ABSTRACT

The appropriate plot effectively conveys the author’s conclusions to the readers. Journal of Korean Medical Science (JKMS) will provide a series of special articles to show you how to make consistent and excellent plots more easily. In this article, we will cover pyramid charts. A pyramid chart is a simple yet popular tool for looking at the structure of a population by age and gender. Other variables can also be applied. This article helps researchers use these charts more easily by introducing effective tools and explaining how to use them.

Keywords: Pyramid Chart

INTRODUCTION

Pyramid charts are common, essential, and useful when comparing the age and sex of a population, but it takes a lot of time and effort for researchers to create. We will introduce 4 tools to make it easy and efficient. You will also learn how to use it to compare the age and gender of a population, as well as other variables.

METHODS

The 1st tool

Visit https://tinyurl.com/D-Pyramid. The data has a simple structure of age and sex, and it is converted to a pyramid chart on the right (Fig. 1).

You can edit any color you like. You can also specify a color by entering words such as ‘blue’ or ‘red’ (Fig. 2).

By changing the ‘bin width’ to 10, the age is divided into 10-year intervals. If ‘bar label’ is enabled, the count belonging to each bar is displayed (Fig. 3).

If you change the ‘label’ to ‘% of each gender’ or ‘% of total population,’ it calculates and displays the percentage according to sex or the groups combined (Fig. 4).
The labels displayed on the graph are displayed in the table on the right, so if you need this number, you can copy and paste it into Excel (Fig. 5).

This tool is very concise and stays focused to the essential functions of a population pyramid chart. Raw data is aggregated and summarized in the form of a table, so the result can be used for other purposes.
The 2nd tool
Visit https://tinyurl.com/Pyramid-Chart2. Specify one continuous variable and one nominal variable. Then, for the nominal variable, enter the names to be assigned to the right and left sides (Fig. 6).

A pyramid chart in the form of a histogram that is divided into sections facing each other is created (Fig. 7).
Fig. 5. Bar labels are displayed as a table on the right for further uses.

Fig. 6. The 2nd tool is for considering additional variables.
Various color combinations are possible by changing the 'Select color palette,' and the 'reverse color' changes the two colors vice versa. You can choose 'Select theme,' and in the case of a thesis, 'classic' will be appropriate (Fig. 8). This allows you to use any continuous variable other than age, and allows you to use any nominal variables other than sex.

Fig. 7. Pyramid chart in the form of a histogram.

Fig. 8. Colors can be adjusted as needed.
The 3rd tool
Visit https://tinyurl.com/Pyramid-Chart-II. The data consists of a total of 7 columns, and the middle column represents groups divided by age (Fig. 9).

The numbers indicated by $x_1$ and $y_1$ are represented by red bars, respectively, and the numbers represented by $x_2$ and $y_2$ by yellow green. If the number is 0, the stick disappears.

Because it shows multicolored sticks, it is useful to show not only the distribution of age, but also additional information such as showing the distribution of urban and rural populations according to age (Fig. 10).

![Fig. 9. The purpose of the 3rd tool is to specify additional data of each age subgroup.](image)

| x1 | x2 | x3 | agegrps | y1 | y2 | y3 |
|----|----|----|---------|----|----|----|
| 11.00 | 4.00 | 12.00 | 0-10 | 9.00 | 0.00 | 13.00 |
| 10.00 | 3.00 | 10.00 | 11-20 | 10.00 | 2.00 | 12.00 |
| 8.00 | 3.00 | 10.00 | 21-30 | 11.00 | 2.00 | 11.00 |
| 9.00 | 2.00 | 6.00 | 31-40 | 6.00 | 2.00 | 8.00 |
| 8.00 | 4.00 | 5.00 | 41-50 | 6.00 | 3.00 | 7.00 |
| 6.00 | 2.00 | 5.00 | 51-60 | 8.00 | 5.00 | 4.00 |
| 5.00 | 3.00 | 5.00 | 61-70 | 6.00 | 3.00 | 7.00 |
| 2.00 | 7.00 | 3.00 | 71-80 | 6.00 | 4.00 | 3.00 |
| 3.00 | 7.00 | 4.00 | 81-90 | 5.00 | 7.00 | 4.00 |
| 4.00 | 6.00 | 3.00 | 91+ | 4.00 | 5.00 | 3.00 |

![Fig. 10. Additional distributional data of each age subgroup specified.](image)
Since each label can be replaced with the desired text, various applications are possible (Fig. 11).

If you upload data like this (Fig. 12), it will look something like this. In other words, it is possible to compare not only the age group but also various groups (Fig. 13).

If 'select rainbow color' is set to 7, the visible light color is divided into 7 and displayed (Fig. 14), and if set to 14, 14 colors are displayed. (Fig. 15) Let's say you want to use colors 2, 4, and 7 out of 7 colors.

Data can be organized as above. Enter 0 where the bar is not required (Fig. 16).

Eventually you will be able to use any color you want (Fig. 17). If you want to express only a specific group with a different color, it can be applied. This tool has the advantage of having the shape of a pyramid chart and allowing you to select and use multiple colors at will.

**The 4th tool**
Visit https://tinyurl.com/D-Dual-Pyramid. The data is prepared in 5 columns. Data for F1 and M1 are expressed as bar charts, and data for F2 and M2 are expressed as line charts. This chart
is suitable for comparing the demographic structures of two countries, or for comparing the demographics of the past and present (Fig. 18).

If you change the selection of ‘compare’ to ‘male and female,’ only F1 and F2 data are used to compare men and women. The bar chart on the right shows F1, and the line chart on the right shows M1. The bar chart on the left is M1, and the line chart is F1. Hence it is a good chart to compare the distribution of men and women. If you look at the chart above, you can see that there are more males in young age, and more females in old age (Fig. 19).

You can also adjust the color for 4 types of information (Fig. 20). Since there are little options left to configure you can create a graph immediately by uploading your own data.
**Fig. 15.** Example of color palette on selecting rainbow color as 14.

**Fig. 16.** Enter data as 0 where bar is not required.

**Fig. 17.** Final chart with previously chosen colors.
Fig. 18. The 4th tool is for comparing 2 demographic data as bar and line charts.

Fig. 19. Comparison between gender can be also shown as needed.

Upload and further editing
You can upload your own data using ‘want to use my data.’ Save the data as a csv file in Excel, and make it in the same format as the example data.
After selecting 'plot download,' you can confirm the size, download it in the desired format, and edit it further using an appropriate editing program (Fig. 21). You can edit svg files in PowerPoint, and recently, it has become more convenient because you can also edit PDFs in MS Office.

**CONCLUSION**

We have introduced 4 tools that can create Pyramid Charts, and looked at the functions of each. All of them are simple and intuitive to use, so it will be easy for researchers to use according to their needs.