First Day
- Data Sheet – fill out and bring to lab tomorrow
- Syllabus – go over

The Big Picture
- What is statistics all about?

The Big Picture
- Statistics is about variability!
  - Recognizing variability.
  - Quantifying variability.
  - Explaining variability.
Statistical Thinking

- An appreciation of uncertainty and variability and their impact on decision making.
- Using the scientific method when approaching issues and problems.

Statistical Thinking

- Starts with a question –
  Did cars and trucks made in 2004 meet the Corporate Average Fuel Economy (CAFE) standard?

Statistical Thinking

- What data would help us answer this question?

Parameter – numerical summary of the entire population. Example: population mean fuel economy (MPG).

Sample – a few items from the population. Example: 36 vehicles.

Statistic – numerical summary of the sample. Example: sample mean fuel economy (MPG).

Sampling

- Random selection from the population of interest.
- The lab tomorrow will look at what happens with “purposeful” sampling and random sampling.

A Word of Caution

- Statistical methods are very good at quantifying uncertainty introduced by random sampling.
- Statistics doesn’t help much if the population changes with time.
Political Opinion Poll

- 1000 randomly selected likely voters are asked – “If the election were held today, for whom would you vote for President?”

Political Opinion Poll

- The sample proportion indicating they would vote for McCain or Obama is a pretty good indication (within 3 percentage points) of the true proportion of the population of likely voters.

Political Opinion Poll

- Does that mean a poll taken today will predict the outcome in November?