



MC295: Research Design and Quantitative Analysis in Public Policy

Course Information

Tuesday and Thursday: 12:40 - 2:00 p.m.

Classroom: 331 Case Hall

Computer Lab: 337 Case Hall

Course Web Page: <http://www.angel.msu.edu>

Instructor Information

Professor Daniel Kramer

Office: 370 North Case Hall

Phone: (517) 432-2199

Email: dbk@msu.edu

Office Hours: Thursday 9:00 - 11:00 a.m.

The best way to reach me is during my office hours or by email. I am also readily available by appointment. Please make an effort to stop in and chat.

Course Overview

We are living in a time of information overload. The consumption and production of information has never been greater. Yet, according to many, individuals are having an increasingly difficult time of making sense of this information due both to the sheer magnitude of information confronting them and because we as a society are increasingly failing in terms of numeracy, quantitative literacy, and statistical literacy. As students of public affairs and indeed, as engaged citizens, possessing quantitative and statistical literacy is essential. Moreover, quantitative and statistical literacy are an important part of the set of critical thinking skills you acquire at James Madison College (JMC). Thus, the four general goals of this course, in order of importance are to 1) increase your quantitative and statistical literacy; 2) learn the most fundamental concepts and tools of statistical analysis; 3) become familiar with R, a very powerful, open-source statistical software; and 4) learn about two important and current research pursuits in the social sciences – the science of happiness and the science of social capital.

In some sense, this is an untraditional quantitative methods course which is a reflection on the education and expectations you experience at JMC. First, you will realize that statistics is not number crunching, and we will not do a lot of number crunching in this course. Statistics is and ought not be a slave to mathematics. The emphasis of the course will be on understanding statistical concepts and on interpreting and communicating the results of statistical analyses. That is, you will be expected to learn to construct and to critique numerical arguments. Second, we will motivate our learning and enrich our understanding of the methods of social science by working through two social science books. The first is *Stumbling On Happiness* by Harvard psychologist Daniel Gilbert. The book summarizes the latest

research from psychology, neuroscience, philosophy, and economics on what makes people happy. The second book, *Bowling Alone* by Robert Putnam, is a true social science classic. Putnam, a professor of political science at Harvard, puts forth and attempts to evidence the thesis that social capital, the bonds that tie us together, is declining in America. Using these books as well as data sets on happiness and social capital, we will improve our statistical literacy, learn the essential concepts and tools of statistical analysis, and become adept at using the statistical software R.

The two books are complemented by a free, online course book on statistical methods by William Trochim, Research Methods Knowledge Base (<http://www.socialresearchmethods.net/kb/>). In addition, I will occasionally distribute newspaper and journal articles for you to read.

Course Objectives

General

- Students will learn to identify and formulate an appropriate research question.
- Students will learn to derive testable hypotheses from theories.
- Students will learn to collect, format, and analyze data to test hypotheses.
- Students will become acquainted with R, an open-source data analysis software program.
- Students will learn to critically evaluate statistical claims in public policy.
- Students will improve their oral and written communication skills.
- Students will improve their critical reading and summarization skills.
- Students will become more intelligent consumers of statistics in the popular press and academic writings.
- Students will develop the ability to communicate statistically
- Students will understand the purpose and logic of statistical investigations
- Students will understand the process of statistical investigations
- Students will understand mathematical relationships
- Students will understand probability and chance

Statistical Literacy Benchmarks

- Reasoning about data
- Reasoning about representations of data (e.g. distribution, center, variability)
- Reasoning about statistical measures (confounding effects, causation versus correlation, statistical significance versus practical importance)
- Reasoning about uncertainty
- Reasoning about samples (e.g. differences from populations)

Resources and Readings

Required Texts

Stumbling On Happiness by Daniel Gilbert

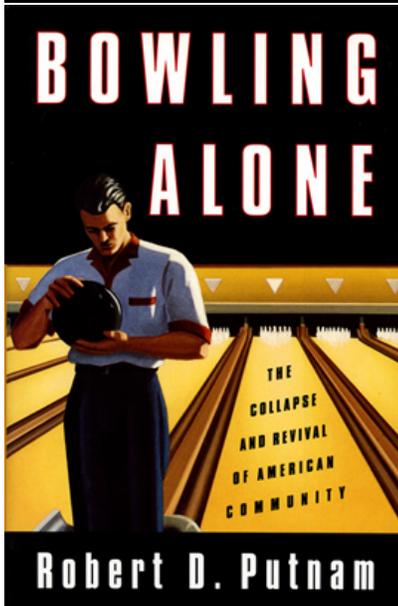
Stumbling on **HAPPINESS**

"THINK YOU KNOW WHAT MAKES YOU HAPPY?
This absolutely fantastic book will shatter your most deeply held convictions
about how the mind works."—STEVEN D. LEVIT, author of *PSYCHOLOGY*

