In volleyball, timeouts are often called by teams when they are losing a set. By analyzing NCAA Division 3 Liberty League Conference Volleyball Data from the 2013-2022 seasons, we can examine the impact of calling a timeout on scoring a point or ultimately winning a set.

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What would an appropriate research question be, based on the previous information?

Suppose you are interested in finding out the probability of winning a set if your team was losing before the final timeout of the set.

* In words identify the observations.
* Identify the variable of interest.
* If it is categorical, identify the levels, if it is numerical, identify the units.

Identify a population from which this sample is representative.

Suppose that you are looking at the percentage of times a team wins a set after calling a timeout. Would this quantity be a statistic or parameter? Explain.

Based on this statistic, what is a possible parameter that we can infer?

Now, assume that it is reported that in 214 sets out of 2718 total sets, the losing team won the set after the last timeout was called. Given this data, what is our estimate of the losing team winning a set after the last timeout is called?

If we were to take another sample of matches (e.g., look at a different conference), would we necessarily get the same estimate?

Construct a 95% confidence interval for the proportion of losing teams winning a set after the final timeout.

Provide an interpretation for the resulting interval.

Why would a team call a timeout if the chances of the losing team winning the game after the last timeout are so low?

When looking at only the first timeout of the set, we see that the losing team before the timeout has a significantly higher chance of winning the game than they would have after the last timeout (about an 18% +/- 0.956% chance of winning the game). Why do you think that calling a timeout earlier in a game increases the chances of winning?