

Analyzing One Categorical Variable

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Identifying individuals, variables, and categorical variables in a data set

Millions of Americans rely on caffeine to get them up in the morning. Here's nutritional data on some popular drinks at Ben's Beans coffee shop:

Drink	Type	Calories	Sugars (g)	Caffeine (mg)
Brewed coffee	Hot	4	0	260
Caffè latte	Hot	100	14	75
Caffè mocha	Hot	170	27	95
Cappuccino	Hot	60	8	75
Iced brewed coffee	Cold	60	15	120
Chai latte	Hot	120	25	60

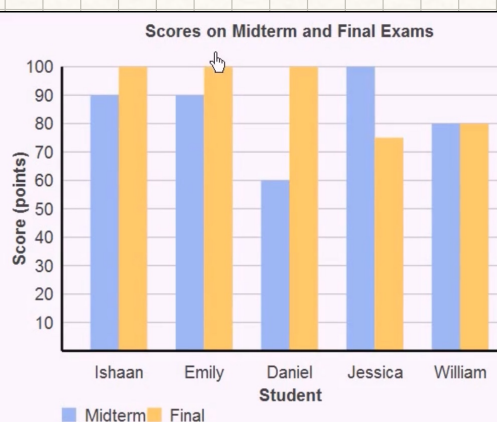
individuals

categorical

numeric

variables

Reading bar charts



- What was the median score for the final exam?
- What is the midrange of the midterm scores?
- What was the average student score for the final exam?
- What was the mode for the final exam scores?
- What is the range of the midterm scores?

$$\textcircled{1} \text{ finals} = \{100, 100, 100, 75, 80\}$$

$$= \{75, 80, 100, 100, 100\}$$

$$\textcircled{2} \text{ midterms} = \{90, 90, 60, 100, 80\}$$

$$= \{60, 80, 90, 90, 100\}$$

$$\text{midrange} = \frac{\text{max} + \text{min}}{2} = 80$$

$$\textcircled{3} \text{ Mean (f)} = \frac{75 + 80 + 100 + 100 + 100}{5}$$

$$= \frac{455}{5} = 91$$

$$\textcircled{4} \text{ Mode (f)} = 100 \text{ (freq} = 3\text{)}$$

$$\textcircled{5} \text{ Range (M)} = \text{max} - \text{min}$$

$$= 40$$

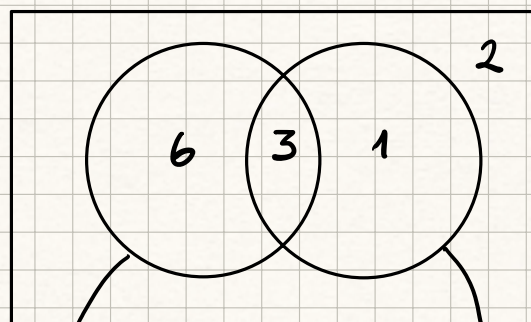
- * Individual: A single member or unit of a population or sample being studied.
- * Variable: A characteristic or attribute that can take on different values among individuals.
- * Categorical variable: A variable that represents distinct groups or categories (e.g. gender, color)
- * Bar chart: A graphical representation of categorical data using rectangular bars where the length or height of each bar corresponds to the value it represents.

Two-way Tables

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Two-way frequency tables and Venn diagrams

Data :



Venn Diagram

Chocolate

Coconut

	Has coco.	No coco.	Total
Has choc.	3	6	9
No choc	1	2	3
Total	4	8	

Two-way Table

Two-way relative frequency tables

The two-way frequency table below shows data on type of vehicle driven and whether there was an accident in the last year for customers of All American Auto Insurance.

Complete the following two-way table of column relative frequencies.
(If necessary, round your answers to the nearest hundredth.)

	Sport utility vehicle (SUV)	Sports car
Accident within the last year	28	35
No accident within the last year	+ 97 125	+ 104 139
	Sport utility vehicle (SUV)	Sports car
Accident within the last year	$28/125 = 0.22$	$35/139 = 0.25$
No accident within the last year	$97/125 = 0.78$	$104/139 = 0.75$
Column total	1.00	1.00

Interpreting two way tables

* Venn Diagrams : A visual representation of mathematical or logical relationships between different sets, using overlapping circles (or other shapes) to show common and distinct elements.

* Two-way Table : A table that displays the frequency distribution of two categorical variables, showing how the categories of one variable relate to the categories of another.