Week 1 lecture notes - PSYC 5316

August 28, 2017

Course outline

1. Review of classical statistical methods (5 weeks)

   - Basic probability
   - distributions used for applied work
   - sampling distributions and confidence intervals
   - hypothesis testing
   - common hypothesis tests (including t-test, anova, chi-square, etc.)

2. Robust methods (3 weeks)

   - bootstrapping
   - robust measures of location (including trimmed means, Winsorized means, M-estimators, etc.)
   - inferences based on robust measures

3. Bayesian methods (5 weeks)

   - Bayes' Theorem, priors, likelihoods, and posteriors
   - estimating proportions and rates
     - exact methods via conjugate priors
     - approximate methods, using Markov chain Monte Carlo (MCMC)
   - fitting models with JAGS and R
   - Bayesian hypothesis testing

Basic definitions

probability function

expected value and variance

conditional probability and independence

Distributions

Binomial

Normal