**Course Description:**
Sociologists and other social scientists are often interested in understanding causal and dynamic social processes such as:

“How do the places we live, work, and play get under the skin and affect health and well-being across the life course?”

“Does upward social class mobility change one’s political attitudes?”

“What social currents are responsible for changes in support for same-sex marriage across historical time?”

“Are long-standing racial inequalities declining, persisting, or increasing in recent years?”

Many of these questions are methodologically difficult to answer with observational (non-experimental) data, and they require that we get a handle on the study of change, context, and causality. You likely have learned how to answer questions like these with standard OLS (linear) regression techniques and cross-sectional data, which remain useful tools in social scientists’ methodological toolbox. But these techniques are also quite limited, and impose strict assumptions that do not allow us to meet many of our goals, adequately answer our questions, or provide stringent tests of our theories and hypotheses.

In this course, we’ll pick up where introductory statistics courses leave off, and get an introduction to more advanced statistical methods for observational data, including but not limited to: regression for categorical dependent variables, fixed and random effects models, and hierarchical linear modeling. This course will be a mix of seminar and lecture, where we will be focused on understanding how we can use these methods to better meet our goals and answer our research questions. Put differently, this course is less focused on going “under the hood” and more focused on “how to drive”—specifically, we will interrogate the assumptions and use of these statistical methods in the social sciences and learn how to implement these methods using stata. This will include: discussion of core methodological assumptions and limitations, how to apply these statistical methods in different settings, and learning when specific methods are appropriate tools and when they are not. We will explore these issues through student-led discussions, hands-on data analysis, and dissecting the application of these methods in academic journal articles. As part of this course, you will be exposed to (and critique) a wide range of sociological research published in our major disciplinary journals. The course will culminate in an independent research project where students will analyze data and use the one or more of the modeling techniques discussed during the term to answer a sociological research question of their choosing. **SOCY 10 or equivalent (ECON 10, PSYCH 10, GOV 10, QSS 15) is required to enroll in this course. High school AP statistics will not suffice.**
Course Readings

Required Texts
Firebaugh, Glenn. 2008. Seven Rules for Social Research. Princeton: Princeton University Press (note: this is a handy reference that we will use throughout the course, but it is not a statistics textbook). New copies of this book are available locally at Still North Books, and e-copies are available for less than $20. In addition, the library has e-copies available for free. If you would like a hard copy of the book and are not able to afford it, please let me know as soon as possible.

*Outside of the Firebaugh text, we will also rely on: 1) academic journal articles; and 2) annotated stata DO files as our primary course texts. These are available on canvas and you should complete the readings for the day prior to each class period (including the Do files).

Optional Texts:
Basic Statistics (resources for those looking for a refresher on introductory statistics)

STATA Guides (resources for those having trouble with STATA---see the section below for online resources)

A Deeper Dive (an elaboration of the methods discussed this term)

*Additional optional readings (academic journal articles) are available on CANVAS. The full citation of these readings are listed at the end of the syllabus.

For a good application of statistics to everyday life, I highly recommend that you add these blogs to your daily reading:
Family Inequality (Phil Cohen): http://familyinequality.wordpress.com/
Five Thirty Eight (Nate Silver et al.): http://www.fivethirtyeight.com/
Vox (Ezra Klein et al.) www.vox.com
The Upshot (NYTimes) http://www.nytimes.com/upshot/
Wonkblog (WaPo): http://www.washingtonpost.com/blogs/wonkblog/
Statistical Modeling, Causal Inference, Social Science (Andy Gelman) http://andrewgelman.com/

Statistical Software and Electronics
We will be using stata 16 or 17 for in-class demonstrations, problem sets, and the final project. stata is available for free on the Dartmouth Network (Mac/PC) and is also available on most public computers on campus. If you are off campus, you can use Dartmouth’s Global Protect VPN to access the keyserv e. For more information on stata resources and installing stata on your computer, see the following websites:
For Mac users: https://services.dartmouth.edu/TDClient/1806/Portal/KB/ArticleDet?ID=64644
For Windows users: https://services.dartmouth.edu/TDClient/1806/Portal/KB/ArticleDet?ID=64632

For more information on using stata off campus, see:
https://services.dartmouth.edu/TDClient/1806/Portal/KB/ArticleDet?ID=64133

Please use these resources and the helpdesk for any installation questions.

