

Designing Hypothesis Tests

Stat 145

Inquiring Minds Want to Know

For each of the scenarios below.

1. Design a study to investigate the question. What will your data be like? (What variables? Are they categorical or quantitative? Is there an explanatory variable? a response variable?)
2. Determine the parameter(s) of interest.
3. State the null and alternative hypotheses about the parameter.
4. What sort of plot would you make to investigate your data? What R command would make that plot?

Note: For some of these there may be more than one appropriate study design, but you should not choose a poor design when a better design is available.

Divorce Opinions by Sex

Question: Do men and women have different views on divorce? Specifically, do they differ in their view on whether divorce is “morally acceptable”?

Finger Tapping and Caffeine

Question: If you drink caffeine, will you be able to tap your finger faster 2 hours later?

Fair Coin?

Question: Does flipping a coin really have a 50-50 chance of coming up heads?

Arsenic in Chicken

Arsenic-based chicken feed is used in the US (but banned in Europe). A super market chain wants to ensure that the chicken it sells has no more than 80 ppb (parts per billion) of arsenic (on average). How do they test the chicken that comes from one of their suppliers to decide if they should continue doing business with them?

Dogs and Owners

Question: Do dogs resemble their owners?

Smiles and Leniency

Question: Will college disciplinary panels be more lenient if you smile in the photo that is attached to your case paperwork?