Pre-analysis steps

Data was collected using a Google Form consisting of seven questions exploring opinions on the topic, "Is a hot dog a sandwich?" The responses were downloaded as a CSV file and subsequently cleaned to ensure uniformity and consistency across the dataset. This is particularly important for the "Yes/No" column, where some of the responses were not consistent, such as the use of lowercase or uppercase letters and irregular responses such as "Yess" or "N". The data was then explored by making plots to see the demographics of our participants and start investigating our research question.

Analysis methods

Our hypothesis is ½ of UVA full-time undergraduate students believe a hot dog is a sandwich. We will use a one-sample z-test for proportions to test our hypothesis. Our sample proportion will be found by dividing the number of students in our sample who believe a hot dog is a sandwich by the total number of students surveyed. Our population proportion will be assumed to be 0.5, as that's what the hypothesis proposes. We will then calculate a z-score value using the formula:

$$z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}$$

where:

- $\hat{p}$ = sample proportion

- p_0 = hypothesized population proportion (0.5)

- n = sample size

We can then use the z-score to calculate a p-value, and if the p-value is less than a significance level of 0.05 (given we are using a two tailed test), then we can reject the null hypothesis. Looking up values from a table, our decision rule is simply if Z is less than -1.96 or greater than 1.96, we will reject the null hypothesis.

Evaluation of success

Our analysis will be successful if we correctly evaluate the hypothesis using the proportion test and can determine if we reject or fail to reject the hypothesis that over ½ of full-time UVA undergraduate students believe that a hot dog is a sandwich using statistical measures.