In most classes, we will be using stata in order to demonstrate statistical techniques. For this reason, you are encouraged to bring your laptop to class to every class period.

In each class, we will be working from annotated stata DO files. These DO files are a primary text of the course, and as such you should download and read these DO files before each class period.

A brief note on stata: Becoming proficient in a programming language is hard. I will periodically provide stata refreshers during Xhours, and we will learn/practice new STATA commands during regular class periods. However, I highly recommend that you practice outside of class to hone your skills. Please see me during office hours with all stata related questions. In addition, here are some resources that will help you as you learn to code in stata:

**STATA Resources**
Jianjun Hua’s research guides http://researchguides.dartmouth.edu/content.php?pid=316205&sid=2587562

UCLA Stata Resources
https://stats.idre.ucla.edu/stata/modules/

Princeton Stata Resources:
http://data.princeton.edu/stata/
http://dss.princeton.edu/training/StataTutorial.pdf
http://dss.princeton.edu/online_help/stats_packages/stata/

Stata Online Course and Cheat Sheets:
http://geocenter.github.io/StataTraining/

You may need a calculator to complete your assignments and to participate in in-class exercises. A basic and inexpensive calculator that has square-root and squaring functions is best for use in this class. The calculator that comes standard on your computer or phone is sufficient.

**Course Structure**

In a perfect world, we will meet in-person every class period and have a normal face-to-face class. My hope is that we will be fully “back to normal” in this term. But the virus may have other ideas, which could necessitate us to shift to a remote delivery without warning. For these reasons, pre-recorded lectures will be made available upon request. Otherwise, my expectation is that all students will be attending class regularly. All other course materials (handouts, powerpoints, etc) will be available on canvas.

To ensure that all students have a support system in place to succeed in this course, at the beginning of the term, I will assign you to a group of 4-5 students based on your responses to the introductory survey. This group will be your core peer support network in the course. Groups will work together to complete all course assignments. Groups will also work together to complete the final research project. Representatives from the group can meet with Prof Houle at any time. A limited number of students may be permitted to work on the final project independently, but will need to submit a proposal to Prof Houle to be permitted to do so. If you would like to pursue this option, you must talk to Prof Houle by the end of Week 1.
We will be using **Slack** for all virtual discussion this term. You will need to download Slack onto your machine, and join the **SOCY/QSS 54** workspace (click here for more information about Slack).

**COVID-19 Safety Regulations**

In accordance with current College policy, I mask use will be optional in the classroom this term. However, those who test positive for COVID-19 should not attend class, and all students who are identified as a close contact should mask for at least 10 days after exposure. If you refuse to comply with masking or other safety protocols, and to ensure the health and safety of our community, I am obligated to report you to the Dean’s office for disciplinary action under Dartmouth’s Standards of Conduct. Additional COVID-19 protocols may emerge. Pay attention to emails from the senior administrators at the College. I will communicate any changes and their resulting implications for our class community.

**For the health and safety of our class community, please: do not attend class when you are sick, nor when you have been instructed by Student Health Services to stay home.**

**Evaluation and Grading**

*Group Mini-Conferences (10%)* On the last day of each unit, a student group will be responsible for presenting the findings of one of the **optional readings** from the unit (listed at the end of this syllabus) to the class for 10-15 minutes max. Students can select any of the optional readings **listed in bold** at the end of the syllabus for each respective unit. Alternatively, students are welcome to present on an alternative reading/study, provided that I approve it in advance. Your goal in this mini-conference is to present the main points of one of the optional readings to the class (which your classmates will not have read). As part of these mini conferences, groups should focus on: 1) communicating the **main points** of the reading to the audience (what is the author asking/arguing? Why is this important?); 2) reflecting on how this article builds on/complicates/challenges what we have learned so far in this unit (and perhaps other units); 3) discuss the strengths and limitations of the use of the statistical method; and 4) the implications for future research. When presenting, keep in mind that you are effectively teaching new material to your fellow classmates, who will not have read the piece you selected for the day.

