



Data Visualization for NGOs

DATA USAGE AND ADVOCACY



Co-funded by
the European Union



What Will We Talk About?



Why Data?

How NGOs
Can Use Data?

Data Culture

Data
Visualization

Storytelling
with Data

Why Data?

Data
to Understand

Data
to Monitor

Data
for Performance

Data
for Telling

Data
to Proving

Data
for Persuading

Why Do NGOs Use Data?

To Decide...

NGOs can measure every activity: participation statistics for their activities, donation, volunteer statistics, web and social media statistics, project statistics, etc.

To Measure Impact...

Being able to understand the impact of the work you do allows us to understand whether our services work or not.

For Advocacy...

The use of data in advocacy activities is necessary for effective and persuasive communication. Data is used as evidence in advocacy issues.



How NGOs Can Use Data?



Program Management

Program Management is the process of collecting, analyzing and using data to improve or optimize an implemented program/project.

It is usually carried out as part of a measurement and evaluation activity known as monitoring/evaluation.

Program measurement is the collection of data that can be used to measure the implementation process of a program; program evaluation is carried out to understand the impact of the program on the beneficiaries (people/communities) it benefits.

Indicators

When you use data to measure progress toward your goals, you need to find numbers that show what progress looks like.

These numbers, known as indicators, can help you determine if you are on track to achieve your goals.

In a donation campaign, indicators such as the number of donors, average donation amount, number of retained donors are used.

In volunteer management, indicators such as the number of volunteers gained, the average number of working days of volunteers, etc. are used.



Data for NGO's

Data in Reporting

Annual reports, impact reports and policy documents focusing on specific issues are examples of data use for measuring impact.

Data in Video Content

CSOs use data in the videos they produce. "Show Your Work" and "Impact" stories frequently use data.

Data in Social Media

CSOs frequently use data in their social media posts.



Data Culture

Pilot Level

Organizations at this level have a data strategy, even if it is limited. They test this strategy in a pilot project. There is a management decision to use data in decision processes.

Data-Informed

Organizations at this level have partially included data in their decision-making processes. Data is used along with experience and personal insights.



Start-up Level

Organizations at this level do not have the competence to use the data they collect in their decision-making processes.

Dissemination Level

Organizations at this stage expand the principles implemented as a pilot in the previous stage to all their work with a management decision.

Data-Centric

Organizations at this stage are completely focused on data. This is part of the corporate DNA and they have redesigned or adapted their culture according to the data included in all areas of decision-making.

Where is Data?

Tools used for member, stakeholder, project and resource management and finance, accounting, human resources and inventory management are suitable channels for collecting data

Management Software



Surveys and interviews provide qualitative and quantitative data depending on the questions you ask and your target audience.

Surveys and Interviews

Digital Media

Email – E-newsletter activities, website and social media accounts are suitable areas for collecting data.



