

Syllabus

Course title	ECBS 5400 – DISCOVERING DISCRIMINATION WITH DATA
Instructor	Miklós Koren
Email	korenm@ceu.edu
Office	QS B510 (Vienna) by appointment
Credits	1 US credits (2 ECTS credits)
Module	None
Term	Spring 2023-2024
Course level	Master's
Prerequisites	Data Analysis 2: Finding Patterns with Regressions
Course drop	

1. COURSE DESCRIPTION

Content. This course is an immersive simulation game using the statistical concepts learned earlier to argue about patterns of gender discrimination in the workplace. The focus is on interpreting and communicating data analysis results rather than performing statistical calculations. Various assignments, including readings, essays, and presentations, reinforce the learned concepts.

Relevance. Discriminative practices are often hard to detect. This course teaches students how to use data to discover discrimination in the workplace. The course is designed for students who have already taken a course in data analysis and want to learn how to use their skills to address real-world problems. .

2. LEARNING OUTCOMES

Key outcomes. By the end of the course, students will be able to

- Distinguish categorical from numerical features. Use appropriate descriptive statistics for each.
- Understand that samples may suffer from selection bias and survival bias. Evaluate whether a sample is appropriate for a particular purpose.
- Use a histogram or other visualization to explore the dispersion of a variable and spot potential outliers. Explain how data quality issues can lead to bad decisions.
- Apply hypothesis testing to compare the mean value of a variable in two groups. Explain the importance of a large-enough sample.
- Use multivariate regression to compute the mean of an outcome conditional on other variables. Interpret the coefficients properly.
- Discuss how controlling for additional groupings or numerical variables can change the prediction of a regression. Give examples.
- Discuss various sources of employment discrimination.
- Distinguish legitimate business reasons for pay disparity from those that only a pretext for discrimination. Give examples.

- Use causal graphs to illustrate how three or more factors are related, and how they affect one another directly or indirectly.
- Critically evaluate statistical analysis based on subject matter expertise and general human judgement.

Other outcomes. The course will also help develop skills in the following areas.

Learning Area	Learning Outcome
Critical thinking	Critically evaluate statistical analysis based on subject matter expertise and general human judgement. Understand that samples may suffer from selection bias and survival bias. Evaluate whether a sample is appropriate for a particular purpose.
Quantitative reasoning	Distinguish categorical from numerical features. Use appropriate descriptive statistics for each. Apply hypothesis testing to compare the mean value of a variable in two groups. Explain the importance of a large-enough sample. Use multivariate regression to compute the mean of an outcome conditional on other variables. Interpret the coefficients properly. Discuss how controlling for additional groupings or numerical variables can change the prediction of a regression. Give examples. Use causal graphs to illustrate how three or more factors are related, and how they affect one another directly or indirectly.
Interpersonal communication skills	Convey difficult concepts verbally.
Management knowledge and skills	Organize work effectively. Meet deadlines.
Cultural sensitivity and diversity	Work together with students of different backgrounds.
Ethics and social responsibility	Discuss various sources of employment discrimination. Distinguish legitimate business reasons for pay disparity from those that only a pretext for discrimination. Give examples.

3. READING LIST

Required

David. 2020. "Avoid Misrepresenting Data." The Data School.

Wakabayashi, Daisuke. 2017. "At Google, Employee-Led Effort Finds Men Are Paid More Than Women" The New York Times. Sept. 8, 2017. <https://www.nytimes.com/2017/09/08/technology/google-salaries-gender-disparity.html>

Chassonnery-Zaïgouche, C. 2020. "How economists entered the 'numbers game': Measuring discrimination in the US courtrooms 1971-1989." Journal of the History of Economic Thought, 42(2), 229-259. doi:10.1017/S1053837219000646.

Koren, M. and Imola Csóka. 2022. "Losing Your Female Talent: A Simulation Game About Discrimination and Analytics" Coded Thinking, Tallinn. (handouts will be made available during class)

Recommended

Wan, Helen. 2013. The Partner Track: A Novel. New York: St. Martin's Press

4. TEACHING METHOD AND LEARNING ACTIVITIES

Learning objectives will be achieved through

- Conceptual lectures.
- Hands-on exercises.
- Group discussion.

5. ASSESSMENT

Grading will be based on the total score out of 100, in line with CEU's standard grading guidelines.

- Before essay (20 percent)
- Class participation (30 percent)
- In-role essay (30 percent)
- After essay (20 percent)

6. TECHNICAL REQUIREMENTS

- None.

7. TOPIC OUTLINE AND SCHEDULE

Session	Topics	Readings
Session 1	Exploratory data analytics. Patterns of discrimination. Data quality issues.	David (2020), Wakabayashi (2017)
Session 2	Evaluating statistical models. Causal analytics and external validity. Causes of discrimination.	Chassonnery-Zaïgouche (2020)

8. SHORT BIO OF THE INSTRUCTOR

Miklós Koren is professor of economics at CEU, senior research fellow at the Institute of Economics, and research fellow of the Centre for Economic Policy Research. His research focuses on how talent and technology jointly determine business success. Professor Koren has more than two decades of experience with microeconometrics and quantitative macro modeling. He is a certified Carpentries Instructor.