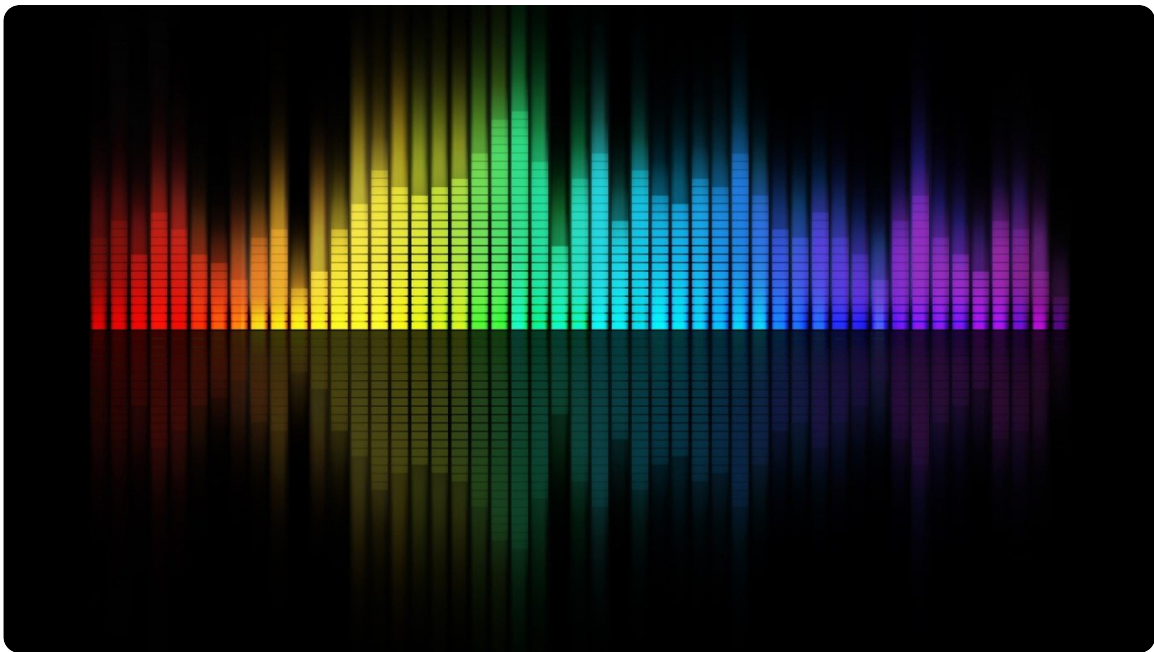


Create Concise Bar Chart for Reporting

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Credit to <https://www.wallpaperflare.com/1920x1080-px-background-bar-black-equalizer-graph-multicolor-music-rainbows-people-actors-hd-art-wallpaper-syyzo>



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As mentioned before, I just finished a project, where we analyzed various kinds of climate risks (such as extreme wind speed, extreme precipitation, heat stress, droughts, wildfires, sea level rise, etc) at more than 15 asset sites. Each site requires a detailed data summary report, in