External Resources

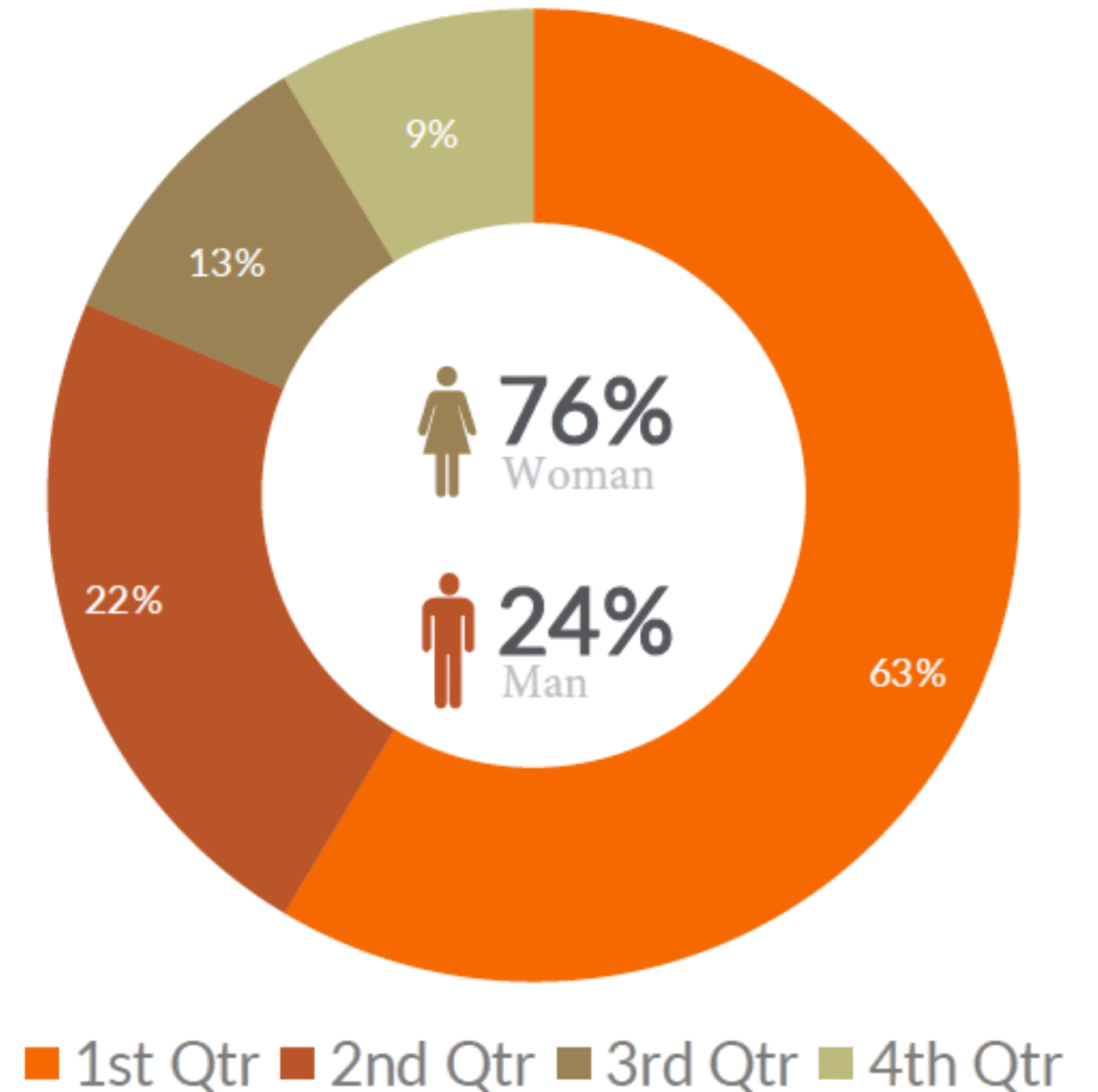
Open data, data obtained from CIMER, data announced by national and international organizations and data obtained from research companies.

Data Visualization

Data visualization is visualizing large amounts of data using specific tools to make patterns and trends visible.

Data visualization can be used to make large amounts of data **understandable**, especially for people who are not data scientists or statisticians.

It is a functional method for creating an insight from data.



Why Data Visualization?

1. For fast and easy understanding of data:

Expressing messages visually instead of numbers and words ensures fast, clear and much easier understanding.

2. To attract interest to data: With data visualization, we can present the message we want to convey in a striking way.

3. To ensure that the data is memorable:

Visualizing the data makes it easier to remember by associating the given message with a visual.