*Group Homework Assignments (20%):* There will be five homework assignments that cover Units 1-5 of the term*. You must complete **four** of these assignments (there are two homework assignments for Unit 3—only one can be submitted for credit, and you must choose one to submit). Each group will be responsible for turning in a single copy of the homework assignment. Group members are welcome to either a) complete assignments individually, and then meet to resolve any differences and submit a final draft or b) work together to complete an assignment in real time. Assignments will typically be due following the last class of each unit (with one exception). All completed assignments must include three elements: 1) a document that includes all written interpretation, fully-formatted tables, and figures; 2) an annotated DO file that shows you have estimated models and manipulated data correctly; 3) a log file that records the output from all analysis steps. Assignments will be posted on Canvas by Monday of the week before they are due (at the latest). Please feel free to troubleshoot the assignment with your classmates on Slack. *I will not assign homework assignments for Units 6-8, so that you can focus your time and energy on the final project.*

*Confidential Group Evaluations (0%):* Each student will complete confidential evaluations of their group mates at the end of each week, upon submitting key assignments (specifically: each homework, mini lecture, final presentation, and the final paper). Evaluations are required, and will be used to assess individual contributions
to group assignments and will be factored into your grade for each assignment. Failing to complete the confidential group evaluation will result in a 10-percentage point reduction to your assignment grade.

*Individual In-class activities and lab assignments (5%):* Nearly all class sessions will operate as a lab session, where we will work through problems/examples together in Stata and/or dig into the assumptions of the methods that are being discussed that day. These activities are crucial to the success of the course, and therefore your participation in these activities is important. Consider this your class participation grade for the term. What does class participation entail? It means you must be an active participant in the class. This includes: 1) contributing to class discussion; 2) actively contributing to small group exercises. If you come into class, sit quietly every day, and do not contribute to class discussion you will receive a 0 for class participation. I understand that due to sickness or competing obligations, students may not be able to attend every class period. For this reason, I will drop the two lowest reading prompt/activity grades. In essence, each student has two freebies.

*Group Final Research Paper (65%)* For the final writing assignment, you will write a standard sociological research paper—modeled on the academic articles we read this term—on the topic or question of your choice. You will draw on secondary literature (at least five academic sociological research articles) to address your research questions. You will conduct an original data analysis using one or more of the methods discussed in this course to answer your research question. More detailed instructions will follow. This paper will be completed in a series of steps, and you will receive feedback and review from myself and your classmates at each stage:

1) ½ - 1-page research proposal (5%): Your research proposal must include your research question, a testable hypothesis, and a description of the data and methods you plan to use to address/answer your research question. **Due Friday 9/30**

2) Meeting with Prof Houle (5%): After receiving feedback on your proposal, you must schedule a meeting with Prof Houle by Fri 10/7 to discuss your plan for your project moving forward. If possible, I would prefer to meet during X hours or office hours. Please bring any questions you might have, as well as any ideas about potential data sources and methods, to this meeting.

3) Data Analysis I (10%): **Due Friday 10/21**

4) Data Analysis II (10%): **Due Wednesday 11/2**

5) Presentation of Research Project (10%)

6) Final Draft (25%) **Due Tuesday 11/22 by 5pm (via email or Canvas)**

I will use the following scale in assigning grades:

- 95%-100%: A
- 92%-94.9%: A-
- 89%-91.9%: B+
- 83%-88.9%: B
- 80%-82.9%: B-
- 77%-79.9%: C+
- 73%-76.9%: C
- 70%-72.9%: C-
- 60%-69.9%: D
- Below 60%: F

Please note the following about grades: 1) I do not round grades; 2) I **do not negotiate final grades** unless an error was made 3) When grading, I follow the Dartmouth Scholarship Guidelines (http://www.dartmouth.edu/~reg/transcript/grade_descriptions.html)

**Late Policy**

All students will receive one 24-hour extension on any class assignment of their choosing, no questions asked (with the exception of the final paper and scheduled presentations). Students should notify me via email if/when you plan to use their extension. After that, on any assignment, your grade will be reduced by 8 percentage points for each day late (e.g., 1 day late a grade of 100 would be reduced to a 92; 2 days, 84; and so on).
**Basic Needs**

Your safety and wellbeing are more important than anything going on in class. Please feel free to reach out to me if you need to talk. Any student who faces challenges securing their food or housing or personal safety is urged to contact the Dean of the College for support. Please notify me if you are comfortable in doing so. This will enable me to provide any resources that I can.

