DRAFT
Using Big Data to Solve Economic and Social Problems, Summer 2022

Professor Raj Chetty

Course Head: Gregory Bruich, Ph.D.

COURSE DESCRIPTION

This 6-week course will show how "big data" can be used to understand and address some of the most important social and economic problems of our time. The course will give students an introduction to frontier research and policy applications in economics and social science. Topics include equality of opportunity, education, racial disparities, health care, and climate change. In the context of these topics, the course will provide an introduction to basic methods in data science, including regression, causal inference, and machine learning.

Speakers will include Gregory Bruich, Raj Chetty, Ellora Derenoncourt, Nathan Hendren, John Friedman, Frances Moore, and Winnie van Dijk.

A key learning element of the course will be completion of an empirical project. The empirical project will include significant coding, reading, and writing elements that will put students in the shoes of social scientists doing research. Each student will present on their Empirical Project. We will teach and support the statistical software program Stata 17.

COURSE MECHANICS

1. Mondays & Tuesdays: Live lectures and discussions on Zoom

2. Wednesdays: Professional development organized by PREDOC.ORG and Opportunity Insights

3. Thursdays: Section led by teaching fellows on Zoom designed to give you hands-on experience in doing economics yourself by working through empirical problems in small groups with peers and your teaching fellow.

4. Students will complete and present on an empirical project, submit weekly section assignments, and attend the live lectures, discussions, and section. The class requires 6 hours of class time per week and approximately 4 hours of work outside of class per week.
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CLASS OUTLINE (subject to change; homework and final project due dates not indicated)

Week 1

1. Monday, July 4: No Lecture due to July 4 holiday
2. Tuesday, July 5: Introductions and Class Overview
3. Wednesday, July 6: Lecture 1 The Geography of Upward Mobility in America [Chetty]
4. Thursday, July 7: Section [split into two cohorts]

Week 2

5. Monday, July 11: Lecture 2 The Causal Effects of Neighborhoods [Bruich]
6. Tuesday, July 12: Lecture 3 U.S. Racial Inequality in Historical Perspective [Derenoncourt]
7. Wednesday, July 13: Professional Development
8. Thursday, July 14: Section [split into two cohorts]

Week 3

9. Monday, July 17: Lecture 4 Higher Education and Upward Mobility [Friedman]
10. Tuesday, July 18: Lecture 5 K-12 Education [Bruich]
11. Wednesday, July 19: Professional Development
12. Thursday, July 20: Section [split into two cohorts]

Week 4

14. Tuesday, July 26: Lecture 7 Policies to Mitigate Climate Change [Moore]
15. Wednesday, July 27: Professional Development
16. Thursday, July 28: Section [split into two cohorts]

Week 5

17. Monday, August 1: Lecture 8 Improving Health Outcomes [Bruich]
18. Tuesday, August 2: Lecture 9 Measuring Policy Impacts [Hendren]
19. Wednesday, August 3: Professional Development
20. Thursday, August 4: Section [split into two cohorts]

Week 6

21. Monday, August 8: Student presentations
22. Tuesday August 9: Student presentations
23. Wednesday August 10: Student presentations
24. Thursday August 11: Student presentations
COURSE READINGS

Students are responsible for reading a small number of required papers (in bold below). Please focus on understanding the main ideas, rather than technical details. We recommend starting with non-technical summaries and introductions for this purpose. The other papers will be discussed in lecture, in labs, or in the empirical projects, and may be useful references in those contexts.

Tuesday, July 5: The Geography of Upward Mobility in America [Chetty]


Monday, July 11: The Causal Effects of Neighborhoods [Bruich]


Tuesday, July 12: U.S. Racial Inequality in Historical Perspective [Derenoncourt]


Monday, July 17: Higher Education and Upward Mobility [Friedman]


**Tuesday, July 18: K-12 Education [Bruich]**


**Monday, July 25: Eviction and Poverty in American cities [van Dijk]**


**Tuesday, July 26: Climate Change [Moore]**


**Monday, August 1: Improving Health Outcomes [Bruich]**

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**Thursday, August 2: Measuring Policy Impacts [Hendren]**