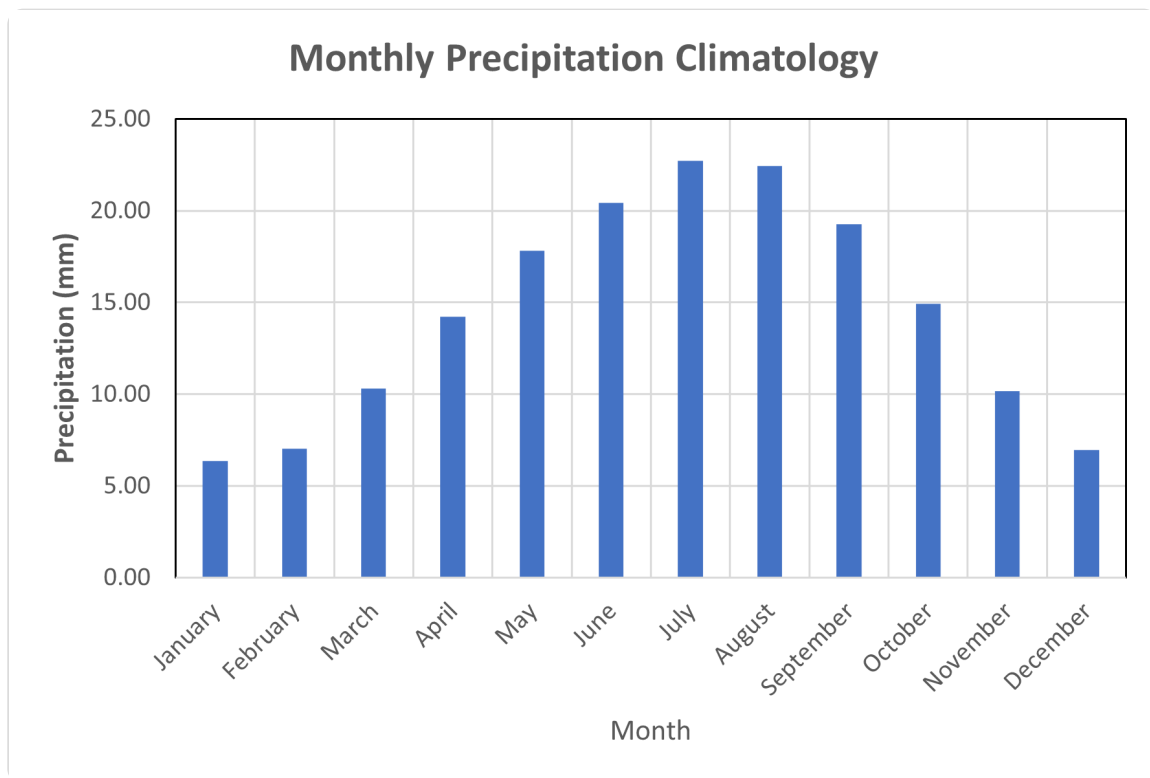
which all analysis results are presented with charts and tables. Besides line charts, I found Bar is another chart type widely used in the report.

In the [previous tutorial](#), I presented how to create a concise line chart for reporting. In fact, these steps or the underlying philosophy could also be applied to create concise bar charts. In this practical tutorial, I would only present some comparisons between the original design and re-design. As stated before, everybody can do visualization. So the following tutorial is presented only from my own experience.

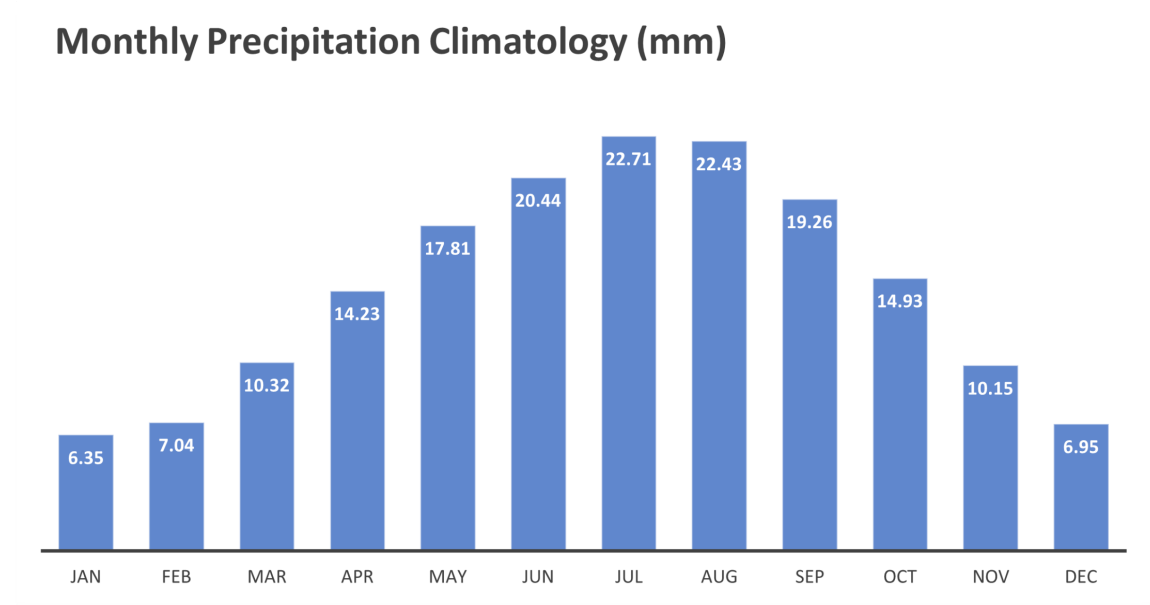
1. Single Bar

Let's start from an original presentation. It is good and it expresses all important information just like the line chart in the previous tutorial.

