

Practice Assignment: Comparing Quantitative Distributions

- 1) Which type of plot is appropriate for displaying the distribution of a quantitative variable? Select all that apply.
 - a) Bar chart
 - b) Histogram
 - c) Dotplot
 - d) Segmented bar chart

Questions 2–4: Researchers studying the effects of climate change on different species in Antarctica collected various body measurements on a sample of 342 adult foraging Adélie, Chinstrap, and Gentoo penguins observed on islands in the Palmer Archipelago near Palmer Station.¹ This dataset was first explored in the preview assignment for In-Class Activity 3.D.

Use the dataset in the spreadsheet DCMP_STAT_3E_Penguins and the *Describing and Explore Quantitative Variables* tool at https://lumen-learning.shinyapps.io/eda_quantitative/ to answer the following questions.

- 2) Using the **Several Groups** tab, create two histograms for the distribution of flipper length in millimeters (mm) for each of the two penguin sexes. (Note that the sex measurement is missing for some of the penguins, denoted by “N/A.” These observations are excluded from the analysis.)

Part A: Describe the shape of each distribution of flipper length.

Part B: Which distribution of flipper length has a greater center?

Part C: Which sex has more spread in flipper length?

- 3) Create dotplots for the distribution of flipper length (mm) for each of the three penguin species.

Note: The sort feature in the Excel spreadsheet is helpful!

Part A: Describe the shape of each distribution of flipper length.

¹ Horst, A., Hill, A., & Gorman, K. (n.d.). *palmerpenguins*. Github.
<https://allisonhorst.github.io/palmerpenguins/>

Part B: Which species has the longest flipper length, on average?

Part C: Compare and contrast the variability in flipper length across the three species. Select the best description.

- a) Adelie has the greatest variability in flipper length, then Gentoo, then Chinstrap
 - b) Gentoo has the greatest variability in flipper length, then Adelie, then Chinstrap
 - c) Chinstrap has the greatest variability, then Gentoo, then Adelie
 - d) All three distributions have approximately the same variability.
- 4) Consider again the histograms created in Question 2. Provide an explanation in context for why the distributions of flipper length for males and females each show a bimodal distribution.