1.2 Displaying Categorical Data Part 1

In the last section, we covered frequency tables and relative frequency tables. Those tables summarize a variable's distribution with numbers. Now, we are going to display those distributions using graphs.

First, we will cover bar charts (also known as bar graphs). A **bar chart** shows each category as a bar. The heights of the bars show the category frequencies or relative frequencies.

Making a graph is not an end in itself. The purpose of a graph is to help us understand the data. When you look at a graph, always ask "What do I see?"

How to Make a Bar Chart

1. **Draw and label the axes.** Put the name of the categorical variable under the horizontal axis. To the left of the vertical axis, indicate whether the graph shows the frequency (count) or relative frequency (percent or proportion) of individuals in each category.

2. **"Scale" the axes.** Write the names of the categories at equally spaced intervals under the horizontal axis. On the vertical axis, start at 0 and place tick marks at equal intervals until you exceed the largest frequency or relative frequency in any category.

3. **Draw bars** above the category names. Make sure the bars equal in width and leave gaps between them. Be sure that the height of each bar corresponds to the frequency or relative frequency of individuals in that category.

Example: Here is a frequency table of the preferred status (famous, happy, healthy, rich) data for 40 students. Make a bar chart to display the data.

Preferred Status	Frequency
Famous	7
Happy	21
Healthy	4
Rich	8
Total	40
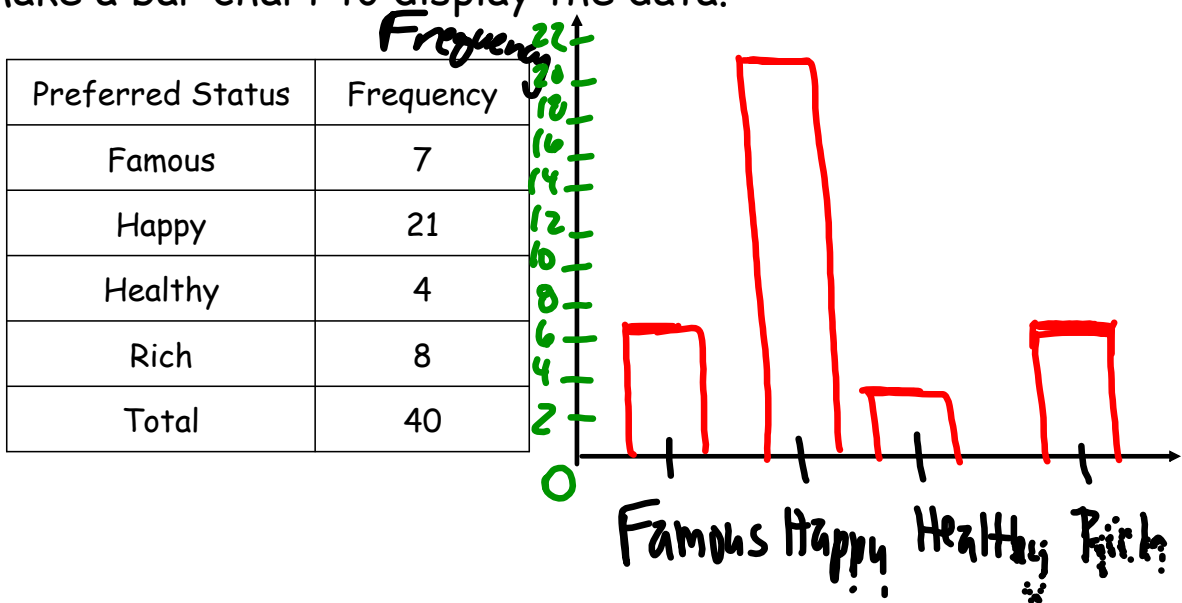
Example: Here is a relative frequency table of the favorite color data for 26 people. Make a bar chart to display the data.

Favorite Color	Frequency	Relative Frequency
Blue	10	38% 10/26 ≈ 0.38
Red	3	12% 3/26 ≈ 0.12
Orange	1	4% 1/26 ≈ 0.04
Yellow	3	12% 3/26 ≈ 0.12
Green	5	19% 5/26 ≈ 0.19
Pink	3	12% 3/26 ≈ 0.12
Purple	1	4% 1/26 ≈ 0.04