

# Introduction to Statistics I

Textbook: Elementary Statistics (4th Edition, by Navidi and Monk), and Workshop Statistics (4th Edition, by Rossman and Chance).

## Previous Lecture

- ◆ Sampling from a population
- ◆ Sampling/question bias



## §2.1: Graphical Summaries for Qualitative Data



### Penny Opinions

You're interested in how college students feel about abolishing the penny.

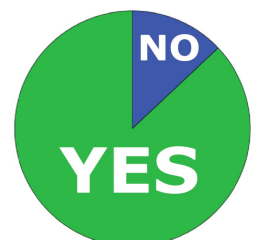
Obv-unit/var/var type?

Poll: Abolish the penny?



[bit.ly/introstatsdata](https://bit.ly/introstatsdata)

Poll: Abolish the Penny?



### Proportions

We can summarize categorical data by calculating a **proportion**.

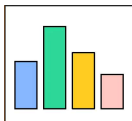
Proportion, or **relative frequency** is  $\frac{\# \text{ in Category}}{\text{Total \#}}$ .

e.g., if  $\frac{\# \text{ in Category}}{\text{Total \#}} = \frac{19}{24}$ , then the **relative frequency** to abolish is 0.791 or 79.1%.

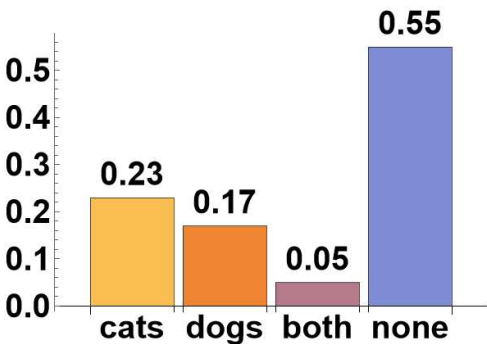


How should we *visualize* categorical data?

# Bar Graphs/Charts



## Household Pets



Bar charts visualize categorical data. All bar charts should have:

- ▶ Title
- ▶ Categories of var along bottom axis
- ▶ Percent/**Proportion**/**Relative Frequency** along side axis
- ▶ Height of the bars should be accurate and labeled as the proportions of each group

## Distribution

A **distribution** (distr) of a var refers to its pattern of variation.

With categorical vars, distr refers to the var’s possible categories & the proportion of data in each.

Bar charts allow us to **see the distr** of a qualitative var.

**Pie charts** are also a common way to represent categorical data, see the textbook for more on this.

## Activity: 2.1a

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### What did we learn?

- ◆ Proportion
- ◆ Bar Charts & Distributions (distr)



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Materials for Other Courses Found at **MathTalker.org**