

**University of Louisville**  
**School of Urban and Public Affairs**  
**PADM 601/PLAN 602**  
**Statistics for Public Affairs**  
**Tuesday and Thursday 4 pm to 5:15 pm, USI 200**

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Office Hours: Tuesday and Thursday 3:00 pm to 4:00 pm  
Wednesday appointments only

I want you to make extensive use of both the weekly review/exercise session as well as my office hours, especially if you have problems understanding the course material and/or working on the assignments. I do not think that e-mail is the right medium to discuss difficult statistical problems. For brief statistical or non-statistical questions, however, e-mail may be used.

***Course Prerequisites:***

Basic understanding of math (high school and/or introductory college mathematics).

***Course Description:***

This course is required for graduate students pursuing a Master's degree in Public Administration or Urban Planning. It provides the student with an introduction to statistical methods commonly used by social scientists when analyzing quantitative data. The course covers descriptive statistics, probability distributions, inferential statistics, random sampling, regression analysis and aspects of spatial statistics, and familiarizes the student with statistical software programs, such as Microsoft Excel.

***Learning Objective:***

- To help future public managers, urban planners and policy analysts to become critical users of quantitative information and to think comprehensively about problem solving.
- To introduce students to the elementary concepts used in the field of statistics, so that they can effectively collect and analyze empirical data.
- To increase the student's ability of interpreting and evaluating research findings.
- To sensitize the student to the spatial aspects of statistical analysis.
- To train students how to use statistical software tools to edit, manipulate and analyze data sets.
- To expose students to the wealth of empirical data available on the internet.
- To encourage students to understand the importance, as well as the restrictions, of empirical data analysis.
- To prepare students for more advanced statistics courses.

***Textbook:***

Lind, Marchal, Wathen and Waite (2006). *Basic Statistics for Business and Economics*. Fifth Edition. McGraw-Hill. ISBN 0070951640

This is a good, but also pretty basic statistics textbook, which I mainly chose because of the examples and exercises relevant to the field of public administration. I will complement the textbook with some additional material and/or articles, especially when it comes to random sampling and spatial statistics, both topics not covered in the textbook.

Homework Manager: This software product needs to be purchased under <https://ebooks.primisonline.com/cgi/showebook.cgi?partnerID=HWM&isbn=0390640905&bookType=unselected&eTool=yes>

A calculator is required in addition to the textbook.

***Teaching Style, Attendance and Learning Requirements:***

The meetings will be a mix of lecture at the board, hands-on exercise and work in the computer lab. I will loosely follow the outline of the textbook, but at times I will go beyond its content. While I do not require excuses for missed classes, I strongly recommend that you come to class regularly, and if you cannot attend, that you get the notes from a class mate. I am convinced that the nature of the presented material makes attendance self-enforcing. I will not accept under any circumstance the excuse that you have missed a certain class.

Learning statistics will be hard work for many students. Furthermore, most of the learning will happen outside of the classroom. Therefore, it is imperative that you keep up with both the reading and the assignments. You will be only able to master the material if you get a lot of practice. This is the reason why I will give you homework assignments and case studies. Do not wait until the last day to work on the assignments. Chances are that the product will not be as good as it could be.

I do encourage group work. It will be easier to understand the material if people talk about it with others. It is an established fact that both stronger and weaker students equally benefit from group work. In a group nobody will get so easily stuck on a problem, or go down the wrong path in solving it. It also makes learning more fun.

An average student should in general expect to spend at least twice the classroom time outside of the classroom (more is better). That would be about five hours a week additionally to the class meetings.

Warning: Statistics is not conducive to binge-working – you will get lost!

I am aware that everybody's time budget is limited, but at the same time, one makes choices concerning the use of one's time (including paid work). The amount of time spent on studying and group work will likely be reflected in the final grade, and as such, provide future employers with a sense of how important the class was to the student.

### ***Grading:***

The final grade consists of the following:

1. Homework manager (HM) assignments (20 points)
2. Mini case studies (20 points)
3. Midterm (25 points) and final exam (25 points)
4. Critical statistics paper review presentation (5 points)
5. Leverage (10 points)

The best of the above three grades will be counted twice, so that the total number of possible points will equal 100. In addition, students have the opportunity to write a critical review of an empirical research article for extra credit of 4 points.

I am convinced that every student who spends the necessary time for studying and does all the assigned work with care will be able to earn at least a grade of B, especially because I have a relaxed grade scale. But at the same token, I will not curve the exams:

A+: 100; A: 95 – 99; A-: 90 – 94;  
B+: 85 – 89; B: 80 – 84; B-: 75 – 79;  
C+: 70 – 74; C: 65 – 69, C-: 60 – 64,  
D: 50 – 59; F < 50.

As you can see that the grading scheme is somewhat relaxed. However, you will receive an A+ only for perfect work, which will be almost impossible. While I want everyone to succeed, I will not hesitate to give you a grade less than a B- if you deserve it (including an F).

I do not believe in curving and will enforce absolute standards. This means, that the whole class could get grades in the A range, on the other hand I do not hesitate to let the class as a whole fail. Do not rely on the assumption that your poor work may not stand out because of the shortcomings of other students.

