

What is the definition of an ungrouped frequency distribution and can you provide an example?

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An ungrouped frequency distribution is a statistical method used to organize and display data by listing each individual value and its corresponding frequency (or number of occurrences). This type of distribution does not group the data into categories, but rather shows the exact values and their frequencies. For example, if we have a set of test scores: 85, 92, 76, 85, 78, the ungrouped frequency distribution would list each score and its frequency as follows: 85 (2), 92 (1), 76 (1), 78 (1). This type of distribution is useful for small data sets with distinct values.

Ungrouped Frequency Distribution: Definition & Example

Suppose we conduct a survey in which we ask 15 households how many pets they have in their home. The results are as follows:

1, 1, 1, 1, 2, 2, 2, 3, 3, 4, 5, 5, 6, 7, 8

One way to summarize these results is to create a frequency distribution, which tells us how frequently different values occur in a dataset.

Often we use grouped frequency distributions, in which we create groups of values and then summarize how many observations from a dataset fall into those groups.

Here's an example of a grouped frequency distribution for our survey data:

Number of Pets	Frequency
1-2	7
3-4	3
5-6	3
7-8	2

We first created groups of size 2, then we counted how many individual observations from the dataset fell in each group. For example:

7 families had either 1 or 2 pets
3 families had either 3 or 4 pets
3 families had either 5 or 6 pets
2 families had either 7 or 8 pets

Another type of frequency distribution we could create is an ungrouped frequency distribution, which displays the frequency of each individual data value rather than groups of data values.

Here's an example of an ungrouped frequency distribution for our survey data:

Number of Pets	Frequency
1	4
2	3
3	2
4	1
5	2
6	1
7	1
8	1

This type of frequency distribution allows us to directly see how often different values occurred in our dataset. For example:

4 families had 1 pet 3 families had 2 pets 2 families had 3 pets 1 family had 4 pets

And so on.

When to Use Ungrouped Frequency Distributions

Ungrouped frequency distributions can be useful when you want to see how often each individual value occurs in a dataset.

Note that ungrouped frequency distributions work best with small datasets in which there are only a few unique

values.

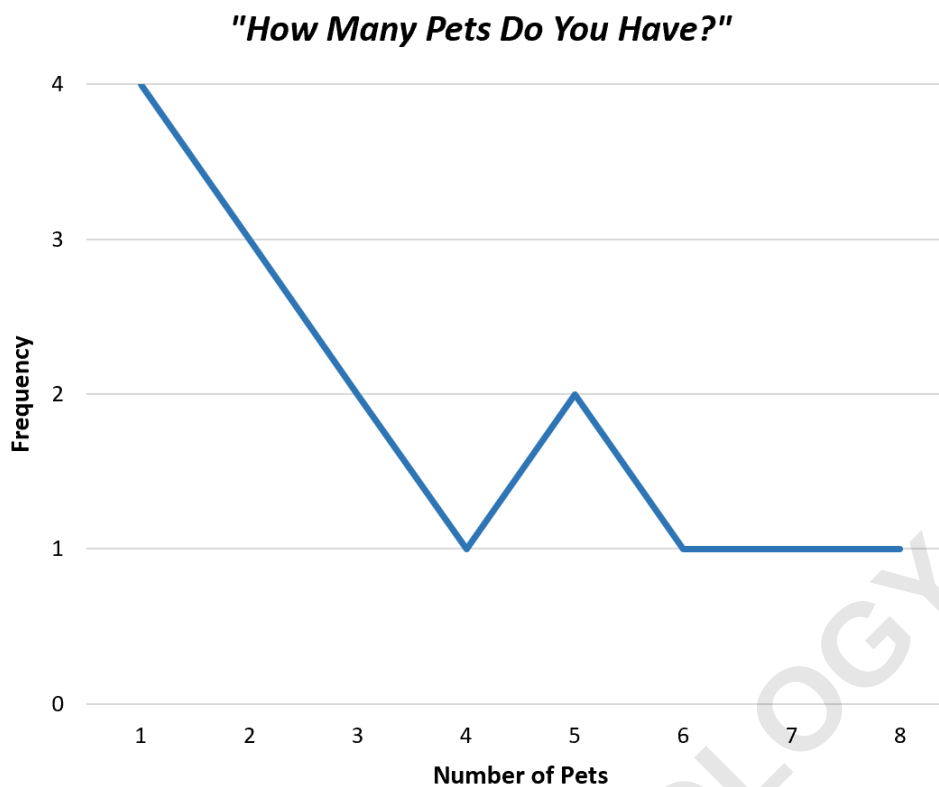
However, if we had a dataset with hundreds or thousands of unique values, an ungrouped frequency distribution would be incredibly long and difficult to gather information from.

For larger datasets, it makes sense to construct grouped frequency distributions.

How to Visualize Ungrouped Frequency Distributions

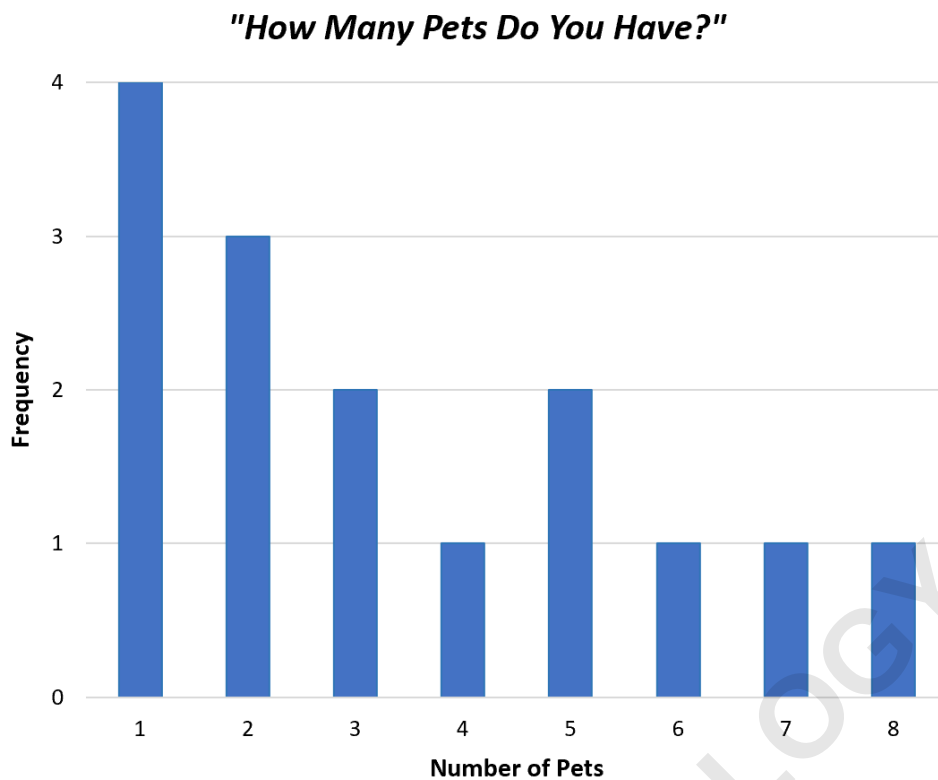
The easiest way to visualize the values in an ungrouped frequency distribution is to create a frequency polygon, which displays the frequencies of each individual value in a simple chart.

Here's what a frequency polygon would look like for our sample data:



This helps us quickly gain an understanding of how often each value occurs in the dataset.

Alternatively, we could create a bar chart to display the exact same data using bars rather than a single line:



Both charts allow us to quickly understand the distribution of values in our dataset.