EC282 SPRING 2023

Syllabus

Course description

Students studying business will learn about modern econometric analysis in this course. It offers resources for applying descriptive and regression analysis to deduce useful information from data. By the end of the semester, I hope that you will be comfortable using the **R** and **RStudio** interfaces, manipulating simple data, getting and analyzing sample statistics, and performing insightful regression analysis.

Importantly, you should understand the distinction between correlation and causation, as well as when the former suggests the latter. Randomization for causality will be a major issue of debate. We will learn how to construct an experimental research, validate the design, and establish the prerequisites for a causal link. This course also intends to highlight the limits of empirical studies, with a particular emphasis on the randomization approach to causal inference.

Knowledge and Skills

- Compute and interpret the descriptive statistics of a sample.
- Understand the statistical uncertainty, construct and interpret the confidence intervals.
- Conduct hypothesis testing, interpret the test statistic and the results of a statistical test.
- Construct a multivariate regression model, empirically estimate the model and interpret the results.
- In depth understanding of the randomized controlled trials and the causal inference.
- Understanding of the limitation of causal study designs.

Perspectives

- Learn how to conduct a regression analysis, understands its limitation in inferring a causal relationship, generalizing its results, and power in prediction an outcome that is unknown to the researcher.
- Understand the causal research design and its basic implementations.
- Understand the regression diagnostics to choose the most appropriate definition of predictors, outcome, and functional form.

Class Information

Contact

Class Information

- instructor: Onur Altındağ
- office: AAC 181
- zoom (office hours/classes): see Black Board
- email: oaltindag@bentley.edu
- web: https://www.onuraltindag.info/
- office hours: https://calendly.com/oaltindag/

Office hours

Please go to my calendar and book a virtual office hour to meet me (20 minutes maximum). Email me if you need to talk to me urgently or there is no availability on my calendar.

Important Dates and Evaluation

- Homework assignments (due dates on MindTap) (20%)
- **Feb 27, 2023, Monday** - First Midterm (20%)
- **Apr 3, 2023, Monday** - Second Midterm (25%)
- **May 4, 2023, Wednesday, 8:00AM** - Final (30%)
- Classroom participation (5%)

Software and Collaborative Work

- **R** and **RStudio**: I assume that you have a basic familiarity with or expect your effort to gain familiarity throughout the semester. The instructions installation, some basic rules and best practices on coding are on this web page. Keep in mind that this course is **not** designed to teach you R and more than anything, the best way to learn programming is to actually work on assigned problems. When learning R, arguably the most important skill that you need to acquire is to be able to **Google** your problem. There is probably not a single R question that you have yet has not been answered on Stack Overflow.
- **Github**: I will post code and links on the GitHub page of the course.

You **MUST** create an account on MindTap. This is a digital learning platform that hosts all the required course materials: the e-book of Wooldridge's Introductory Econometrics a Modern Approach, your homework assignments, practice questions, and your course videos. You can additionally purchase the hard copy of the textbook but it is not required. When you create an account on MindTap, please use your Bentley email. Please find more detailed information below about the registration on MindTap.

Registration on MindTap

Course: EC 282-1

Instructor: Onur Altindag

This course requires an online homework platform called MindTap. Follow the instructions below to get started.

Register for your MindTap Course

1. Use the course registration link https://student.cengage.com/course-link/MTPPS53ZS79L
2. Follow the instructions on screen to create your Cengage account and register for this MindTap course.
3. Begin your temporary access* period.

Need help? Visit the Cengage Start Strong Website (https://startstrong.cengage.com) for step-by-step instructions.

Temporary Access: You can access your MindTap course until 5:00 AM (UTC) on 2/6/2023 for free. At the end of the temporary access period, you will be prompted to purchase access. Your work will be saved and will be available to you again once you've completed your purchase.

NOTE: If the cost of your course materials is included in your tuition, you will not need to purchase access.

MindTap Tips & Training Tools

Learn more about navigating your MindTap course: (https://help.cengage.com/mindtap/mt-student/introduction.html)

Technical Support & Troubleshooting

Our US-based support team delivers answers and advice via 24/7 online chat, Twitter, live phone support (1-800-354-9706) and through support.cengage.com, which includes helpful articles, and tutorials.