### ***Homework Manager:***

HM is a software product which will help you to get a deeper understanding of statistics and will provide you with plenty opportunity to practice what you have learnt in class. The due date for the material covered is noted in the syllabus. No late assignments will be accepted. 20 points are a quarter of the class requirement. Accordingly, take the HM assignments seriously.

### ***Mini Case Studies:***

The purpose of the mini case studies is to apply statistical methods to real-world data sets. The first mini case study focuses on census population data and covers descriptive statistics. The second mini case study uses data from FARS (Fatality Analysis Reporting System) and applies inferential statistics. The final mini case study will be on regression analysis and takes labor income data. The due date will be at the beginning of the class. Papers handed in at the end of the class are considered late. If you hand in the paper late by less than a week, I will deduct one point, if it is late by more than one week, I will deduct two points. No papers are accepted if it is late by more than two weeks.

### ***Exams:***

Both the midterm and final exams are in-class exams. The midterm is scheduled so that you receive the grade before deadline to drop the class. The final, which will be comprehensive, will be given during the class meeting in the last week of the semester.

All exams are required to be taken at the scheduled time, unless you have a by the Dean's office officially approved excuse. If you miss the midterm, the final will be just counted twice, if you miss the final exam you will be administered a make-up exam (which will be different to the original one).

### ***Critical Statistics Paper Review:***

I want you to find an academic paper in the field you are interested in which uses statistical methods. During the presentation I want you to summarize the paper, its finding, especially with a focus on the statistical results, and also discuss its shortcoming. The presentation should not take any longer than 5 minutes (which will be an art to say everything you need to say in the given time frame).

### ***Leverage:***

These are up to 10 points, which brings the total to 105 points. Most students can expect to get 5 points, as long they always participate and make a generally good impression on me. Outstanding students who are between grades or students, where I have the feeling that they are better as their written work suggests, may get more than 5 points. Students who do not make such a good impression on me by not coming prepared to class or even skip classes regularly and students where I have the feeling that their written work is better than they seem to me, I may give fewer than 5 points.

In any case, this leverage is outside of any discussion and cannot be challenged from your side. On the other hand, I have a somewhat relaxed grading scheme.

### ***Academic Integrity:***

It is expected that a student in the Graduate School will refrain from plagiarism and cheating. Plagiarism and cheating are serious breaches of academic conduct and may result in permanent dismissal. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. Any proven plagiarism will result in failure of the course and will be reported to the committee on student discipline for further action, including notice in the permanent record, dismissal or expulsion.

This is the only warning! For more information, please consult the student's handbook.

### ***Disability Statement:***

All students with a disability who require special accommodations to participate in and complete this course must contact the Disability Resource Center (852-6938) for verification of eligibility and for determination of specific accommodation.

## Detailed Course Schedule

<u>Date</u>	<u>Topic</u>	<u>Textbook and other readings</u>	<u>Assignments</u>
8/20	Introduction to Statistics	Chapter 1	
8/22	Frequency distribution and measures of central tendency	Chapter 2 and 3	
8/28	Measures of dispersion	Chapter 4	
8/30	<i>Lab 1: Introduction to Excel</i>		
9/4	Spatial statistics	<b>Different textbook</b>	HM 1 (1 – 4) assignment due
9/6	<i>Lab 2: Descriptive statistics</i>		
9/11	Introduction to Probability	Chapter 5 Levitt: Drinking Drivers	
9/13	Normal probability distribution	Chapter 6	Mini case study 1 due
9/18	Binomial and other probability distribution	Chapter 7	
9/20	Review session		HM 2 (5 – 7) assignment due
9/25	<b>Midterm exam (Chapters 1 through 7)</b>		

9/27	Sampling methods	Chapter 8 Levitt: Seatbelt paper	
10/2	Introduction to inference and population proportions	Chapter 9	
10/4	<b><i>Lab 3: Correcting for sample selection bias</i></b>		
10/9	<b>No class – Mid-term break</b>		
10/11	Hypothesis testing	Chapter 10	
10/16	Testing differences between two groups	Chapter 11	
10/18	<b><i>Lab 4: Inferential statistics</i></b>		HM 3 (8 – 11) assignment due
10/23	ANOVA	Chapter 12	
10/25	Causality and correlation in empirical research	Chapter 13 Freakonomics chapter	
10/30	Introduction to regression analysis		
11/1	<b><i>Lab 5: Regression analysis</i></b>		Mini case study 2 due
11/6	Assumption of regression analysis		

11/8	<b>No class – I am out of town</b>		
11/13	Multiple regression analysis	Chapter 14	
11/15	<b><i>Lab 6: Multiple regression analysis</i></b>		
11/20	Advanced topics in regression analysis		HM 4 (12 – 14) assignment due
11/22	<b>No class – Thanksgiving</b>		
11/27	Review session		Mini case study 3 due
11/29	<b>Final exam (Chapters 8 – 14)</b>		
12/4	Reading day		
12/6	No class – exam week		
12/11	Presentations		

**I reserve the right to change the syllabus when necessary.**

