

Hypothesis Testing (1):

1. **Strong Hypothesis** : There is a significant difference in the number of goals scored when the team plays at home versus away

data: home_goals and away_goals

$z = 3.3464$, $p\text{-value} = 0.0008187$

Alternative Hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

0.1330136 0.5090917

sample estimates:

mean of x mean of y

1.800000 1.478947

The P value is 0.0008187

2. **Close Call Hypothesis:** Could not find close hypothesis for the given dataset. You can try it on your own once.

3. **Failed Hypothesis:** There is significant difference between fouls committed in home

games vs away games

Two-sample z-Test

data: *home_fouls* and *away_fouls*

$z = 0.18179$, $p\text{-value} = 0.8557$

alternative hypothesis: true difference in
means is not equal to 0

95 percent confidence interval:

-0.07722061 0.09301009

sample estimates:

mean of x mean of y

0.3763158 0.3684211

p value here is 0.8557

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Hypothesis Testing Description (2):

Strong Hypothesis: There is a significant difference in the number of goals scored when the team plays at home versus away

Home Turf Advantage? You Won't Believe How Much More Goals Are Scored!

- The home team is better when they play with their home crowd as noted by the p-value of 0.0008187

Failed Hypothesis: There is significant difference between fouls committed in home games vs away games

"Fouls at Home or Away? The Results Will Surprise You!"

- There is not a significant difference between fouls committed between home games and away games as the p-value is 0.8557

Narrow Queries (3):

- We have taken *goals_scored* as a dimension to calculate the mean
- The mean of *goals_scored* is 1.639474 -> M0
- We have taken two more conditions (Condition 1: Team Name – Sheffield United and Condition 2 – Result is Lost)
 - o The mean of the *goals_scored* for the above two conditions is 0.5714286 -> M
 - o M is less than half M0: Condition (eq2) satisfied