

# 15.068 Statistical Consulting

## Spring 2019

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### Course Objectives:

- To increase familiarity with ideas and methods that are essential to the serious statistical consultant, especially those related to sampling, regression, bootstrapping, and hypothesis testing
- To increase the ability to reach fair and insightful judgments about statistical analyses performed by others
- To enhance skill in performing real-life data analyses of high caliber and reliability
- To get better able to present one's own data analyses *convincingly* to others who are intelligent but not necessarily comfortable with Mathematics

### Main "Deliverables" of Course:

- Two Project Presentations in Class by Groups of Size Four
- Some Short Written Data Analyses Performed Individually
- Six Brief "Problem Sets" about new topics in Statistics
- A few critiques of statistical studies distributed to the class
- One quiz in November on applied statistical methods

### Textbook:

*Applied Statistics: Models and Intuition* by Barnett. Because the Professor has no desire to benefit financially from sales to his students, he will donate all his royalties to a MIT-Sloan Scholarship Fund.

**Office Hours:** There are no required recitations, but there will be a few voluntary recitations at times to be announced. The T.A.'s will offer one-on-one office hours under a schedule that will be posted next week. Moreover, there will be 24/7 electronic office hours, in which the Professor will zestfully participate.

15.068 Fall 2019  
Statistical Consulting  
Tentative Flight Schedule

*(This is a general description of what will be covered. However, the course will be revised a bit in January, to include more exercises in actual statistical consulting.)*

NOTE: Schedules are based on expected flying times. Safety is our primary consideration. Because weather and other factors might affect operating conditions, arrivals and departures cannot be guaranteed.

--Emergency Card, Trans World Airlines (RIP)

<u>Lecture</u>	<u>Topic</u>	<u>Deliverable</u>
1	Intro/Some Statistical Horrors	
2	A Darker Side of Regression	
3	Auto Insurance/Behavioral Accounting	<i>Critique</i>
4	Testing Statistical Theories	
5	More Testing Theories	<i>First Problem Set Due</i>
6	Still More Testing Theories	
7	Some Central Statistical Concepts	<i>Second Problem Set Due</i>
8	Further Concepts	
9	Are Markets Efficient?	<i>First Team Project</i>
10	Statistical Sampling	<i>Third Problem Set Due<sup>a</sup></i>
11	More Statistical Sampling	

SIP WEEK AND SPRING VACATION

12	A Courtroom Drama	
13	End of Sampling	
14	Logistic Regression	<i>Fourth Problem Set Due</i>
15	Coffee and Cancer of the Pancreas	<i>Brief Critique</i>
16	Bootstrapping	
17	More Bootstrapping	<i>Fifth Problem Set Due</i>
18	Quiz	<i>Insight</i>
19	Rural Roads	<i>Brief Writeup</i>
20	Simulation	
21	Did the Hospital Overcharge?	<i>Second Team Project</i>
22	Statistical Indicators	
23	A Case of Depression	<i>Sixth Problem Set Due</i>
24	The Students Speak	

<sup>a</sup> Will be brief, given midterms, end-of-H1

Every evening after we have class, the Professor will send an e-mail to the class discussing what was accomplished (or not accomplished) that day, and also what will be covered in the next lecture. The critiques, problem sets, and analyses submitted count 30% of the grade, the quiz 35%, the projects 20%, and class participation 15%. Welcome aboard.