**Academic Integrity**

Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner and all members of the Dartmouth community are expected to act in accordance with this principle. Academic integrity includes a commitment not to engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty violate the fundamental ethical principles of the Dartmouth community and compromise the worth of work completed by others. As such, dishonesty of any kind will not be tolerated and students found in violation of the Dartmouth Academic Honor Principle will be notified and reported to the appropriate authorities ([http://student-affairs.dartmouth.edu/policy/academic-honor-principle](http://student-affairs.dartmouth.edu/policy/academic-honor-principle)). Cheating and other forms of dishonesty (such as plagiarizing) often result when students feel too much pressure to perform and that they do not have the tools to achieve their goals. If you are falling behind or feeling overwhelmed, please come sit down and chat with me BEFORE you decide to cheat. For additional resources on the Academic Honor Code, plagiarizing, and proper citation of sources, please see the following link: [http://writing-speech.dartmouth.edu/learning/materials/sources-and-citations-dartmouth](http://writing-speech.dartmouth.edu/learning/materials/sources-and-citations-dartmouth)

**Religious Observances**

Some students may wish to take part in religious observances that occur during this academic term. If you have a religious observance that conflicts with your participation in the course, please meet with me before the end of the second week of the term to discuss appropriate accommodations.

**Student Accessibility and Accommodations**

Students requesting disability-related accommodations and services for this course are required to register with Student Accessibility Services (SAS; [Getting Started with SAS webpage](https://student.accessibility.services@dartmouth.edu); 1-603-646-9900) and to request that an accommodation email be sent to me in advance of the need for an accommodation. Then, students should schedule a follow-up meeting with me to determine relevant details such as what role SAS or its Testing Center may play in accommodation implementation. This process works best for everyone when completed as early in the quarter as possible. If students have questions about whether they are eligible for accommodations or have concerns about the implementation of their accommodations, they should contact the SAS office. All inquiries and discussions will remain confidential.

**Diversity & Inclusion**

In an ideal world, science would be objective. However, much of science is subjective and is historically built on a small subset of privileged voices. In this class, we will make an effort to read papers from a diverse group of scientists, but limits still exist on this diversity. I acknowledge that it is possible that there may be both overt and covert biases in the material due to the lens with which it was written, even though the material is primarily of a scientific nature. Integrating a diverse set of experiences is important for a more comprehensive understanding of science. I would like to discuss issues of diversity in neuroscience as part of the course from time to time.

Please contact me (in person or electronically) or submit anonymous feedback if you have any suggestions to improve the quality of the course materials.
Furthermore, I would like to create a learning environment for my students that supports a diversity of thoughts, perspectives and experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, etc.) To help accomplish this:

If you have a name and/or set of pronouns that differ from those that appear in your official college records, please let me know.

If you feel like your performance in the class is being impacted by your experiences outside of class, please don’t hesitate to come and talk with me. I want to be a resource for you. Remember that you can also submit anonymous feedback (which will lead to me making a general announcement to the class, if necessary to address your concerns). If you prefer to speak with someone outside of the course, the Associate Dean of the College for Diversity Programs is an excellent resource.

I (like many people) am still in the process of learning about diverse perspectives and identities. If something was said in class (by anyone) that made you feel uncomfortable, please talk to me about it. (Again, anonymous feedback is always an option.)

As a participant in course discussions, you should also strive to honor the diversity of your classmates.

**Mental Health and Wellness**

The academic environment is challenging, our terms are intensive, and classes are not the only demanding part of your life. There are a number of resources available to you on campus to support your wellness, including: the Counseling Center which allows you to book triage appointments online, the Student Wellness Center which offers wellness check-ins, and your undergraduate dean. The student-led Dartmouth Student Mental Health Union and their peer support program may be helpful if you would like to speak to a trained fellow student support listener. If you need immediate assistance, please contact the counselor on-call at (603) 646-9442 at any time. Please make me aware of anything that will hinder your success in this course.

**Title IX**

At Dartmouth, we value integrity, responsibility, and respect for the rights and interests of others, all central to our Principles of Community. We are dedicated to establishing and maintaining a safe and inclusive campus where all have equal access to the educational and employment opportunities Dartmouth offers. We strive to promote an environment of sexual respect, safety, and well-being. In its policies and standards, Dartmouth demonstrates unequivocally that sexual assault, gender-based harassment, domestic violence, dating violence, and stalking are not tolerated in our community.

The Sexual Respect Website ([https://sexual-respect.dartmouth.edu](https://sexual-respect.dartmouth.edu)) at Dartmouth provides a wealth of information on your rights with regard to sexual respect and resources that are available to all in our community.

