Stat 145, Wed 24-Feb-2021 -- Wed 24-Feb-2021
Biostatistics
Spring 2021

Wednesday, February 24th 2021

Wk 4, We
Topic:: Sampling distributions 2
Read:: Lock5 3.1

A sampling distribution is specific to
 - the population from which samples are being taken
    access to full population is a must for simulating it
    is the population/variable quantitative?
 - the size of random samples taken
 - whether what the distribution has been affected by draws already made
    sampling with vs. without replacement

    examples:
      1. sampling from MLB 2018 "runs scored" population (quantitative var)
          mySample = sample(mlb18, size=10)   without replacement   (Statkey does
          mySample = sample(mlb18, size=10, replace=TRUE)   w/out repl.)

      2. rolling a die to view its number (quantitative var)

      3. rolling a die to see if you get a 6 (binary categorical var) p = proportion of
                                                                              orange in pop.

      4. flipping a coin, to see what face comes up $\hat{p}$ = proportion of
                                                                              orange in sample
      5. drawing candies from Reese's pieces to view their color
          app (http://www.rossmanchance.com/applets/OneProp/OneProp.htm?candy=1)

      6. drawing 5 bottle caps from a bag w/ replacement, proportion of greens
            have done this with intro stats classes in the past
            bags contain 10 bottle caps, 7 green and 3 blue

 - the statistic being computed from those samples
    is the population/variable quantitative?   MLB (quant.) data
    is the population/variable categorical? μ = population mean

                                                          $\bar{x}$ = sample mean

 - Use StatKey to carry out sampling distributions, noting that
    For mean of quantitative var
       must be able to provide full population
       sampling is done without replacement
    For proportion (binary categorical var)
       must provide a proportion for population
       sampling is done with replacement

 - Observe: In both sample mean/sample proportions, sampling dist is bell-shaped
    perhaps less-so when sample size n is small
    increasingly as sample size n becomes large
   This foreshadows the CLT

Some focused videos
for sample proportions using StatKey:
 http://scofield.site/courses/s143/videos/samplingDistsProportionsFirstLook.mp4
for sample means using StatKey:
 http://scofield.site/courses/s143/videos/samplingDistMeansFirstLook.mp4