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# Is a Hot Dog a Sandwich?

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# Motivation



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Medical Education

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Is A Hot Dog A Sandwich? Using Lateral Thinking to Teach Philosophy of  
Science

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## Is A Hot Dog A Sandwich?

From the National Hot Dog and Sausage Council

Indiana University  
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**Is a hot dog a sandwich? The world may never know.**

By: Harsh Patel

Monday, April 01, 2019

- Heated Debate
- No Consensus
- Taxed Differently
- **Taxation Without Representation**

of many things that make a tax system complicated. Because, in the end, if sandwiches are tax advantaged in some way hot dogs are not, a hot dog will definitely be a sandwich.

# Hypothesis



*We expect that less than 50% of UVA full-time undergraduate students believe that a hot-dog is not a sandwich.*

**Null:** The % of UVA full-time undergrad students who believe hot-dogs are not sandwiches is 50%

**Alternative:** The % of UVA full-time undergrad students who believe hot-dogs are not sandwiches is less than 50%

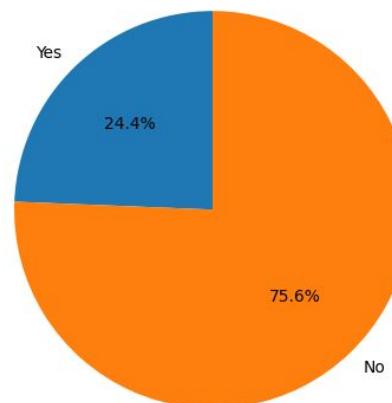


# Data

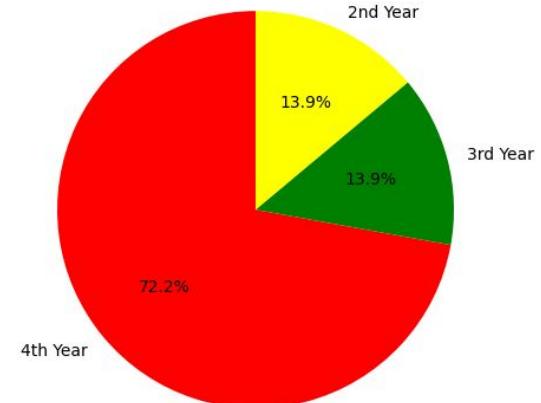
Our survey revealed that out of 80 responses from full-time UVA undergrad students...

- 59 students reported ‘hot-dogs are not sandwiches’
- 19 students reported ‘hot-dogs are sandwiches’

Do You Believe a Hot Dog Is a Sandwich?



Distribution of Students by Year



# Analysis Plan

## Pre-Analysis:



Download Excel

To wrangle and have  
accessible data



Rename columns

For clarity and  
succinctness. "What Year  
are you" → "Year"



Filter Rows

Eliminate students who  
responded "No" to being  
UVA undergrad full-time

## Analysis Methods:



Histogram

Visualization of frequency  
of survey responses



Stacked Bar Plot

Plot segmented by year to  
illustrate difference in  
opinion across years



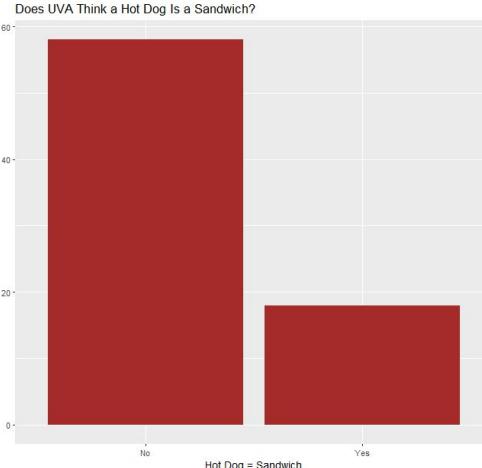
Draw Conclusions

Use plots to draw  
conclusions and see  
variance across students



Proportion Test

One-sample proportion  
test to evaluate if believers  
differ from 50%



## Results/Findings

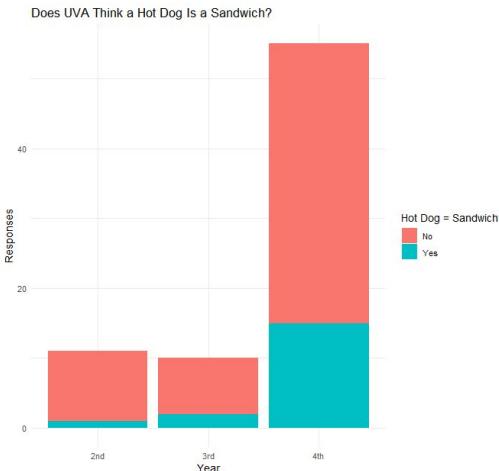
Point estimate for true proportion of UVA undergraduate students who think a hot dog is a sandwich: **23.7%**

95% Confidence Interval: **(15.0%, 35.1%)**

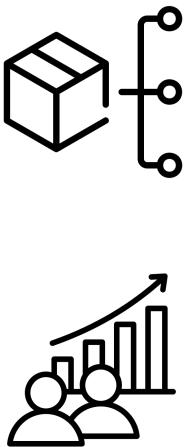
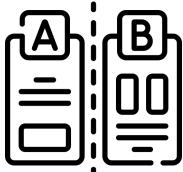
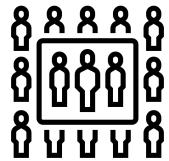
P-Value: **0.000007691**

We DO have enough evidence to reject the null hypothesis and say that less than 50% of UVA undergraduate students believe a hot dog is a sandwich

Sample may be unrepresentative, more 4th years, no 1st years



# Next Steps



- Design a way to get a **representative sample** of the UVA undergrad full-time student population
- Add **more categories** to analyze data on: gender, political affiliation, hometown, enjoy sandwiches?
- Attempt more **advanced analysis** such scatterplots and more advanced graphs; potential linear regression to find key predictors of the response
- Increase the **sample size** of the study
- **Compare UVA data** to other neighboring schools and schools from different regions