Please note that, as a faculty member, I am obligated to share disclosures regarding conduct under Title IX with Dartmouth's Title IX Coordinator. Confidential resources are also available, and include licensed medical or counseling professionals (e.g., a licensed psychologist), staff members of organizations recognized as rape crisis centers under state law (such as WISE), and ordained clergy (see [https://dartgo.org/titleix_resources](https://dartgo.org/titleix_resources)).

Should you have any questions, please feel free to contact Dartmouth's Title IX Coordinator or the Deputy Title IX Coordinator for the Guarini School. Their contact information can be found on the sexual respect website at: [https://sexual-respect.dartmouth.edu](https://sexual-respect.dartmouth.edu).

**Socioeconomic Differences and Financial Difficulty**

*If you encounter financial challenges related to this class, please let me know.*
TENTATIVE COURSE SCHEDULE

***Note: all readings should be completed prior to the start of the class period, including all Stata DO files that are posted on canvas. All datasets for the day should also be downloaded prior to class.

<table>
<thead>
<tr>
<th>Class</th>
<th>Topic</th>
<th>Readings</th>
<th>Assignment Due Dates</th>
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<tbody>
<tr>
<td>M 9/13</td>
<td>Course Introduction</td>
<td>Wheelan Ch 11-12</td>
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<tr>
<td>Date</td>
<td>Topic</td>
<td>Reading/Notes</td>
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<tr>
<td>W 9/14</td>
<td><strong>Unit 1: Regression: Review and Expansion I</strong></td>
<td>Firebaugh, Ch 1.</td>
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<td>Th 9/15</td>
<td>X Hour: Stata Basics Review</td>
<td>Firebaugh, Ch 2; Stata basics video</td>
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<td>F 9/16</td>
<td>Regression: Review and Expansion II</td>
<td>Barkan 2014</td>
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<tr>
<td>M 9/19</td>
<td>Regression: Review and Expansion III</td>
<td>Firebaugh, Ch 3.</td>
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<tr>
<td>F 9/23</td>
<td>Regression: Review and Expansion V</td>
<td>O’Brien and Kiviat 2018</td>
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<tr>
<td>M 9/26</td>
<td><strong>Unit 2: Stata Workflow I</strong></td>
<td>HW #1 Due</td>
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<tr>
<td>W 9/28</td>
<td>Stata Workflow II</td>
<td>Firebaugh Ch 4</td>
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<tr>
<td>F 9/30</td>
<td><strong>Unit 3: Regression for Categorical DV’s I</strong></td>
<td>Uggen and Manza 2002</td>
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<tr>
<td>M 10/3</td>
<td>Regression for Categorical DV’s II</td>
<td>Research Proposal Due</td>
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<td>W 10/5</td>
<td>Regression for Categorical DV’s III</td>
<td>Mize 2019 (Skim);</td>
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<td>F 10/7</td>
<td>Regression for Categorical DV’s IV</td>
<td>Stokes and Ellison 2010</td>
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<tr>
<td>M 10/10</td>
<td><strong>Unit 4: An Introduction to the Study of Change I</strong></td>
<td>Percheski and Kimbro 2017</td>
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<tr>
<td>W 10/12</td>
<td>An Introduction to the Study of Change II</td>
<td>Firebaugh Ch. 6 (through p. 195); Ryder 1965 (SKIM)</td>
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<tr>
<td>F 10/14</td>
<td><em><strong>Open/Catchup Day</strong></em></td>
<td>Schedule Meeting with Prof Houle by today; Mini Conference #1</td>
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<tr>
<td>M 10/17</td>
<td><strong>Unit 5: Fixed and Random Effects I</strong></td>
<td>Johnson 1995; Firebaugh Ch 5 (through p. 146)</td>
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<tr>
<td>W 10/19</td>
<td>Fixed and Random Effects II</td>
<td>HW #4 Due</td>
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<tr>
<td>F 10/21</td>
<td>Fixed and Random Effects III</td>
<td>Sugie and Turney 2017</td>
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<tr>
<td>M 10/24</td>
<td>Fixed and Random Effects IV</td>
<td>Colen &amp; Ramey 2014;</td>
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<td><strong>Unit 6: Hierarchical Linear Modeling I</strong></td>
<td>Data analysis I due</td>
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<td></td>
<td>Firebaugh Warner and Massoglia 2013 (I am primarily concerned with</td>
<td>Mini Conference #3</td>
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<td>the discussion of the hybrid model on p. 118-120, but all of the</td>
<td>Dowd 2020</td>
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<td>reading is a good review); Dowd 2020</td>
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<td></td>
<td>(SKIM); revisit Firebaugh Rule 5, p. 183-185</td>
<td>HW #5 Due</td>
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<td>F 10/28</td>
<td>HLM II</td>
<td>Denney 2015</td>
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<td>Date</td>
<td>Activity</td>
<td>Reading/Resource</td>
<td>Notes</td>
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<tr>
<td>M 10/31</td>
<td>HLM III</td>
<td>Houle and Berger 2017</td>
<td>Mini Conference #4</td>
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<tr>
<td>W 11/2</td>
<td><strong>Unit 7: Natural/Quasi Experiments and Instrumental Variables I</strong></td>
<td>Firebaugh Ch. 5 (p.152-end) ; Kirk 2009</td>
<td>Data analysis II due</td>
</tr>
<tr>
<td>F 11/4</td>
<td>Natural/Quasi Experiments and Instrumental Variables II</td>
<td>Sharkey et al. 2017</td>
<td>Mini Conference #5</td>
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<tr>
<td>M 11/7</td>
<td><em><strong>Open/Catchup Day/Final Presentations</strong></em></td>
<td>Firebaugh Ch 7</td>
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<tr>
<td>W 11/9</td>
<td>Final (Group) Presentations</td>
<td>Firebaugh Ch 7</td>
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<tr>
<td>T 11/10</td>
<td>Final (Group) Presentations</td>
<td>Firebaugh Ch 7</td>
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<td>F 11/11</td>
<td><em><strong>NO CLASS</strong></em></td>
<td>Firebaugh Ch 7</td>
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<tr>
<td>M 11/14</td>
<td>Final (Group) Presentations</td>
<td>Firebaugh Ch 7</td>
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**FINAL PAPER DUE VIA EMAIL BY TUESDAY, NOVEMBER 22, 5:00 PM**

