Random Sampling

Recently, the Oregon Department of Fish and Wildfish determined that sea lions are pushing Willamette River steelhead to the brink of extinction. There are simply more sea lions eating the fish than the number of fish that can get past them and reproduce. This has resulted in a painfully drastic decrease in fish. In order to get a better sense of the fish population, scientists have collected multiple data sets from different parts of the Willamette River. The below are their (hypothetical) findings.



Upstream

4

25

Ocean

7

10

50

1. Look at the fish population numbers above. What observations can you make about the fish?

2. Calculate the mean, median, mode, range of your data.

MEAN:\_\_\_\_\_\_\_\_\_\_\_

MEDIAN:\_\_\_\_\_\_\_\_\_

MODE:\_\_\_\_\_\_\_\_\_\_\_

RANGE:\_\_\_\_\_\_\_\_\_\_\_

3. Let’s say that a healthy population size has an average of 12 steelhead fish. Looking at your data, do your calculations suggest a healthy or unhealthy population size and why?

The scientists decided to collect more population samples and found the results below.



Upstream

4

25

6

Ocean

3

7

10

4

50

4. Using the new findings, calculate the new mean, median, mode, and range.

MEAN:\_\_\_\_\_\_\_\_\_\_\_

MEDIAN:\_\_\_\_\_\_\_\_\_

MODE:\_\_\_\_\_\_\_\_\_\_\_

RANGE:\_\_\_\_\_\_\_\_\_\_\_

5. What do you notice about the fish population now that you have more population samples? What has changed? What has stayed the same?

One last data collection was done. The final fish population counts are as below.



Upstream

0

4

25

1

6

Ocean

3

7

10

0

2

4

50

6. Using the new findings, calculate the new mean, median, mode, and range.

MEAN:\_\_\_\_\_\_\_\_\_\_\_

MEDIAN:\_\_\_\_\_\_\_\_\_

MODE:\_\_\_\_\_\_\_\_\_\_\_

RANGE:\_\_\_\_\_\_\_\_\_\_\_

7. Fill in the table below with your data.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Data Set** | **Mean** | **Median** | **Mode** | **Range** | **Healthy Population Size?** |
| **Collection 1** |  |  |  |  |  |
| **Collection 2** |  |  |  |  |  |
| **Collection 3** |  |  |  |  |  |

8. Look at your data, what do you notice? State 3 observations.

9. The scientists are looking at recommendations for how they should do their sampling for the next steelhead population test. What are your recommendations and why? Use your data to support your thoughts.