If you are having trouble loading MindTap, run the MindTap browser check (https://ng.cengage.com/static/browsercheck/index.html) to make sure your browser is compatible or refer to the MindTap System Requirements (https://help.cengage.com/mindtap/MindTap-System-Requirements.pdf). If MindTap isn't loading, be sure to visit Techcheck (https://techcheck.cengage.com) to see if there is an outage.

Grading

You **MUST** attend all the midterms and the final as there will be no make-up exams in this course. The midterms are **NOT** cumulative. If you miss or are likely to miss a midterm due to an emergency, please contact me as soon as possible. You will need to provide supporting documentation/verification of your absence. I will re-weight your final exam accordingly if you have a valid excuse. Please note that family vacations or missing the school shuttle are not valid excuses.

The final exam **is** cumulative. If you miss the final exam due to an emergency, you will receive an incomplete for this course. Do not take this class if you know that you will not be able to attend the final exam.

You have **10 homework assignments**. The submission method is automated, and no submissions will be accepted after the deadline (even 5 minutes). There will be no exceptions if you fail to complete the assignment. You will obtain full credit if you correctly answer at least 70% of the questions. You have three attempts to answer each question and I will take the maximum for these attempts. You are encouraged to collaborate on homework tasks or to seek assistance from campus resources.

Academic Integrity

Learning is a privilege that demands responsibility. At Bentley, students and faculty are members of an academic community that supports integrity both inside and outside the classroom. The expectation at Bentley is that students will take advantage of the opportunity for intellectual development and, in doing so, will conduct themselves in a manner consistent with the standards of academic integrity. When these standards are violated or compromised, individuals and the entire Bentley community suffer. Students who engage in acts of academic dishonesty not only face university censure but also may harm their future educational and employment opportunities. In other words, don't bring unauthorized materials into exams, don't plagiarize someone else's work, and make sure that your collaborations are conducted in accordance with university and course policy.

All students have access to Bentley's academic integrity policy on Blackboard (via the Academic Integrity course page) and the Undergraduate Student Handbook/Graduate Catalog. The best way to avoid a problem is to consult with your instructor before taking any action that might constitute a violation.

Diversity Inclusion and Support

Statement of Diversity and Inclusion

My goal in this class is to create a teaching environment that is inclusive for all of the members of our community independent of their race, gender, age, disability status, and political or religious views. Our differences strengthen our ability for perspective taking, being critical about our default believes,and enhance learning.

I will try to reach this goal within my best capacity by respect and professionalism in our class-related engagements and I anticipate students to do the same. These standards of appropriate conduct are well summarized by Bentley's Core Values in our institution's mission statement.

If you feel that I or anyone in this class has acted outside these values, please come to me so that we may discuss your experience. If you do not feel comfortable coming to me with your concerns, I encourage you

to speak with someone in the Office of Academic Advising: 781.891.2803, academic_services@bentley.edu, Jennison 336.

My class roster has your preferred name, but I will happily address you by an alternate name and/or pronoun. Just let me know your preference early in the semester.

Bias Incident Response

The Bias Incident Response Team (BIRT) provides students affected by bias or bias-related incidents with access to appropriate resources. Where appropriate, BIRT assists the University in its response to situations that may impact the overall campus climate related to diversity and inclusion. Working closely with appropriate students, faculty, committees, organizations, and staff, BIRT plays an educational role in fostering an inclusive campus community and supporting targeted individuals when bias or bias-related incidents occur. More information about BIRT and how to file a bias incident report can be found at: https://www.bentley.edu/offices/student-affairs/birt

Disability Services

Bentley University abides by Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 which stipulate no student shall be denied the benefits of an education solely by reason of a disability. If you have a hidden or visible disability which may require classroom accommodations, please call (if you are a residential student or on online student) Disability Services within the first 4 weeks of the semester to schedule an appointment. Disability Services is located in the Office of Academic Services (JEN 336, 781.891.2004). Disability Services is responsible for managing accommodations and services for all students with disabilities.

The Undergraduate Academic Services (UAS) Peer Tutoring program offers online one-on-one and small group tutoring services for students who have worked with their instructors and made use of the Learning Centers, but still require additional academic support. The program goal is to help those students in true need who are willing to take responsibility for their own learning. Please reach out to me if you need more information.

