4.3 Day 1 will be split into two days

4.3 Day 1a Inference for Sampling
       (and Sampling Variability)

      + Quiz +   time to work on Response Bias Project

4.3 Day 1b

*One Categorical Variable* **Applet** - see instructions on page 270. ?

Agenda

1. LCQ

2. Start Section 4.3....Day 1 (which will extend into tomorrow)
   therefore:
   today will be called Section 4.3 Day 1A
   tomorrow will be 4.3 Day 1B
   Your test will now be on Tuesday, not Monday

3. Time to plan your Response Bias Projects. Proposals
   due not later than Wednesday

Learning Target

Explain the concept of sampling variability when making an
inference about a population and how sample size affects
sampling variability.

Sampling

---

your sample proportion $\hat{p}$
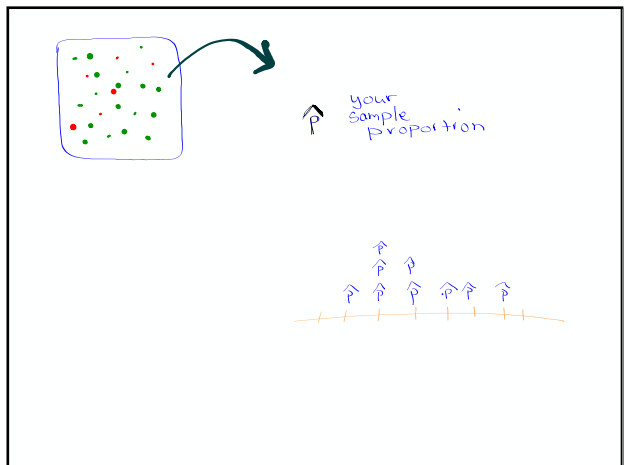
Inference for Sampling

When the members of a sample are
selected at random from a population,
we can use the sample results to make
inferences about the population.

Exploring Sampling Variability

• Experiment on Page 270

Record in your notes

You'll work on the LCQ
while individuals collect data.

Even when making an inference from a random sample, it would be surprising if the estimate from the sample was exactly equal to the truth about the population.

Inference for Sampling

Sampling variability refers to the fact that different random samples of the same size from the same population produce different estimates.

Sampling Variability and Sample Size

Larger random samples tend to produce estimates that are closer to the true population value than smaller random samples. In other words, estimates from larger samples are more precise.

Percent of red beads ($n = 20$)

Percent of red beads ($n = 100$)
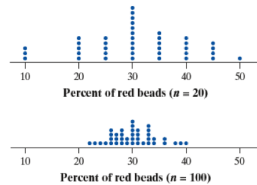
Inference for Sampling

Sampling Variability and Sample Size

Larger random samples tend to produce estimates that are closer to the true population value than smaller random samples. In other words, estimates from larger samples are more precise.

Inference for Sampling

How much do National Football League (NFL) players weigh, on average? In a random sample of 50 NFL players, the average weight is 244.4 pounds.
(a) Do you think that 244.4 pounds is the true average weight of all NFL players? Explain your answer.

How much do National Football League (NFL) players weigh, on average? In a random sample of 50 NFL players, the average weight is 244.4 pounds.
(a) Do you think that 244.4 pounds is the true average weight of all NFL players? Explain your answer.

(a) No. Different samples of size 50 would produce different average weights. So it would be surprising if this estimate is equal to the true average weight of all NFL players.

How much do National Football League (NFL) players weigh, on average?
In a random sample of 50 NFL players, the average weight is 244.4 pounds.
(a) Do you think that 244.4 pounds is the true average weight of all NFL players? Explain your answer.

(b) Which would be more likely to give an estimate close to the true average weight of all NFL players: a random sample of 50 players or a random sample of 100 players? Explain your answer.

How much do National Football League (NFL) players weigh, on average?
In a random sample of 50 NFL players, the average weight is 244.4 pounds.
(a) Do you think that 244.4 pounds is the true average weight of all NFL players? Explain your answer.

(b) Which would be more likely to give an estimate close to the true average weight of all NFL players: a random sample of 50 players or a random sample of 100 players? Explain your answer.

(b) A random sample of 100 players, because estimates tend to be closer to the truth when the sample size is larger.

Read about
Margin of Error
on bottom of page 271

Rest of class

Do some planning on your
Response Bias Project.

Read all of p. 272 (if not pp.269-272)

Do..... **4.3**......93, 95

and work on planning your

Response Bias Project