

JellyBlubber Activity

Objective:

This activity introduces the Simple Random Sample (SRS) to students, and shows why this process helps produce an unbiased sample statistic. Relying on our perceptions can often be deceiving. In this exercise, students are asked to determine the average length of a jellyblubber (a recently discovered marine species) using a variety of techniques. The student will learn that intuition can be deceptive, and a Simple Random Sample (SRS) is the most accurate method of determining a population parameter.

Materials:

One “The JellyBlubber Colony” sheet, one dotplot sheet, and one ruler per student.

Instructions:

1. Pass out the worksheet upside down. Ask students to not look at the sheet until they are instructed.

Tell the students a story about the recently discovered colony of jellyblubbers, a new marine species, and that our task is to try to determine the **average length in centimeters** (measured horizontally) of jellyblubbers.

Allow the students to look at the Colony for **five seconds**. They will then estimate the average (mean) length of the jellyblubbers. The teacher (or students) plot(s) the guesses as a dotplot on the board or a poster. Discuss the distribution, and calculate the mean and range (or standard deviation, depending on the level of students).

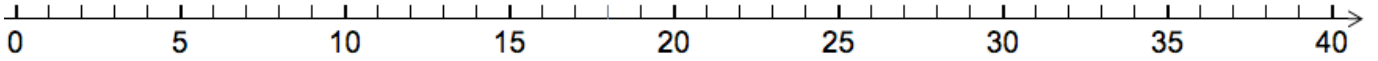
2. The students are now given one minute to choose a representative sample of 10 blubbers. Once they have made their choice, they measure the length of each blubber and calculate the **mean length in centimeters**. These values are plotted on a new dotplot, followed by a whole class discussion of the distribution.
3. Now the student takes a SRS of 10 blubbers, as follows. Each blubber is numbered from 1 to 100. They generate 10 random numbers from a random number table (using 01 through 00) or a calculator in the range 1 to 100. They calculate the mean length of those ten blubbers. These values are plotted on a new dotplot.

Discuss the difference in the three distributions – shape, center, spread, outliers.

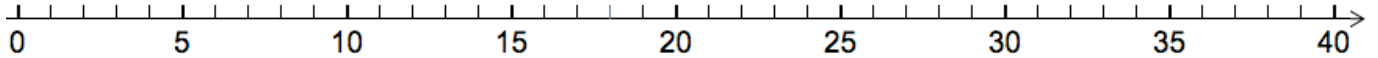
Which method should give the best estimate? (SRS) What makes a sampling method the best? (low bias, low variation) What about a “closing your eyes and pointing” sample? (it would be **biased** toward larger blubbers—you are more likely to point to a large one)

(The actual average length of a blubber is around 1.8 cm. There may be some variation in the size of blubbers due to variation in printing. If blubber #14 is 3.7 cm long, then the 1.8 cm mean should be accurate.)

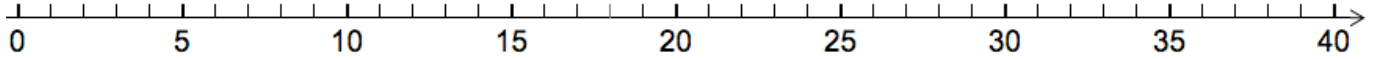
“Wild Guess” Distribution:



“Pick 10” Distribution:



SRS Distribution:



Final Question: A student decides to generate a random sample by closing her eyes and pointing at the sheet of blubbers randomly. She chooses the blubber to which her finger is closest. Comment on this method of generating a SRS.

The JellyBlubber Colony