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**Required Chapters and Articles by Unit**

In addition to the Firebaugh book (*7 Rules*), we will also be reading and discussing a range of academic articles and chapters, noted above in the tentative course schedule. These articles are available on CANVAS, and the full citations are below:

**Unit 1: A Review and Expansion of Regression**


**Unit 3: Regression for Categorical DV’s**


**Unit 4: An Introduction to the Study of Social Change**


**Unit 5: Fixed and Random Effects**


Unit 6: Hierarchical Linear Modeling (HLM)


Unit 7: Natural Experiments and Instrumental Variables


Optional Readings by Unit (readings in bold may be used for your mini conferences. The remaining readings are for your own edification)

Unit 1: A Review and Expansion of Regression

Addo, Fenaba, Jason Houle and Daniel Simon. 2016. “Young, Black, and (Still) in the Red;
Parental Wealth, Race, and Student Loan Debt.” *Race and Social Problems* 8:64-76.


Houle, Jason. 2014. “Disparities in Debt: Parents’ Socioeconomic Resources and Young Adult Student Loan Debt.” *Sociology of Education* (note: a bonus to whomever finds the error embedded in the results section of this paper)


Unit 3: Regression for Categorical DV’s (Mini Conference 1)

Barkan, Steven, Michael Roque and Jason Houle. 2013 “State and Regional Suicide Rates: A New Look at an Old Puzzle.” *Sociological Perspectives* 56:287-297.


Houle, Jason and Lawrence Berger. 2015. “Is Student Loan Debt Discouraging Home Buying Among Young Adults?” *89*:589-621.


Mood, Carina. 2009. “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.


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**Unit 4: An Introduction to the Study of Social Change (Mini Conference 2)**


England, Paula, Emma Mishel, and Mónica L. Caudillo. 2016. “Increase in Sex with Same-


**Unit 5: Fixed and Random Effects (Mini Conference 4)**


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**Unit 7: Natural Experiments and Instrumental Variables (Mini Conference 7)**


Martin, Molly A. 2021. “What is the Causal Effect of Income Gains on Youth Obesity? Leveraging the Economic Boom Created by the Marcellus Shale Development.” *Social Science & Medicine*. Forthcoming (Online First)


