**Introduction**

For this activity, you will be working with NCAA Division I Lacrosse faceoff percentages. Comparing the league average to a specific team, you will see how they performed in comparison.

**Learning Goals**

By the end of this activity, you will gain an understanding of one sample proportion hypothesis testing.

**Data**

The data for the module is from the NCAA Division 1 Lacrosse 2022-2023 season and contains 72 rows and 22 columns. Each row represents a different Division I lacrosse team and with a multitude of variables pertaining to team performance throughout the season. For this activity, you will specifically be working with the total faceoffs and faceoff wins variables.

**Methods**

The only needed material is your preferred method for calculating p-values using the Z statistic.

**Exercises**

For all 72 teams at the Division I level in the 2022-20223 lacrosse season, the true population proportion for faceoffs won is 0.501.

1. As a team, Duke won 330 out of 548 total faceoffs. State the null and alternative hypotheses to determine Duke has a different faceoff percentage than the division.

Ho: p = 0.501 (The proportion of faceoffs won is equal to 0.501)

Ha: p ≠ 0.501 (The proportion of faceoffs won is **not** equal to 0.501)

1. What is the sample size and sample proportion?

Sample size: n = 548

Sample proportion: = 0.602

1. Assuming the null hypothesis is true, does the sample pass the success-failure condition?

= 548(.501) = 274.548 > 10

n(1-) = 548(1-.501) = 273.452 > 10

1. Calculate the test statistic for the sample.

Z = = 4.7287

1. Does this sample proportion provide evidence that Duke has a different faceoff percentage than what is normal for all of Division 1 Lacrosse teams in the 2022-2023 season using a significance level ⍺ = .05? Provide all necessary details and a conclusion in context.

We estimate the proportion of Duke lacrosse faceoff wins in the 2022-2023 season to be 0.602. Therefore, there is strong evidence that their proportion of faceoff wins is different than 0.501 (Z = 4.73, p-value ≈ 0.000).