

## 2-Way Frequency Tables

EQ: How do I describe the probability of categorical data?

. . . . .

### **What am I learning today?**

How to create and analyze 2-category data tables

### **How will I show that I learned it?**

Create a relative frequency table and discuss the popularity of different options

Vocabulary - Review

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- Quantitative Data – Data that can be measured and is reported in a numerical form.
- Categorical/Qualitative Data – Data that can be observed but not measured and is sorted by categories.

2-way frequency tables are used to represent categorical data that each have 2 details. We assume that there is no overlap in these tables.

Example:

- 2 category
- 1 category

Participation in School Activities			
School Club	Gender		Totals
	Male	Female	
Band	12	21	33
Chorus	15	17	32
Chess	16	3	19
Latin	7	9	16
Yearbook	28	7	35
Totals	78	57	135

Total responders Overall Total

Relative frequency table shows the popularity of each category using percents or decimals.

Example:

$$\frac{12}{135} = 0.089\%$$

Participation in School Activities			
School Club	Gender		Totals
	Male	Female	
Band	8.9%	15.6%	24.5%
Chorus	11.1%	12.6%	23.7%
Chess	11.9%	2.2%	14.1%
Latin	5.2%	6.7%	11.9%
Yearbook	20.7%	5.2%	25.9%
<b>Totals</b>	<b>57.8%</b>	<b>42.3%</b>	<b>100%</b>

$$\frac{135}{135} = 100\%$$

MF  
16  
135 =  
119

3 types of numbers in a frequency table.

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	Male	Female	
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<b>Totals</b>	<b>78</b>	<b>57</b>	<b>135</b>

- 2-Category Data
- 1-Category Data
- Total Number of Respondents

$$\underline{\underline{\text{Joint Frequency}}} = \frac{\text{2-category number}}{\text{total number}}$$

Example: What is the joint frequency of a student who is male and in band?

$$\frac{\text{2-cat}}{\text{total}} = \frac{12}{135} = .089 \Rightarrow 8.9\%$$

$$\text{Marginal Frequency} = \frac{\text{1-category number}}{\text{total number}}$$

Example: What is the marginal frequency of a student who is in yearbook?

$$\frac{\text{1-cat}}{\text{Total}} = \frac{35}{135} = .259 = 25.9\%$$

Conditional Frequency =  $\frac{\text{2-category number}}{\text{1-category number}}$

Example: What is the conditional frequency that a male is in Latin?

$$\frac{\text{2-cat}}{\text{1-cat}} = \frac{7}{78} = .0897 \quad 8.97\%$$

Grade	Hours spent on homework		
	0-2	2-4	More than 4
9	38	12	2
10	21	25	9
11	14	18	20

What percentage of students were 9th graders who worked more than 4 hours on homework?  
Type of frequency?

What percentage of students were 11th graders?  
Type of frequency?

What percentage of students who worked 0-2 hours on homework were 10th graders?  
Type of frequency?

Gender	Preferred sport		
	Baseball	Soccer	Basketball
Male	49	52	16
Female	23	64	33

What percentage of the people surveyed were female?

Type of frequency?

What percentage of males preferred soccer?

Type of frequency?

What percentage of the people surveyed were females who preferred basketball?

Type of frequency?