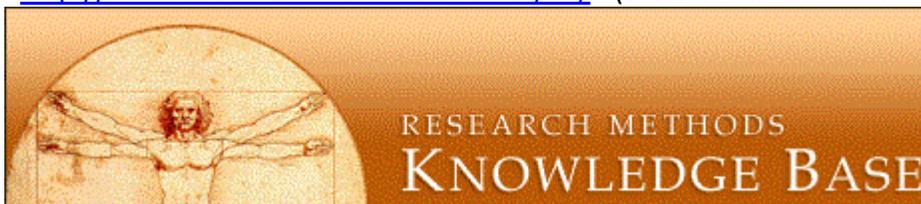


DANIEL GILBERT

Bowling Alone by Robert Putnam



Trochim, William M. The Research Methods Knowledge Base, 2nd Edition. Internet WWW page, at URL:
<<http://www.socialresearchmethods.net/kb/>> (version current as of October 20, 2006).



Other Readings

The *New York Times* is available at no charge to Madison students. We'll be using it extensively in class to illustrate the importance of statistical methods in the analysis of current public affairs. I urge you to consult with the *Times* frequently and to call out these examples yourself in class. ***I will award extra points to students who present at least 2 articles to the class.***

All other readings including journal and newspaper articles can be found on ANGEL or may be distributed in class.

Software

We will be using an open-source statistical software – R. It is not only free but is one of the best statistics and graphics programs available. We put it on the JMC web site for an easy download to your personal computer. The investment to learn R will be well worth your time! Download here -

<http://jmc.msu.edu/r/>. Some good resources for R can be found here - <http://www.statmethods.net/>.

Grading

Your grade will be based on the following tasks...

Participation and Collegiality:	15%
In Class Quizzes (~15):	15%
Short Assignments:	15%
Research Note:	15%
Midterm Exam:	20%
Final Take Home Exam:	20%

Evaluation Criteria for Written Work Including Essay Portions of Exams

- **4.0** - Your work is excellent relative to the level necessary to meet course requirements. You not only make strong, organized arguments that make good use of evidence and link theory to empirical cases, but also are able to recognize the limits of those arguments through thoughtful assessments of alternative explanations. Your work is probing, perceptive, and well expressed.
- **3.0** - Your work is good relative to the level of course requirements. It demonstrates very good command of the materials, is well written, and insightful.
- **2.0** - Your work meets requirements of the assignment, demonstrates adequate command of materials, and is fairly well expressed. Please note that an average grade is a 2.5.
- **Lower than 2.0** - Your work meets minimum requirements for credit but shows weaknesses in the mastery of material and expression.

Evaluation Criteria for Participation and Collegiality

- **4.0** - Students who earn a 4.0 are consistently excellent colleagues. They are always present and prepared for class, and they bring interesting and relevant questions and comments to bear on the subject material. They are equally good listeners and show a genuine interest in their fellow students' thoughts. These students make the class better for all through their contributions, energy, and hard work.
- **3.0** - A student who earns a 3.0 may have missed two or three classes throughout the semester, but generally has been an active and enthusiastic participant in the course. Other students who earn a 3.0 may have been in class and prepared for class every day, but will have occasionally

articulated ideas without reference to the direction of the conversation; that is, they actively participated in discussions without listening to their colleagues' previous statements.

- **2.0** - A student who earns a 2.0 is very much an average student. He or she will miss two or more classes throughout the semester or will come to class several times during the semester without having fully read and understood the assigned materials. Other such students will be prepared for class and will come to every class meeting, but will not fully participate in class activities and discussion; instead, they hold back, waiting for others to ask the tough questions or take the chance at making a mistake. Still other students who earn a 2.0 will occasionally dominate a class discussion and use rhetorical tactics that limit other students' participation.
- **Lower than 2.0** - Students who earn a 1.0 or a 0 in the participation and collegiality portion of their grade will have missed more than three classes or will have come to class several times without being fully prepared for the class meeting. In the class discussions and activities, lower than average colleagues will avoid participating or will occasionally attempt to dominate the discussions.