The Howard A. Winer '58 Lab for Economics, Accounting and Finance (LEAF)

The LEAF will open on Sunday September 19, 2021 for the semester. The LEAF's hours of operation will be Sundays from 5:00–9:00 and Mondays through Thursdays from 12:30–9:00. For the fall 2021 semester, the LEAF tutoring will be done both in person and remotely using Zoom. Please use the instructions below to access additional LEAF information.

1. Access SharePoint site using your Bentley credentials.
2. Click on the Documents at the top of the page, find your tutor by selecting the document for your class (either Accounting, Economics, Finance, or GB).
3. Open the document for LEAF Tutor Schedule and Zoom Information. Find your tutor on the table, note the time he/she tutors, and identify whether he/she is tutoring in the LEAF or using Zoom. If the tutoring is being done via Zoom, identify their LEAF number, and then find their LEAF number on the list of Zoom Links at the top of the page.
4. If the tutoring in being done in the LEAF, the LEAF is in Lindsay 21. If the tutoring is being done via Zoom, log in to the identified Zoom Session at the time, which your tutor is available for your course.

For additional information, visit: https://www.bentley.edu/centers/leaf

Online Attendance

All students must attend the in-person classes. If you join the class online due to an exception, please follow the guidelines indicated below:

Zoom Protocol and Online Attendance

Students **must** join classes through their Bentley Zoom account. Go to bentley.zoom.us and enter the course meeting number to join the session. The zoom link is included on Black Board course page.

I expect you to attend class with a functioning microphone and camera. Cameras should be on to effectively engage in class and participate throughout the course. If you have an impediment to keeping your camera on, please let me know so that we can work to arrive at a mutually agreeable solution.

You are expected to be able to access all electronic course materials. It is your responsibility to review the course syllabus as soon as possible to determine what resources or materials I expect you to use in the course. If you are a student in an international location that may limit access to certain internet resources, please let me know immediately so you can find a solution.

Students are expected to attend classes synchronously despite potential time zone hurdles. Solely watching recorded classes is not deemed to be acceptable course participation or completion. Course recordings are for the benefit of students who miss an occasional class or would like to watch the recording for further edification of materials. Class recordings that are posted to BB are for the sole purpose of this course. Disseminating any portion of this video in any manner is strictly prohibited.

Tentative Schedule

- Introduction to the course, logistics, syllabus, expectations and pap-talk.
- Introduction to R.
- **The Nature of Econometrics and Economic Data (Chapter 1)**
- **The Simple Regression Model (Chapter 2)**
- *Readings:*
  - Definition of the Simple Regression Model (2-1)
  - Deriving the Ordinary Least Squares Estimates (2-2)
  - Properties of OLS on Any Sample of Data (2-3)
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  - Units of Measurement and Functional Form (2-4)
  - Expected Values and Variances of the OLS Estimators (2-5)
  - Regression on a Binary Explanatory Variable (2-7)
- **Multiple Regression Analysis: Estimation (Chapter 3)**
- *Readings*
  - Motivation for Multiple Regression (3-1)
  - Mechanics and Interpretation of Ordinary Least Squares (3-2)
  - The Expected Value of the OLS Estimators (3-3)
  - The Variance of the OLS Estimators (3-4)
- **Multiple Regression Analysis: Inference (Chapter 4)**
- *Readings*
  - Sampling Distributions of the OLS Estimators (4-1)
  - Testing Hypotheses about a Single Population Parameter: The t Test (4-2)
  - Confidence Intervals (4-3)
  - Testing Hypotheses about a Single Linear Combination of the Parameters (4-4)
  - Testing Multiple Linear Restrictions: The F Test (4-5)

  - Reporting Regression Results (4-6)

- **Multiple Regression Analysis with Qualitative Information (Chapter 7)**
- *Note*: Depending on our pace, we may or may not have time to cover these topics.
- *Readings*
  - Describing Qualitative Information (7-1)
  - A Single Dummy Independent Variable (7-2)
  - Using Dummy Variables for Multiple Categories (7-3)
  - Interactions Involving Dummy Variables (7-4)
  - A Binary Dependent Variable: The Linear Probability Model (7-5)