Statistical Deception

- Lying with statistics
- Putting a "positive spin" on the facts

Statistical deception is not necessarily a bad thing, but you need to be aware of it rather than just accepting statistics at face value.

Many problems with statistics involve problems with gathering the data:

1. **Non-representative samples**
   - too small
   - too large
   - not randomly chosen
     - convenience sample
     - purposely chosen wrong

2. **Generalizing to the wrong population**
   - sample is drawn from a different population than the results imply

3. **Comparing apples and oranges**
   - groups being compares were different to begin with
   - difference is due to something other than the results imply

4. Survey bias
   - leading questions
   - **"Good boy" effect**
     - People will give the answer they think you want to hear.
   - **"NOYB" effect**
     - The more personal a question is (the more it is "none of your business"), the more likely people are to lie.

5. **Placebo effect**
   - In medicine a placebo is a fake treatment actually helps because people **<u>think</u>** it will work.
   - Doesn't have to deal with medicine.
   - In general, when people think they are being watched or treated, they often act differently than they would otherwise.

Other issues can come up in interpreting and publicizing statistical results:

6. Changing the subject
   - a.k.a. "Moving the bullseye to fit the arrows"
   - saying a result means something different than it really does
   - putting a "good spin" on the data
   - finding one small thing about the results that supports what you want to find

7. Reporting information from biased sources that have a vested interest.
   - Always ask "Who says so"?
   - Try to get information from neutral parties who don't have a stake in the outcome.

8. Misuse of the word "significant"
   - implying significant means big, important, or dramatic
   - REMEMBER: it just means "unlikely to have happened by chance

9. Discounting significance because something is "just statistics"