

Bey

Does Beyoncé Write Her Own Lyrics?

BEYONCÉ

CRAZY IN LOVE

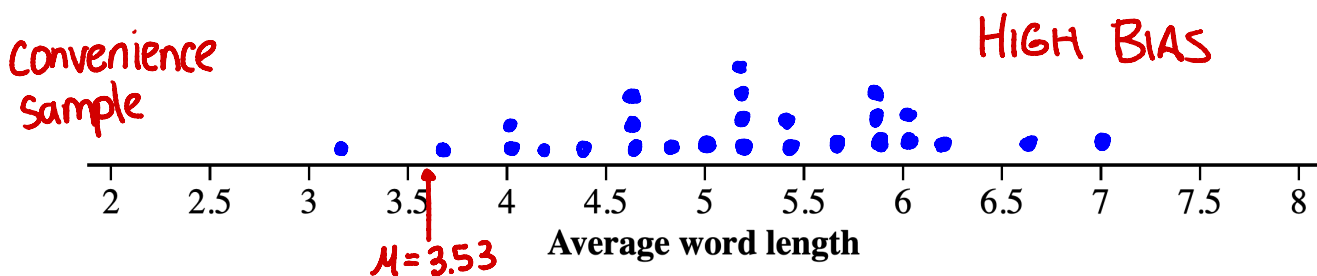
1. Quickly circle a random sample of 5 words. Write them below. How many letters in each word?

sample → ⁽⁶⁾hoping, ⁽³⁾row, ⁽⁵⁾crazy, ⁽⁴⁾baby, ⁽⁷⁾looking

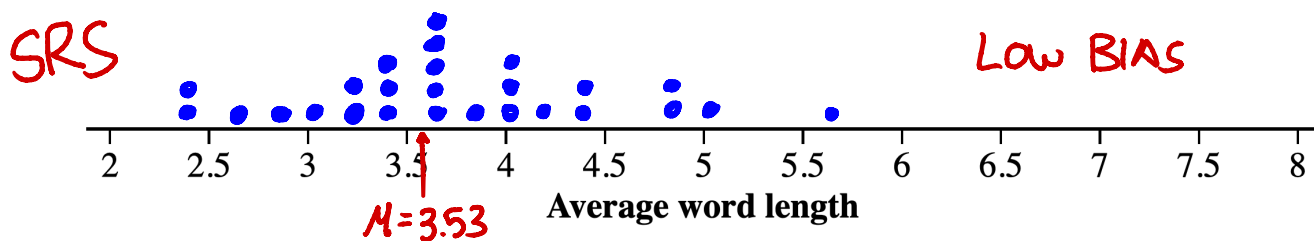
population → all words in Crazy in Love

2. What is the average word length of your sample? 5.0 ← \bar{x} (sample mean)

3. Put your average on the dotplot on the white board at the front of the room. Copy the class dotplot below.



4. Find a new sample of 5 words using a random number generator. Put your average on the dotplot on the white board at the front of the room. Copy the class dotplot below.



5. How is the dotplot from #4 different than the dotplot for #3? Which do you think is a better estimator of the true average word length?

The dotplot for #4 has a lower center. The random number generator is a better estimator.

6. What do you think the true average word length is for "Crazy in Love"? 3.5

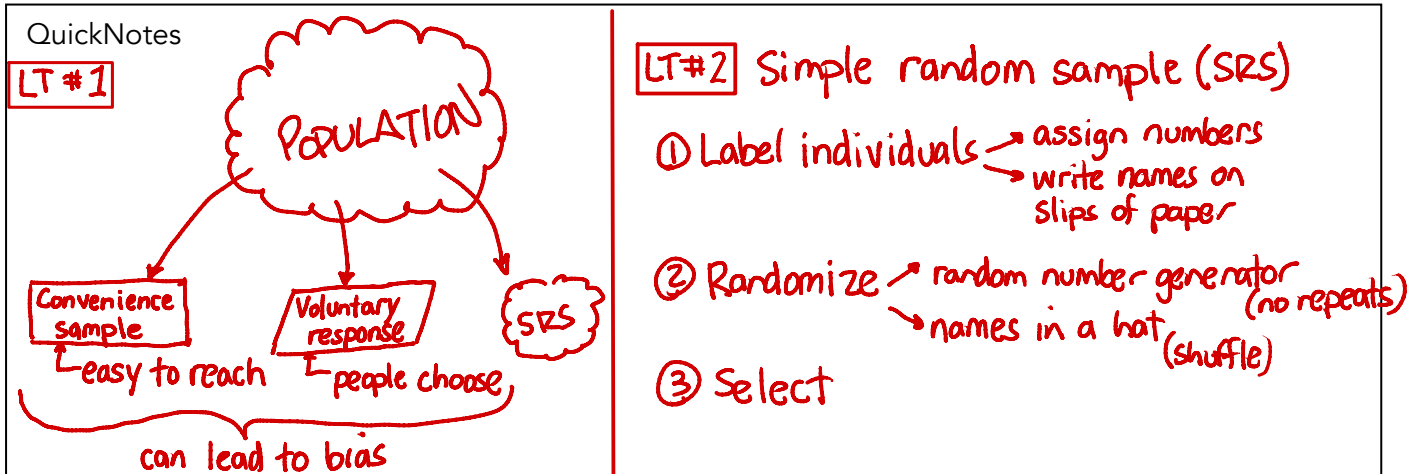
μ → true population mean $\mu = 3.53$

7. It is known that Beyoncé wrote the lyrics for all the Destiny's child songs. The average word length for these songs is 3.64 letters. Based on our work today, do we have convincing evidence that Beyoncé did not write the lyrics for "Crazy in Love"? Explain.

No we don't. The true average word length of Crazy in Love is 3.53 letters, which is very close to the average word length for Destiny's Child (3.64).

not statistically significant

Lesson 4.1 – Simple Random Sample



Check Your Understanding

1. A sign at a local business says, "Rate us 5-stars on Google and get a \$10 gift card!" The store manager uses the ratings to learn how people in the community feel about the business.

Name
a. What type of sample did the manager obtain? *Voluntary response sample*

Explain
b. Explain why this sampling method is biased.

Those people who volunteered to respond were likely motivated to give the business 5 stars so they could get a \$10 gift card.

Higher or Lower
c. The manager finds that 92% of customers rate the business with 5 stars. Is 92% likely to be greater than or less than the percent of all people in the community who truly believe the business deserves 5-stars?

92% is likely greater than the true percent for all people in the community who would give 5 stars. People that really like the business are more likely to respond.

2. To help reduce bias, the manager decides to survey the next 10 customers that make a purchase.

Name
a. What type of sample did the manager obtain? *Convenience sample*

Explain + Higher or Lower
b. Explain why this sampling method is biased.

These customers all made purchases and may not be representative of the whole population. Those customers who made purchases likely gave higher ratings than customers who didn't purchase would.

3. How could the manager avoid the bias described in Question 2?

Simple random sample (SRS)