However, take another look at this visual with an eye. You will find the chart contain too many elements that may distract our concentration on some key information. In another word, some visual elements take up space but don't increase understanding.



Now let's delete chart border, all gridlines, ticks, axis title, and use abbreviated month names. It is worth noting that I further dropped the whole y-axis, as I put the monthly precipitation values in the bar charts. The final bar chart looks like the following image. It is quite tidy and concise.



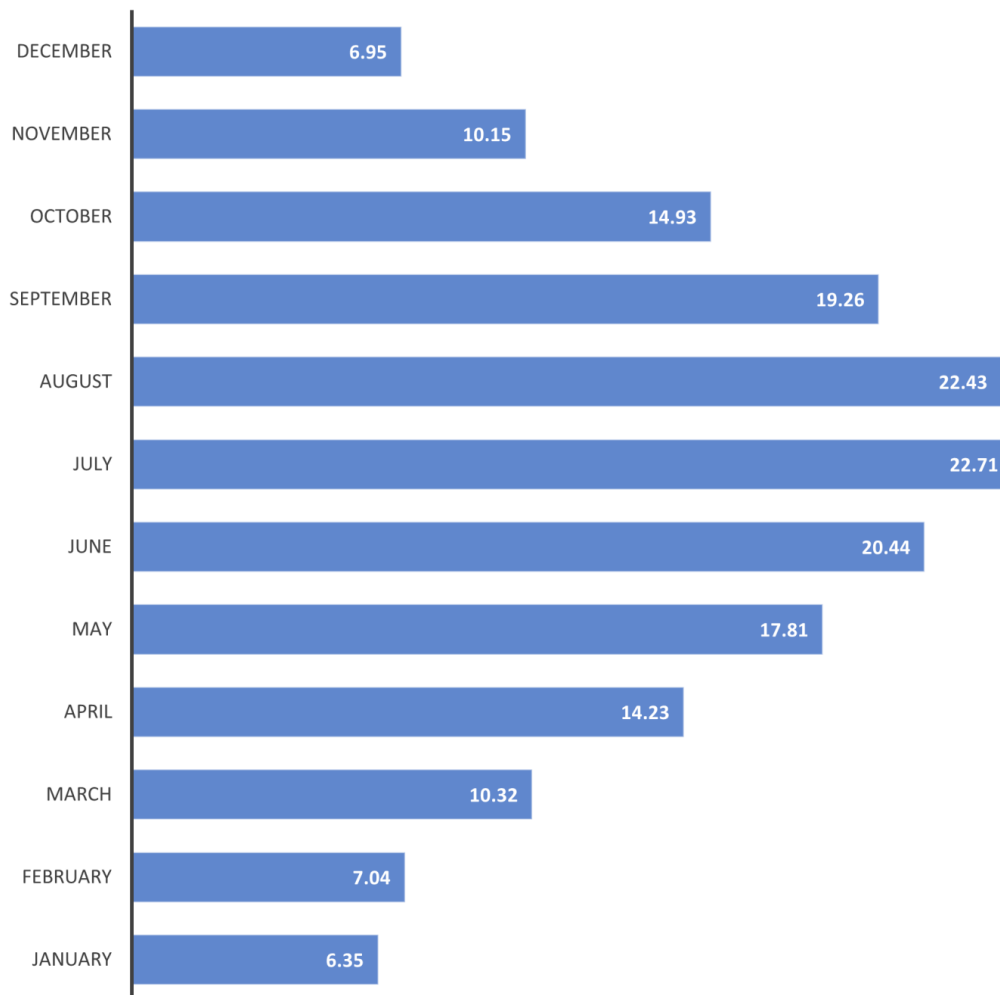
Sometimes, we may not use abbreviated names for axis labels.

Generally, I will take two options:

- make the bar chart (whole plot area) wider, or transform a long name into multiple lines.
- swap the x and y axes.

