hours before each session (thus before Sunday 11.00 AM). You can team in groups of **two** for making the exercises. The last exercise (due for the 9<sup>th</sup> of December) consists of a small paper (4 pages plus tables) where you should carry out a multivariate analysis and interpret the results, using the skills you have learned through-out the seminar. For this final exercise participants are encouraged to use their own data (not necessarily the data one will use in his/her thesis). Researchers without applicable data have to contact me and the TAs in order to find proper data for this exercise.

If you want to write a term paper for this seminar/workshop, please send a copy by email to the seminar's professor as well as to the organizing secretary. Once the paper is approved, she will update your credit award in your academic records. The deadline for submission is: **10 January 2014**.

More details on seminar practicalities and the final assignment will be given during the first introductory class. This course is obligatory for all SPS first year researchers.

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### *Schedule (might slightly change)*

**CLASS 1 (Oct 7<sup>th</sup>):** Introduction and overview of seminar. How to make and comment properly a table. Process of elaboration: spurious, intervening and conditional relationship.

**Readings:** Treiman: Chapters 1, 2, 3 and 4

**No class on Oct 14<sup>th</sup>**

**CLASS 2 (Oct 21<sup>th</sup>):** Bivariate regression and correlation. The logic of OLS estimation.

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How to comment your findings.

**Readings:** Treiman: Chapter 5

Firebaugh: The Second Rule. Look for Differences That Make a Difference, and Report Them (Chapter 2)

**CLASS 3 (Oct 28th):** Problems related to linear regression. Outliers, truncation, regression fallacy, ecological fallacy.

**Readings:** Treiman: Chapter 5

**CLASS 4 (Nov 4th):** Basic of statistical inference. Null hypothesis, type I and type II errors. Confidence intervals.

**Readings:**

[Chapter 3 from](#) Bohrnstedt and Knoke, Statistics for social data analysis, in the dropbox.

Chapters 16, 26 and 29 from Freedman, Pisani and Purves, Statistics, in the dropbox.

**CLASS 5 (Nov 11th):** Multiple regression.

**Readings:** Treiman: Chapter 6

Philip A. Schrodtt (2010), *Seven Deadly Sins of Contemporary Quantitative Political Analysis*

<http://polmeth.wustl.edu/media/Paper/Schrodtt7SinsAPSA10.pdf>

Additional readings

Young, C. 2009. "Model Uncertainty in Sociological Research: An Application to Religion and Economic Growth." *American Sociological Review*. 74:380–97.

<http://asr.sagepub.com/content/74/3/380.full.pdf+html>

Special issue of Conflict management and peace studies, V. 22, 4, 2005

## GROUP A

**CLASS 6 (Nov 18th):** Regression diagnostics.

**Readings:** Treiman: Chapter 7

**CLASS 7 (Nov 25nd):** Interactions

**Readings:** Brambor, Clark and Golder (2006) *Political Analysis* on interaction effects

[http://homepages.nyu.edu/~mrg217/pa\\_final.pdf](http://homepages.nyu.edu/~mrg217/pa_final.pdf)

**CLASS 8 (Dec 2nd):** Introduction to logistic regression

**Readings:** Acock, A. (2006) *A gentle introduction to Stata*, Stata Press (chapter 11)

More advanced

Mood, C. (2010). "Logistic Regression: Why We Cannot Do What We Think We Can Do, and What We Can Do About It." *European Sociological Review* 26:67-82.

**CLASS 9 (Dec 6th)** Additional examples on logistic regressions.

**Readings:**

Material to be distributed

**CLASS 10 (Dec 9th)** More on logistic regression. Comparison with the linear probability model. Examples.

**Readings:**

Material to be distributed

## **GROUP B**

**CLASS 6 (Nov 18th):** Additional examples on data management.

**CLASS 7 (Nov 25nd):** Additional examples on statistical inference.

**CLASS 8 (Dec 2nd):** Additional examples on multiple regressions.

**CLASS 9 (Dec 6th)** Interactions

**Readings:** Brambor, Clark and Golder (2006) *Political Analysis* on interaction effects

[http://homepages.nyu.edu/~mrg217/pa\\_final.pdf](http://homepages.nyu.edu/~mrg217/pa_final.pdf)

**CLASS 10 (Dec 9th)** Additional examples on interactions.