LECTURE OUTLINE
Statistics and the Scientific Method

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Math 10

March 2005

Statistics: Learning from your data

1. **Descriptive Statistics:** Communicating and viewing your data.

2. **Inferential Statistics:** Drawing conclusions from your data.

   (a) **Frequentists View:** Attempt to isolate your data analysis from the rest of the scientific process in order to minimize subjectivity.

   (b) **Bayesian View:** Incorporates as much evidence and information as is reasonable into your data analysis.

A *Scientific Method*

1. Articulate a question.

2. Assemble and evaluate relevant information.

3. Design an investigation or experiment.

4. Carry out the investigation or experiment.

5. Draw (tentative) conclusions.

6. Repeat 1-5 till you "run out of steam" or your conclusions cease to be tentative.

7. Communicate you findings.

The Data

A **sample** is a collection of observations

A **population** is the collection of potential observations of which the sample is a part.

Statistical inference extrapolates from a sample to the population being sampled.

A **prediction** is an inference about the next sample observation or set of sample observations.