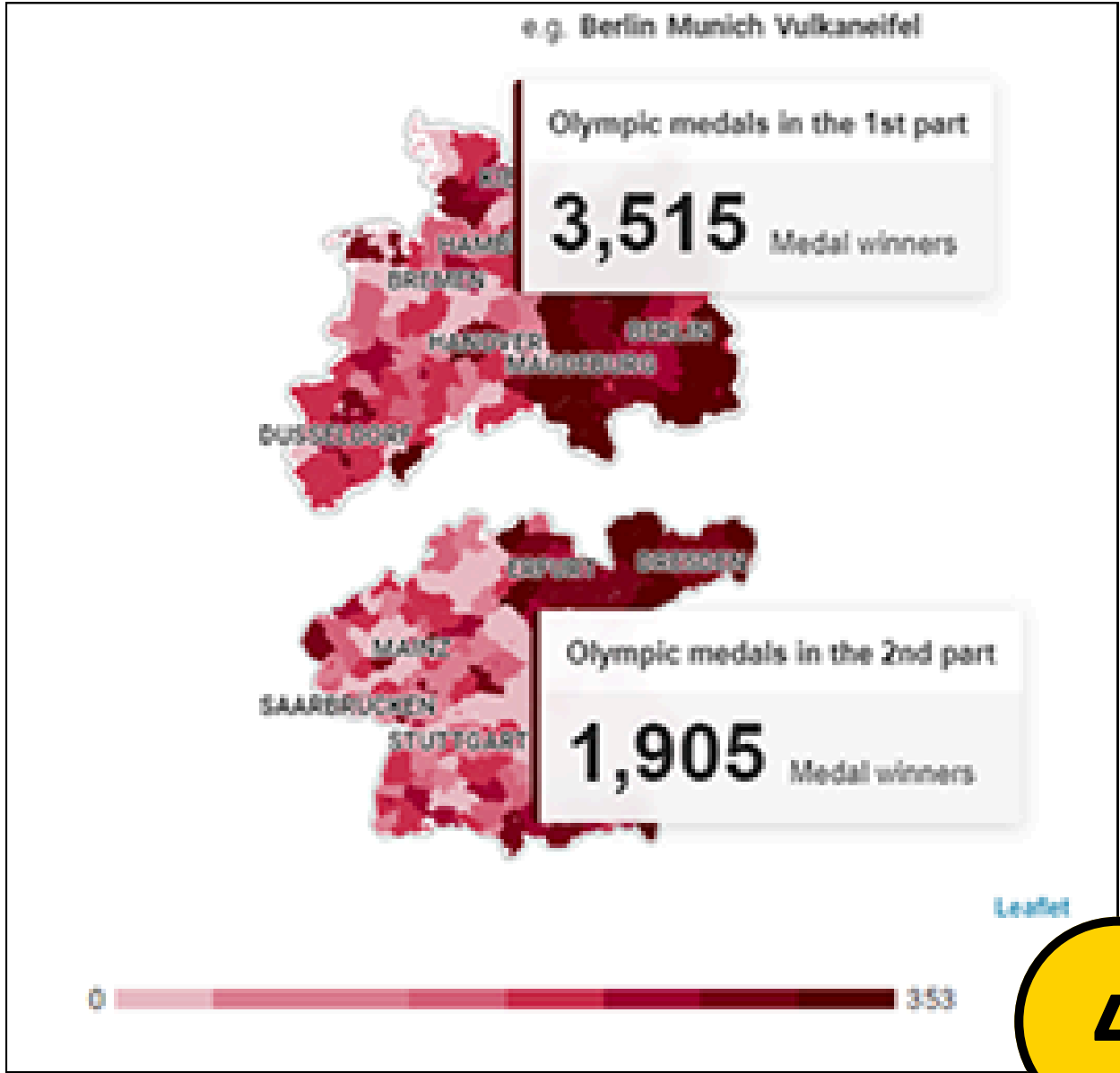
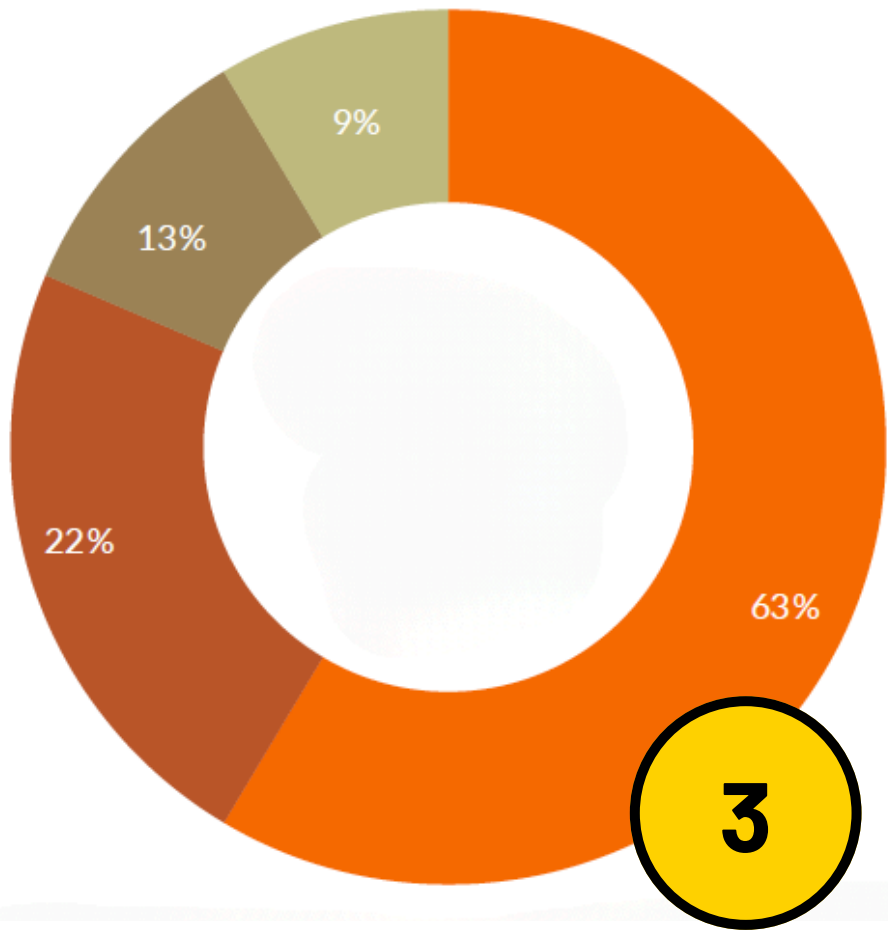
