PS218: Understanding Political Numbers
Charles H. Franklin
322B North Hall
University of Wisconsin, Madison
franklin@polisci.wisc.edu
Office Hours: Monday & Wednesday 10:00-12:00 and by appointment.
Teaching Assistant: Patrick Kearney
pmkearney@wisc.edu

About the course: This course is about learning to tell stories with numbers. To tell a story, you have to
learn what the numbers have to say. And to understand the numbers you have to understand the problem.
Politics is full of problems that deal with numbers: the federal budget deficit; whether Social Security will fail;
how many American soldiers will die this year in Afghanistan; how the economy affects elections; whether gun
control reduces homicides and whether the death penalty reduces homicides.

Many people aren’t interested in the evidence for or against these questions. They are convinced of the
righteousness of their cause and simply use the data to justify their position. Pro- and anti-death penalty advocates
can at least make moral arguments for their respective sides which may transcend the data. But such rigid positions
apply as well to less moralistic issues, such as the effect of deficits or the actuarial tables.

Newspapers are full of articles that turn on questions of quantitative analysis. Yet most citizens never think of
policy in these terms, let alone try to analyze the issues themselves. While there is analysis available, most don’t
try to read the numbers.

This course will teach you how to understand quantitative analysis, how to develop a question that you can
answer, how to collect and analyze the data and how to present your conclusions to others.

For Journalism Majors: While this is a political science course, it is also aimed at journalism students. I
started working for newspapers in the 7th grade and continued to do so through college. That’s what I’d be doing
if not for this gig.

But something fundamental has changed since my day: the rise of “data journalism”, the use of statistics and
go graphics to tell a story and to support other reporting. There is no better growth area in journalism today. Amidst
the disaster of newsroom cutbacks, data journalists are in high demand and represent a rare boom area in the
trade. My goal in this class is especially to speak to you in developing skills that can be built upon in your careers.

Everyone else: This is a class about how to get an “A” on every term paper you’ll ever write. This class is
about the skills required to collect data on a topic, to analyze that data coherently and to present it in a compelling
way. If you can do that, you will blow away any professor on this campus. Not by magic, mind you, but because
telling a clear and compelling story about your original research on a subject will impress the hell out of any
faculty member. By the way, this is also a skill that will get you a job and get you promoted. You might find that
handy. If you are the one person in an office that can take last month’s sales figures and make sense of them and
present them clearly, you will be on a fast track to promotion. I am very interested in students leaving here with
marketable skills that lead to successful careers.

What you’ll do: The fundamental goal of the class is for you to learn to tell stories with data. Such story
telling is essentially about doing science, though it also involves art, imagination and creativity. This is different
from most classes that focus on memorizing “facts”. I definitely expect you to learn about a variety of subjects,
but I primarily want to teach you a skill you can apply to almost any subject.

The class will focus on developing your skills using the statistical programming language, R. This is a state-
of-the-art program favored by the most sophisticated statisticians and social scientists. It also happens to be
free.
You cannot be a carpenter or a plumber without learning the tools of the trade. You cannot learn to do data analysis without learning a statistical programming language. So, you will spend a lot of time learning R and becoming proficient at data analysis using it. The class will provide the instruction and examples, but you will have to provide the effort and practical experience using the program. Discussion sections will be “labs” to help you develop your R skills and to help you over the difficult bits. You do not need to have learned a programming language before, but R does require thinking in the structured way programming requires.

The payoff for all that time is that you will finish the class having acquired a genuine skill that you did not have before. This is a skill that you can use in your other classes and in your career.

**Components of the grade:**

Grading will be different from almost any other class. If anything, this is more like an art class.

First, you will have weekly exercises designed to prove you’ve learned the basic skills of programming in R. These will be brief, with the goal that you learn how to read data, or make a chart, or conduct an analysis. You will submit your R code and output but generally won’t have to write anything beyond that. These will be graded as 1 (satisfactory), .5 (turned in but incorrect or incomplete) and 0 (not turned in). Because learning R is essential to everything in the class, I hope you will all turn in all the exercises for a nice fat “1” on each assignment.

About every 3 weeks (there will be a little variation) you will submit an analysis of a topic related to our readings. This will include a 600-800 word essay (the length of a newspaper op-ed column) and several accompanying graphics that illustrate your analysis, created using R. The goal here is to develop your ability to “tell a story with data”, the fundamental objective of the class. These will be graded on the conventional A-F scale.

At the end of the semester, you will do a final essay, this time a bit longer (12 pages) and with more detailed analysis. For this project you can choose the subject and the data, after consulting with me. These will be graded on the conventional A-F scale.

There will be **NO final exam**.

**Grading:** Your final grade will be computed based on

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<tr>
<td>Weekly exercises</td>
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<tr>
<td>600 word essays (4 in all)</td>
<td>40%</td>
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<tr>
<td>Final paper</td>
<td>35%</td>
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Class attendance is expected. I will check attendance from time to time (randomly) and will reduce the grade significantly for students with frequent absences.

**Computing:** You need to have a computer you can use and on which you can install R. Several campus computing labs include R on their computers. R runs under Windows, Mac OS X, and Linux.

**Texts:** A book on creating graphics in R is required for the class. The text is *R Graphs Cookbook* by Hrishi V. Mittal. It is available from Amazon.com as a Kindle e-book. I strongly urge you to buy it in this form. Amazon has free downloadable Kindle readers for OS X and Windows, so there is no need to buy a Kindle hardware device. If you have a Kindle reader or an iPad you can read the book on those too, of course. And the price is lower for the electronic version rather than the printed one. If you want a print edition, of course that’s fine with me, but you’ll save money and always have it with you if you go the e-book route.

A second book on R is **recommended but not required**. We will give out many handouts on using R and you can get by with those. However, a good book is always valuable as a reference. I recommend *A Beginner’s Guide to R* by Zuur, Leno and Meesters, which is also available as a Kindle download from Amazon. This is a very helpful book that focuses on answering common questions rather than trying to carry you through the R language in great (excrutiating) detail. I like it, though there are parts we won’t need.

While the *R Graphs Cookbook* is necessary, the core readings for the class will all be online. The goal of the class is to analyze data relevant to some topic of current interest. For that, there is no better source than material available online, either at news sites, research sites or in some cases, books from past centuries that are now in the public domain online. I’ll use these sources constantly. Please be aware that these are the core readings of the
class. Just because they are online and free doesn’t mean they are any less important than a textbook you pay $200 for. (Don’t get me started on how much I despise over-priced textbooks.)

Throughout the semester I will email you handouts and other materials you need to read, including links to these online sources.

We will make very heavy use of email to the class list with attachments or links to online reading. One virtue of the class is that we can alter the reading to reflect current events, such as elections or other events relevant to the kinds of data we are analyzing. This means the “reading list” is not fixed until the class happens, but there will be enough to keep you busy.

**Prerequisites:** You need some knowledge of how to do basic computing tasks, such as creating folders (directories) and files. Basic use of a text editor, such as Notepad on Windows or TextEdit on a Mac, is also assumed. Help is available at campus computing labs and from short courses offered by DoIT. I strongly encourage you to take some of those courses. They may be the key to future employment as well as to easy success in this class. And they are (mostly) free.

We do NOT assume you know either R or any statistics. The class will provide all needed instruction in those topics.

**Discussion Sections.** Discussion sections are absolutely essential to this class. They will be taught as labs in which you learn and apply your R skills. Attendance is expected, and it is unlikely you will be able to do the weekly exercises without the material covered in section.