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# Is a Hot Dog a Sandwich?

Kendall Freese, Jeremy Grossman, & Blake Richardson

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# Motivation



Journal of Graduate  
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  
Journal of Undergraduate Research

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## Is a hot dog a sandwich? The world may never know.

By: Harsh Patel

Monday, April 01, 2019

Share Post Email

- 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.

Some updates (all from the same spacing detail oriented reader)



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# 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%

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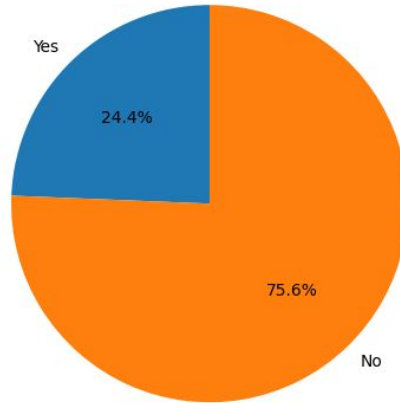
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# Data

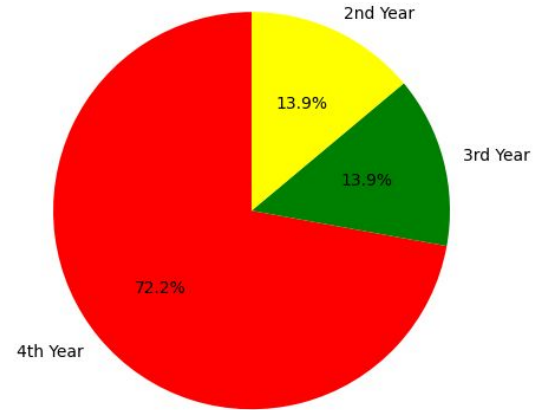
Our survey revealed that out of 80 responses from full-time UVA undergrad students...

- 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



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# Analysis Plan

## Pre-Analysis:

1

Download Excel

To wrangle and have accessible data

2

Rename columns

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

3

Filter Rows

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

## Analysis Methods:

1

Histogram

Visualization of frequency of survey responses

2

Stacked Bar Plot

Plot segmented by year to illustrate difference in opinion across years

3

Draw Conclusions

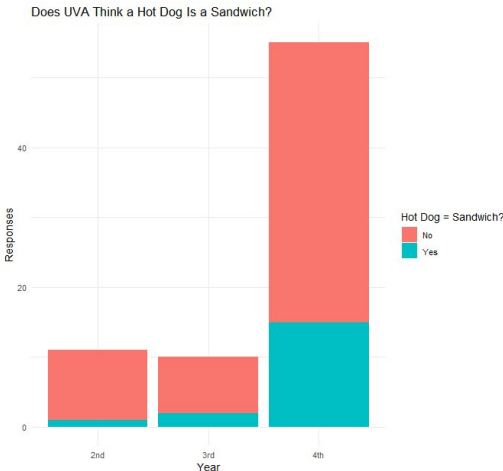
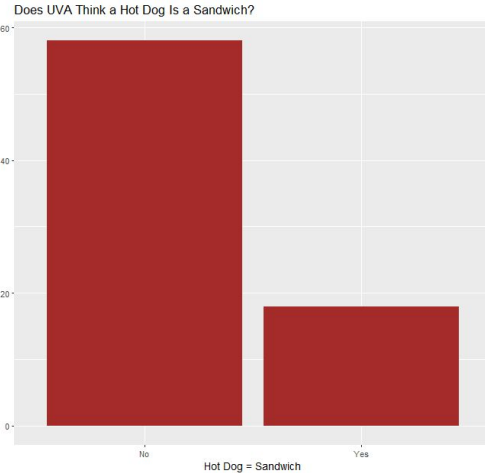
Use plots to draw conclusions and see variance across students

4

Proportion Test

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

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## 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**

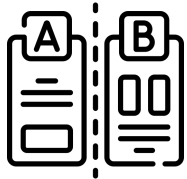
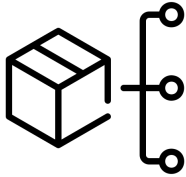
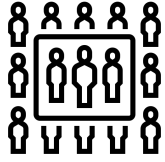
We DO have enough evidence to reject the null hypothesis and say that less than 50% of UVA undergraduate students believe a hot dog is a sandwich

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

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## 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
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