19.
p=.74
x=522
n=603
Do they have bragging rights? Is their average so much higher than the national average, that it must be due to something other than random chance?

$$SD(\hat{p}) = \sqrt{\frac{pq}{n}} = \sqrt{\frac{(.74)(.26)}{603}} = 0.018$$

What is the probability that the sample could be as high as 522/603 = .866 or 87%?

$$z = \frac{.866 - .74}{.018} = 7.0$$

This is about 7 standard deviations above what is expected.

Remember that anything past 2 standard deviations is considered an unusual observation. So yes, they do have rights to brag.

22. Seeds
Randomization: Even though the seeds were not chosen at random, we can assume that the 160 seeds will be a representative sample.

10%: 160(10)=1600 There are more than 1600 seeds in the population.

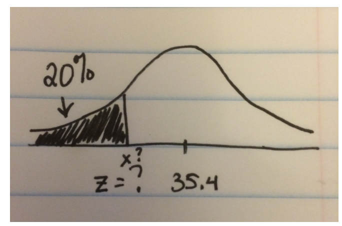
S/F: np = 160(.92)=147.2 and 160(.08)=12.8 both are greater than 10.
Therefore we can use the normal model to estimate the probability.
normalcdf(.95, 1e99, .92, .0215)=0.081

Quantitative Data
mean = μ
standard deviation: $SD(\bar{x}) = \frac{\sigma}{\sqrt{n}}$

Assumption/Conditions
1. Randomness
2. Independence
3. 10%
4. Large Enough Sample (n≥30)

#38. Rainfall
a) This is asking for probability so we use normalcdf(40, 1e99, 35.4, 4.2)=.137
b) Here we need to look at the bottom 20%.

$$z = \frac{x - \mu}{\sigma}$$



We can use the z-score formula or invnorm.
invnorm(.20, 35.4, 4.2)=31.9
(%, mean, sd)
c) Randomization: The 4 years are representative of all the years.
Independence: The rainfalls are independence of each other.
10% condition: 10(4)=40 there are more than 40 years of rainfall.
Large enough: This distribution is normal so any sample size would be large enough.

Now we are going to investigate for 4 years not just one.
Everything will mostly remain the same except the standard deviation.
Thus this distribution is normal with a SD(x)=4.2/2 =2.1 and a mean of 35.4.

d) Normalcdf(-1e99,30, 35.4, 2.1)=0.005

Homework:
New pages uploaded: #37, 39, 43, 48