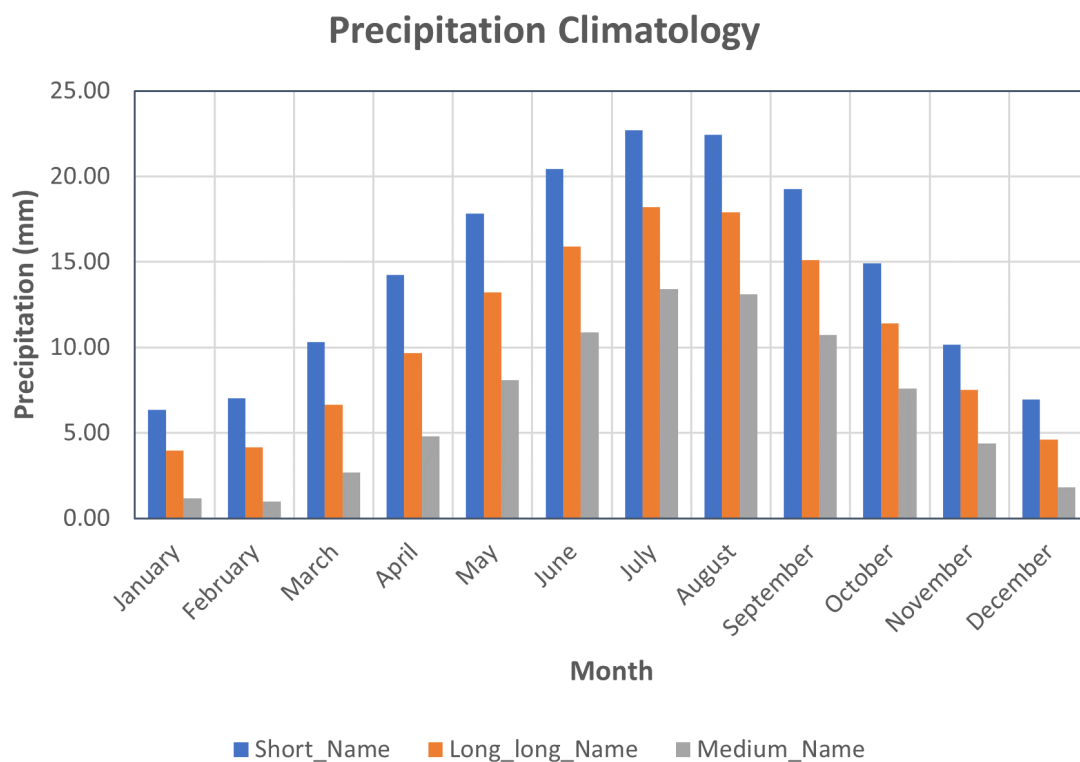
The following image show the resultant bar chart by swapping x and y axes.

Monthly Precipitation Climatology (mm)

