Basic Statistics
MA in Social Sciences UC3M
September 7th - 11th

Instructor: Daniel Ramirez Smith

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Location: TBD

Schedule: Monday through Friday

Class time: from 15:00 - 18:00.

Office hours: by appointment

Course Description:

This course offers a refresher of knowledge in statistics that is conducive to a strong quantitative foundation. The assumption of this course is that the attending students have little to no knowledge in math or statistics. The materials and classes are prepared to be as accessible as possible considering the level of the students.

Required texts:

Exploratory Data Analysis in Business and Economics: An Introduction Using SPSS, Stata, and Excel. New York: Springer, 2013. [Optional]

We will also be making use of some of these online textbooks that are free.
-Statsoft (http://www.statsoft.com/Textbook)
-David Lane (http://davidmlane.com/hyperstat/)
- Seeing Stats (http://www.seeingstatistics.com/)

Class materials:

Most of our class materials stem from the required texts, however; I will try to provide my own written material when possible to complement the text explanations. I will send these materials via email on a daily basis.

ASSIGNMENTS:

The main assignment for this class is a replication exercise. I will divide up the class in a number of teams of 3-4 people and assign an article to each time. These articles will be quantitative and empirical. You will have to replicate the descriptive table provided in these articles. In order to do so, your team will have to read the data section of the article very closely. Your tasks include downloading the proper dataset, providing proper STATA code, and presenting it to the rest of the class on the final day.

Schedule of Readings and Classes

The dates listed are the dates I expect you to have read the assigned material and completed the assignments. Assignments are due prior to the start of class.

Day 1: September 7th

Reading [optional]: chapter 3 of Cleff (2013).

- Univariate Data Analysis II:
    - Normal distribution I
    - Skewness and Kurtosis
    - Outliers and robustness of parameters
    - Boxplots
    - Histograms
    - Missing data
        - Listwise deletion
- Univariate analysis using Stata II.
    - Commands for descriptive and exploratory analysis (Histogram, Boxplots, etc.)
    - Managing missing data

Day 2: September 8th

Reading [mandatory]: chapter 6 through 9 of David M Lane online textbook.

- Normal distribution II
- Central limit theorem
- Sampling distributions
- Point estimations and confidence intervals
- The logic of hypothesis testing

Introduction to replication as final class exercise.

Day 3: September 9th

Reading [optional]: chapter 4 of Cleff (2013).

- Bivariate Data Analysis I:
  - Measuring association between two nominal variables
    - Contingency tables
    - Absolute frequency
    - Relative frequency
    - Chi-square test, Phi coeff, and Cramer's V.
  - Measuring association between continuous variables I
    - Correlation coefficients (Pearson, Spearman's Rho, Kendal Tau's, etc.)
- Bivariate Data Analysis Using Stata I:
  - Exploratory bivariate commands (tab, tab1, corr, etc.)

Day 4: September 10th

Reading [optional]: chapter 4 of Cleff (2013).

- Bivariate Data Analysis II:
  - Measuring association between continuous variables II
    - Correlation matrices
    - Scatterplots
      - Linear
      - Non-linear associations
    - LOESS curves
- Bivariate Data Analysis Using Stata I:
  - Weighting data
  - Commands histogram, twoway scatter, twoway line, twoway connected, saving, exporting, modifying graphs.

Day 5: September 11th

Review of materials, doubt solving for concepts that have not sedimented well, quizzes.

In class replication presentations.

Email Policy

I will use your UC3M email address. If you have another one, either forward your UC3M email to it or remember to check it. I will use email to alert you of any important class updates.

Electronics in the Classroom

You are ENCOURAGED to use your cellphones or tablets in the classroom but only for class participation. Every day we will engage in quizzes and problems that you can help solve by using Kahoot. Kahoot is a free app that allows for swift question/response interaction between professor

and students. Any other use of electronics is forbidden. Headphones will not be permitted. If I perceive improper use of electronics within the classroom, you will be asked to put it away. If it is a persistent problem, you will be asked to leave the classroom.

<u>Academic Integrity</u>

As UC3M students, you are expected to act with academic integrity. I define academic integrity as the pursuit of scholarly activity in an open, honest and responsible manner. All students should act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts.

Dishonesty of any kind will not be tolerated in this course. Dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. Students who are found to be dishonest will receive academic sanctions and will be reported.

<u>Ground Rules</u>

- Attendance is required.
- Come to class on time. If you are late to class, please quietly take a seat.
- Silence your cell phone prior to the start of class.
- Come to class prepared; that is having read and reviewed the assigned readings prior to the start of class.
- Class Climate and Conduct: A good course welcomes diverse viewpoints but always be respectful in raising them.