In Class Quizzes

There will be roughly 15 quizzes conducted in class. These will be very, very short – only 1 or 2 questions. The quizzes are meant to assess your understanding of class material as we progress and to provide an incentive to keep up on your reading. The quizzes will be graded as either a “1” (full credit) or a “0” (no credit). At the end of the semester I will drop your lowest 3 grades assuming you hand in all quizzes.

Short Assignments

There will be 5 homework assignments to be completed over the semester. Homework assignments will give students hands-on experience with the concepts and analytic techniques introduced in class. Students are welcome to consult with others but must submit their own original work. You will be given the homework assignments one week before their due date. Examples of these assignments include 1) data analysis work or 2) an analysis of an original research article.

Research Note

The research note is intended to give you experience in 1) generating a research question, 2) forming a hypothesis, 3) acquiring and formatting data, 4) applying appropriate statistical methods to test your hypotheses, and 5) summarizing the results of your analysis in text.

- The full research note, not including tables and figures, should be between 5 and 7 double spaced pages.
- The paper must clearly state your research question and hypothesis.
- The paper must include the following sections:
 - **Brief Introduction:** Why is your research question important? What background information is important in understanding how you arrived at your question?
 - **Research Question**
 - **Hypothesis**
 - **Data:** Explain the source and nature of the data used in your research note.
 - **Methods:** What data are available to answer your research question? Will you use existing data or will you gather the data yourself? What research design and methodology are most appropriate to answer your research question?

- **Results:** What are the results of your analysis?
- **Conclusion:** Summarize the main results of your analysis. What data, design, or methodology problems did you experience? How might future research correct for these problems?

Midterm and Final Exams

- The midterm exam will be based on previously untested material. The final exam will be comprehensive but will emphasize untested material. Both exams will test your understanding of class readings, class discussions, and films.

Important Due Dates for Assignments and Exams

<u>Assignment</u>	<u>Due Date</u>
Assignment #1	January 26
Assignment #2	February 9
Assignment #3	March 20
Assignment #4	April 5
Assignment #5	April 19
Midterm Exam	March 1
Research Note	April 26
Final Exam	May 2

Honors Option

Each student may choose to take the honors option for this course. You can fulfill the honors option by completing a 10 page critical book review after discussing with me your book choice.

Schedule

See separate sheet and Excel file on Angel

Policies

Attendance

Attendance is required for this class. I understand that occasional emergencies (illness or family emergencies) may occur. In such cases, you should notify me before class begins that you cannot attend. If you don't speak to me in person, you can leave a voice mail or email message with your phone number and the reason you won't be attending class that day. You are responsible for finding out what you missed in class.

Classroom Conduct

Students whose behavior is disruptive either to the instructor or to other students will be asked to leave the class. Everyone's experience and opinions will be valued. Not everyone must agree, even with the instructor, however, differing points of view must be communicated respectfully.

Diversity

This course is intended for students with a variety of interests and backgrounds. The diversity of ethnicities, cultural backgrounds, races, perspectives, experience, and ways of addressing problems among students is one of the most enriching aspects of any course. I will encourage students to acknowledge classroom diversity by listening attentively and politely to one another especially when opinions of students differ.

Grading Grievances

Students with a grievance regarding grading should submit to me in writing the nature of their grievance and their proposed remedy within 48 hours of having received the returned assignment. I will then discuss the grievance with the student.

Late Work

Late work will be docked one full letter grade for every day (not class day) the work is late.

Scholastic Dishonesty (<http://www.vps.msu.edu/SpLife/reg3.htm#1.00>)

The principles of truth and honesty are fundamental to the educational process and the academic integrity of the University; therefore, no student shall:

- claim or submit the academic work of another as one's own.
- procure, provide, accept or use any materials containing questions or answers to any examination or assignment without proper authorization.
- complete or attempt to complete any assignment or examination for another individual without proper authorization.
- allow any examination or assignment to be completed for oneself, in part or in total, by another without proper authorization.
- alter, tamper with, appropriate, destroy or otherwise interfere with the research, resources, or other academic work of another person.
- fabricate or falsify data or results.

Students with Disabilities

Any student with a documented disability needing academic adjustments or accommodations is requested to speak with me during the first two weeks of class. All discussions will remain confidential. Such students also should contact *The Resource Center for Persons with Disabilities* (RCPD), 120 Bessey Hall, (517) 353-9642 and visit their web site at <http://www.rcpd.msu.edu/Home/>.