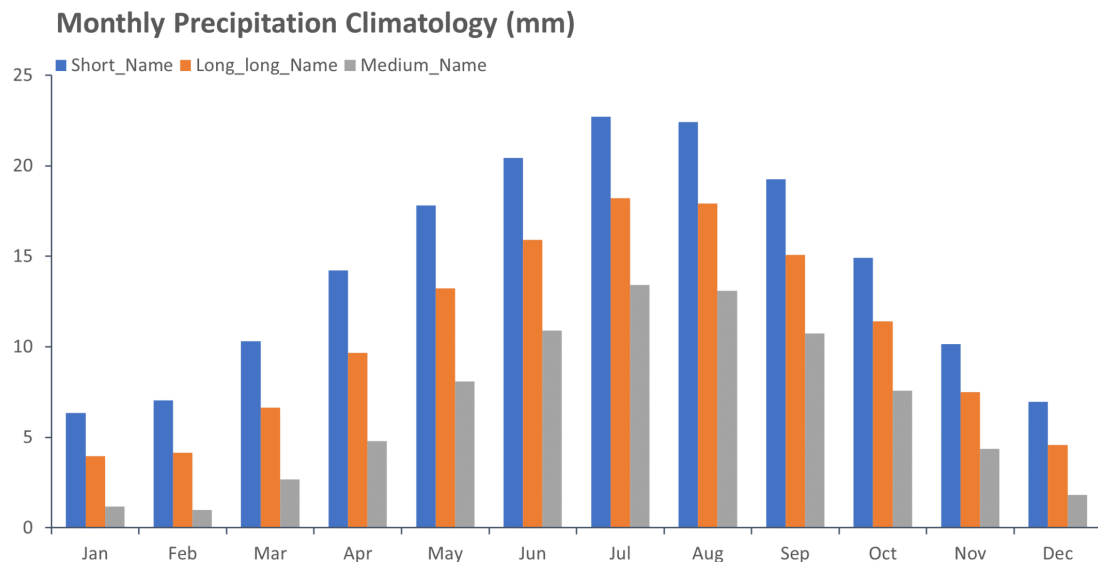


2. Grouped Bars

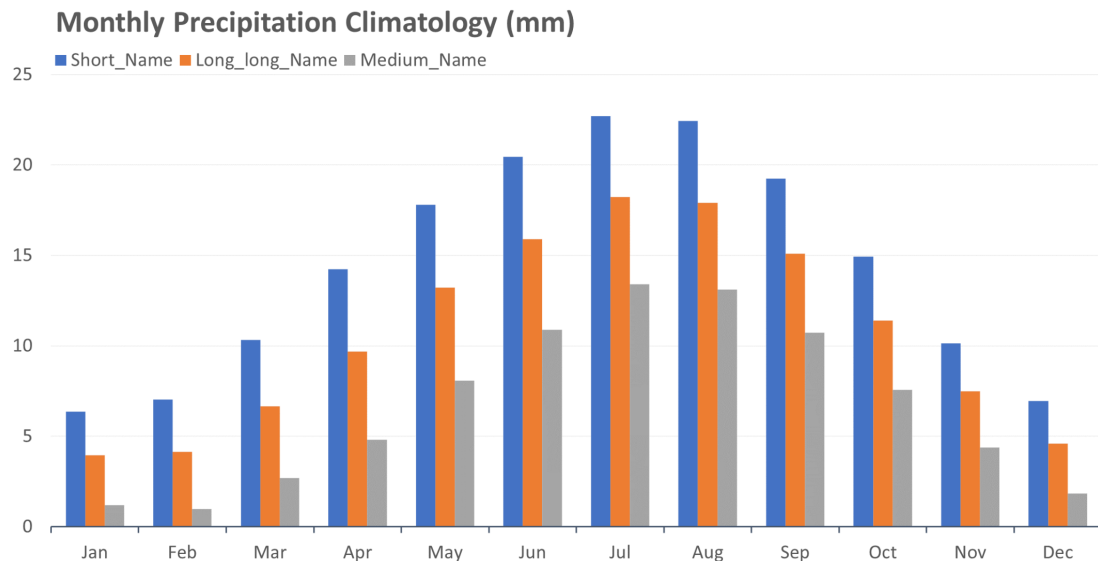
All the examples from the previous section showed how a quantitative amount varied with respect to one categorical variable. Frequently, however, we are interested in two or more categorical variables at the same time. We can visualize this dataset with a grouped bar plot. Let's check the original raw design, firstly.



Next, let's remove all redundant elements as we did for line and single bar charts. However, I did not further delete the y-axis as before. This is because there are three categories. If putting the precipitation values into the corresponding each individual bar, we have to rotate them. I always think rotating labels may make the plot look a little bit ugly. Therefore, I keep the y-axis.



Certainly, we can future replace the y-axis with grid lines.



Summary

In this tutorial, I presented some examples about how to make bar chart more concise, but still providing all necessary information. In fact, you can do more. You can use specific colors for the bars, specific fonts (size and style) for the title and tick labels, etc.

Everybody should keep in mind ***A Graph is Worth a 1000 Words***. Visualization looks easy. However, it is hard to master. It is half art and half science. The best way always is JUST DO IT. In addition, visualization should always be applied with specific purposes, instead of only making the plot look beautiful.

References

<https://www.economist.com/christmas-specials/2013/10/07/worth-a-thousand-words>

Knaflitz, Cole Nussbaumer. *Storytelling With Data: A Data Visualization Guide for Business Professionals*. Hoboken, New Jersey: John Wiley & Sons, Inc, 2015.