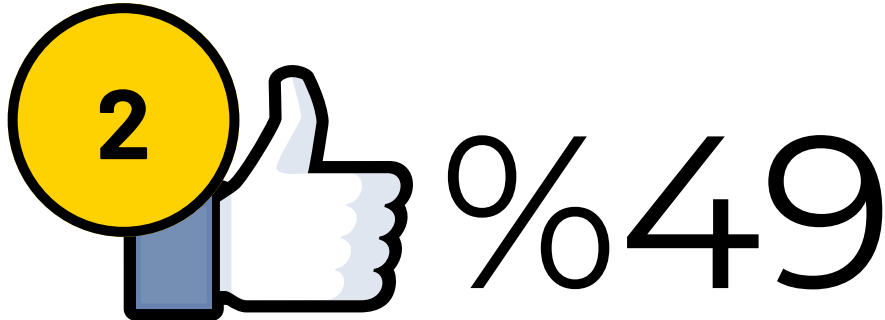
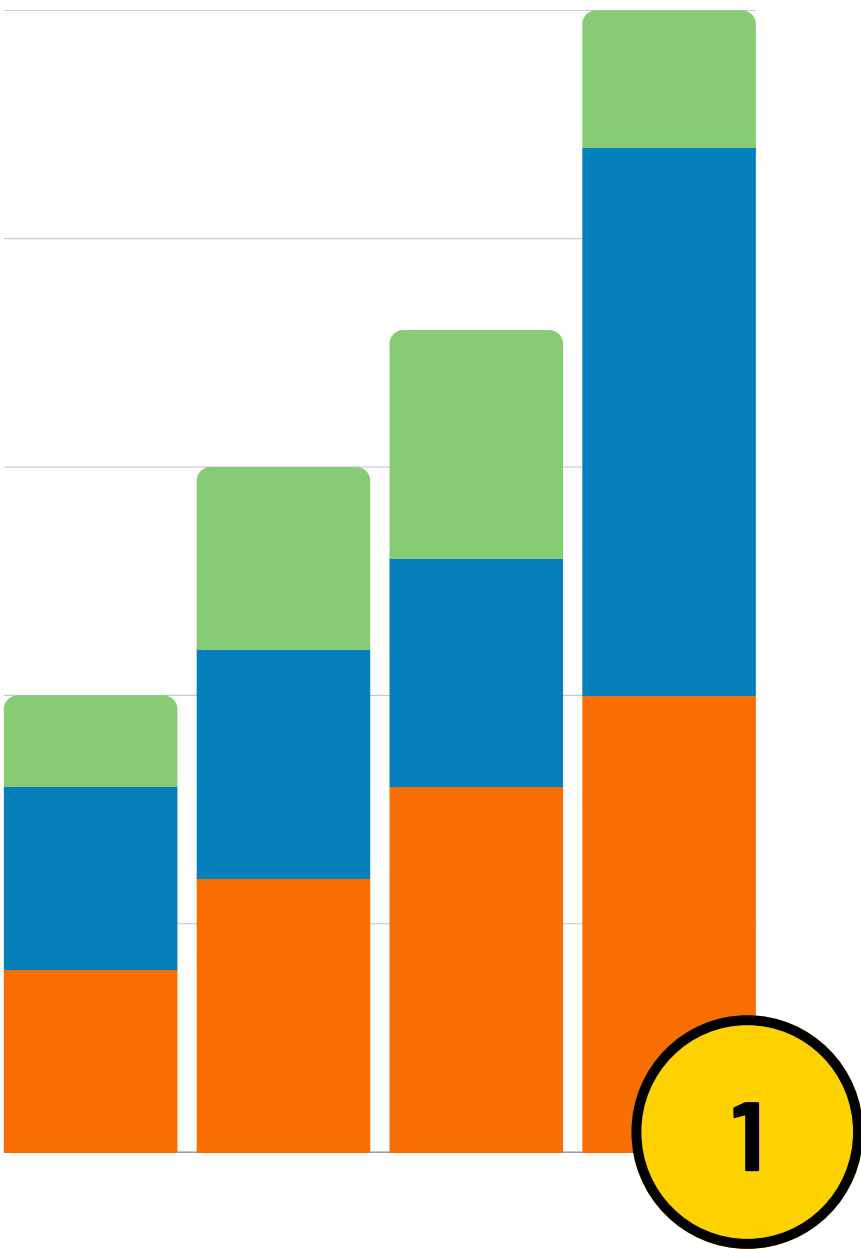
Why Should NGOs Do Data Visualization?

