Statistics for IT Managers (95-796 Z1)
Fall 2021

Course Instructor / Facilitator: Ben Zamzow, Ph.D. (bzamzow@andrew.cmu.edu)
Office Hours: Virtual (email/Canvas); Sunday evenings time TBD.
General Course Website: Canvas (http://www.cmu.edu/canvas/)

Description:

This introductory course in data analysis and statistical inference requires no background in statistics. Its objective is to provide individuals who aspire to enter IT management positions with the basic statistical tools for analyzing and interpreting data. This course also provides you with statistical background for subsequent courses in analytical track.

The course is divided into three distinct modules: descriptive statistics, statistical inference, and regression analysis. The emphasis of the classes on descriptive statistics is the calculation and interpretation of summary statistical measures for describing raw data. The sessions on statistical inference are designed to provide you with the background for executing and interpreting hypothesis tests and confidence intervals. The final component of the course focuses on regression analysis, a widely used statistical tool. Throughout the course you will regularly analyze data relevant to IT management using the statistical software package Minitab.

Course Objectives:
- Apply techniques for analyzing and interpreting data to real-world datasets relevant to IT management.
- Perform and interpret elementary statistical inferences (such as confidence intervals and hypothesis tests) both "by hand", and using the statistical software package Minitab.
- Develop confidence in the communication of statistical results.

Lectures:
For this course, we will use a set of lectures delivered by Ben Zamzow, Ph.D. for the course offered at the Carnegie Mellon Pittsburgh campus. These lectures are all available here: http://heinz-video1.andrew.cmu.edu/Mediasite/Catalog/catalogs/95-796b5-statistics-for-it-managers-copyright-2018-carnegie-mellon-university

We will progress through the course at the rate of about 2 videos per week, with the exception of Week 2 as a result of our observation of Labor Day on September 5.

Synchronous Content:

I will be available for synchronous office hours and may decide to hold a live recitation session. These will be strictly optional but given that I intend them to be beneficial I will

choose these times carefully. I am tentatively considering to host these on Sunday evenings. More details will follow once I determine what platform is going to be best.

Textbook:
Statistics for Business and Economics, 11th, 12th, or 13th edition (McClave, Benson, and Sincich). Reference sections for each lecture are listed in the schedule below.

Software:
Minitab version 17 available at:
http://www.cmu.edu/computing/software/all/minitab/download.html

Grades:
Grades will be based on three components: mini-projects, homework, and a final exam. Mini-projects and homework will be due on Sundays by 11:59 PM (Eastern Time) on the date listed in the schedule below, though you are free to submit the assignments earlier. Because we acknowledge that exceptional circumstances may arise, each student will be permitted one late homework assignment, which may be submitted without penalty up to 48 hours late. All work should be submitted through Canvas. You'll be able to click on a link heading for each assignment which will allow you to attach your submission as a PDF or DOC file.

Deliverables:
Two mini-projects (30% total; 15% each)
The two mini-projects will involve the analysis of real data, and are meant to give you more practice with communicating statistical results. These assignments will be completed in 2-3 person self-selected groups or individually. You may use Canvas to find teammates. All members of a group will receive the same score on the assignment.

Three homework assignments (30% of total; 10% each)
The homework assignments are slightly smaller in scale compared to the two mini projects. These are to be completed individually. You are welcome to discuss course content with your classmates, but these assignments are not group assignments. Your assignment must be the product of your own work, written with your own language and phrasing.

Final Exam (40% total)
The final exam will be a comprehensive assessment. Practice questions will be posted in advance to give you a sense of the sort of questions you'll have on the exam. Discussion and collaboration on the final exam are prohibited.

Re-grades:
Any requests for a re-grade must be submitted in writing to the course instructor. You must include a clear written explanation of why the re-grade is necessary, and submit it with the graded assignment. In general, we will only raise scores in cases where we have made an error in grading. Scores (following re-grades) may increase or decrease.

Questions on course content:

Please use Canvas to ask questions about course content and homework. When asking questions / discussing concepts, please try to include references to lecture numbers – this will make it easier for us to quickly provide help!

Academic Honesty:
Students are expected to respect the integrity of their work as well as that of their classmates. Any evidence of cheating or plagiarism will be referred to the department head or Dean of Student Affairs for further action. Please refer to the University Policy for further detail: (http://www.cmu.edu/policies/documents/Cheating.html).

Schedule
A copy of the schedule is also available through Canvas.

Week	Lecture Number and Topic	Textbook Sections		Watch Date	Assignment Due Date
		11th Edition	12th Edition		
	MODULE I: Descriptive Statistics and Probability				
1	1: Descriptive Statistics	1.1 - 1.3, 1.5, 1.6, 2.2, 2.4 - 2.6, 2.8	1.1 - 1.3, 1.5, 1.6, 2.2 - 2.5, 2.7	08/30	
	2: Probability	3.1 - 3.6, 3.8 4.1 - 4.3	3.1 – 3.7 4.1 – 4.3	9/1	
2	3: Random Variables	4.5, 4.6, 4.9	4.5, 4.6, 4.8	9/6	Mini-Project 1 due on 09/12
3	4: Normal distributions and sampling	4.6, 4.10, 4.11	4.6, 5.1, 5.2, 5.3	9/13	
	MODULE II: Hypothesis testing and Inference				
	5: Confidence Intervals	5.2 - 5.5	6.2 – 6.5	09/15	HW 1 due on 09/19
4	6: Hypothesis testing part I	6.1 - 6.3, 6.5	7.1, 7.2, 7.4, 7.6	09/20	
	7: Hypothesis testing part II	6.1, 6.4	7.1, 7.5	09/22	HW 2 due on 9/26
5	8: Comparing two populations part I	7.2, 7.4	8.2 – 8.4	09/27	
	9: Comparing two populations part II	7.3	8.3	09/29	HW 3 due on 10/3
	MODULE III: Regression				
6	10: Simple Regression part I	10.1 - 10.4	11.1 – 11.4	10/4	
	11: Simple Regression part II	10.5, 10.6	11.5 – 11.6	10/6	Mini-Project 2 due on 10/10

7	12: Multiple Regression part I	11.1 - 11.3	12.1 – 12.3	10/11	
	13: Multiple Regression part II	11.4 - 11.7	12.4 – 12.7	10/13	
8	FINAL EXAM (Take home)				Exam availability: Oct 15 – Oct 17th