

# Frequency Tables

by Sophia



## WHAT'S COVERED

This tutorial will introduce you to the basic principles of frequency tables. Our discussion breaks down as follows:

1. Frequency and Frequency Tables
2. Relative Frequency

## 1. Frequency and Frequency Tables

**Frequency tables** are tables that show how often data occurs. **Frequency** is the number of times that particular value occurs in a data set.

Let's look at several examples to show how easy it is to summarize frequencies in a table.

⇒ **EXAMPLE** Suppose I have the 15 billiard balls from a pool table. One of the variables of these billiard balls that I might be interested in is their color. For example, the one ball is yellow, the two ball is blue, the six ball is green, the nine ball is also yellow, etc.



Now, I could take the values that each variable color represents and put them in a table.

Color	Frequency
Yellow	2
Blue	2
Red	2
Purple	2
Orange	2

Green	2
Maroon	2
Black	1

Frequency is how often these values occur. Two of the balls are yellow, two are blue, two are orange, two are green, etc. The only one that has a frequency of one is black, the eight ball.

What about when we use quantitative data?

⇒ **EXAMPLE** Suppose an ice cream taste tester was asked to rate his satisfaction of 20 different ice creams on a 1-10 scale. His satisfaction scores are listed below.

**6, 6, 4, 8, 9, 7, 8, 5, 8, 9, 3, 4, 4, 3, 4, 1, 9, 8, 7, 10**

Try to construct a frequency table for these scores. Hopefully, you came up with something that looks like this:

Score	Frequency
1	1
2	0
3	2
4	4
5	1
6	2
7	2
8	4
9	3
10	1

One ice cream received a score of one. None of them received a score of two. Two of them received a score of three, and so on. The frequency represents how often a particular score was received.

Now, in some cases, you may not want to look at the raw data, but instead, look directly at the frequency table. This is useful if the data set is very large.

⇒ **EXAMPLE** Consider the following frequency table that has the heights of 333 sixth-grade students.

Height	Frequency
55	11

56	21
57	33
58	37
59	55
60	51
61	44
62	32
63	30
64	12
65	7

These heights are rounded to the nearest inch. This means 11 students are 55 inches tall (height of 4' 7"), 21 students who are 56 inches tall, and so forth.



#### TERMS TO KNOW

##### Frequency Table

A table showing the values of the data, and their respective frequencies.

##### Frequency

How often a data value, or range of values, occurs.

## 2. Relative Frequency

Often it's preferable to not just look at frequency, but rather to ask what percent of the students a particular value represents. We can create a value called **relative frequency**, created by dividing each value by the total.

We can use relative frequency, or percents, to get a better picture of the portion that 11 students are of the whole population.

Height	Frequency	Relative Freq
55	11	$11/333 = 3\%$
56	21	$21/333 = 6\%$
57	33	$33/333 = 10\%$
58	37	$37/333 = 11\%$
59	55	$55/333 = 17\%$
60	51	$51/333 = 15\%$

61	44	$44/333 = 13\%$
62	32	$32/333 = 10\%$
63	30	$30/333 = 9\%$
64	12	$12/333 = 4\%$
65	7	$7/333 = 2\%$

As we can see, the 11 students who have a height of 55 inches make up about 3% of the population. We can fill out the entire table to find the relative frequencies as opposed to "regular" frequencies.



#### TERM TO KNOW

##### Relative Frequency

The percent of the data points that take a particular value. This is obtained by dividing the frequency of each value by the total number of data points.



#### SUMMARY

Data sets can be shown in frequency tables, whether they are qualitative or quantitative. Frequency tables are particularly useful with large data sets, in cases where you don't want to see all of the raw data and would rather see it categorized. You can also use relative frequency to see what percent of the sample goes in each bucket of the frequency table. Remember, frequency is the raw count, relative frequency is the percent, and both of those values can go into a frequency table.

Good luck!

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