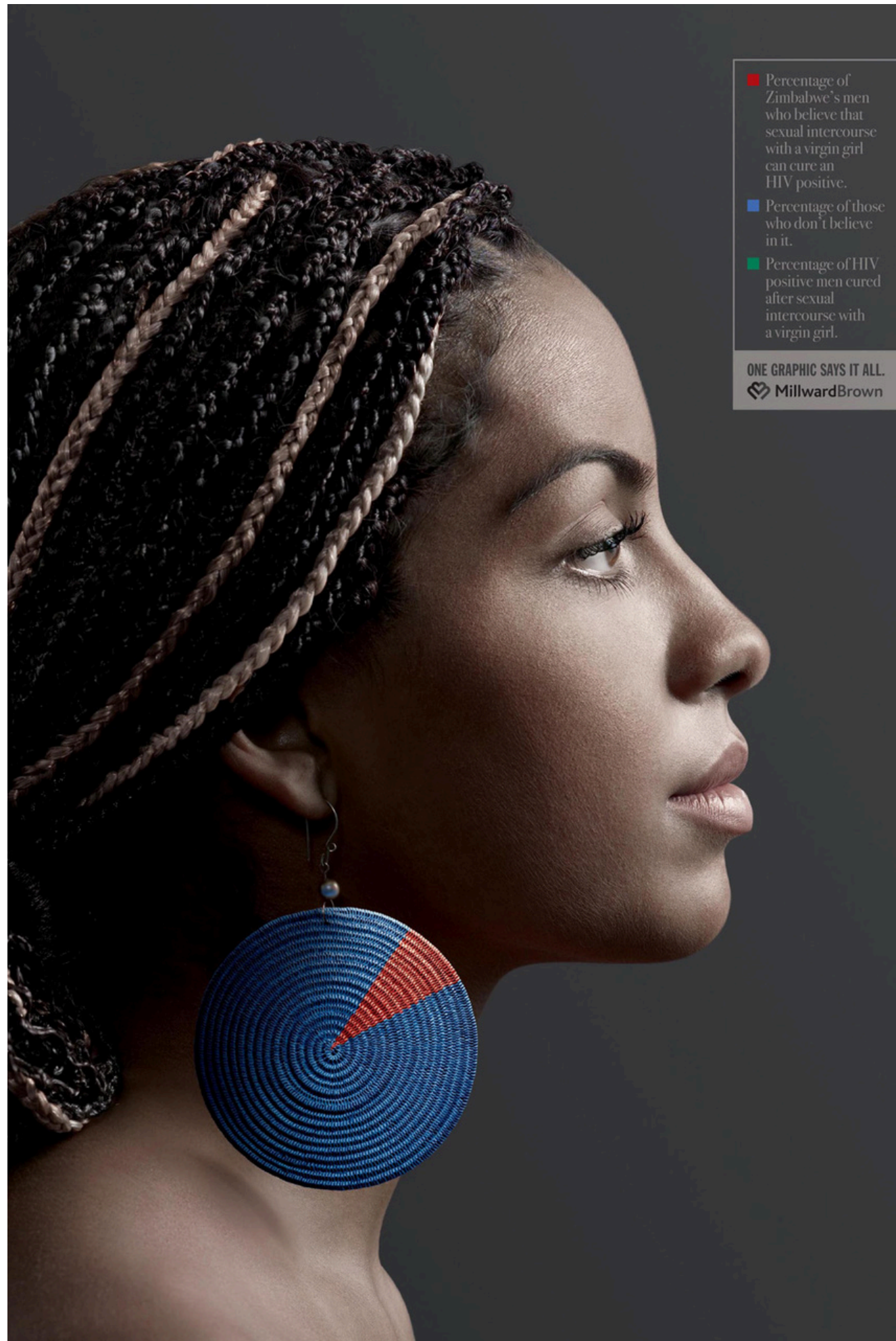
Data visualization reveals **different relationships**, opening the way to discover the most meaningful information for more emphasis or analysis.

It strengthens **decision-making processes**.

It can be used in **advocacy and lobbying activities** to inform our target audience, persuade them, make the problem visible and make them curious.

Which One is a Data Visualization?





Anatomy of Data Graphic

Axes

In many types of graphs, data is shown based on values on the X and Y axes. Examples: Column chart, line graph, histogram. In some types of graphs, X and Y axes are not used. Examples: Pie chart, tree map, and map charts.

Title and Subtitle

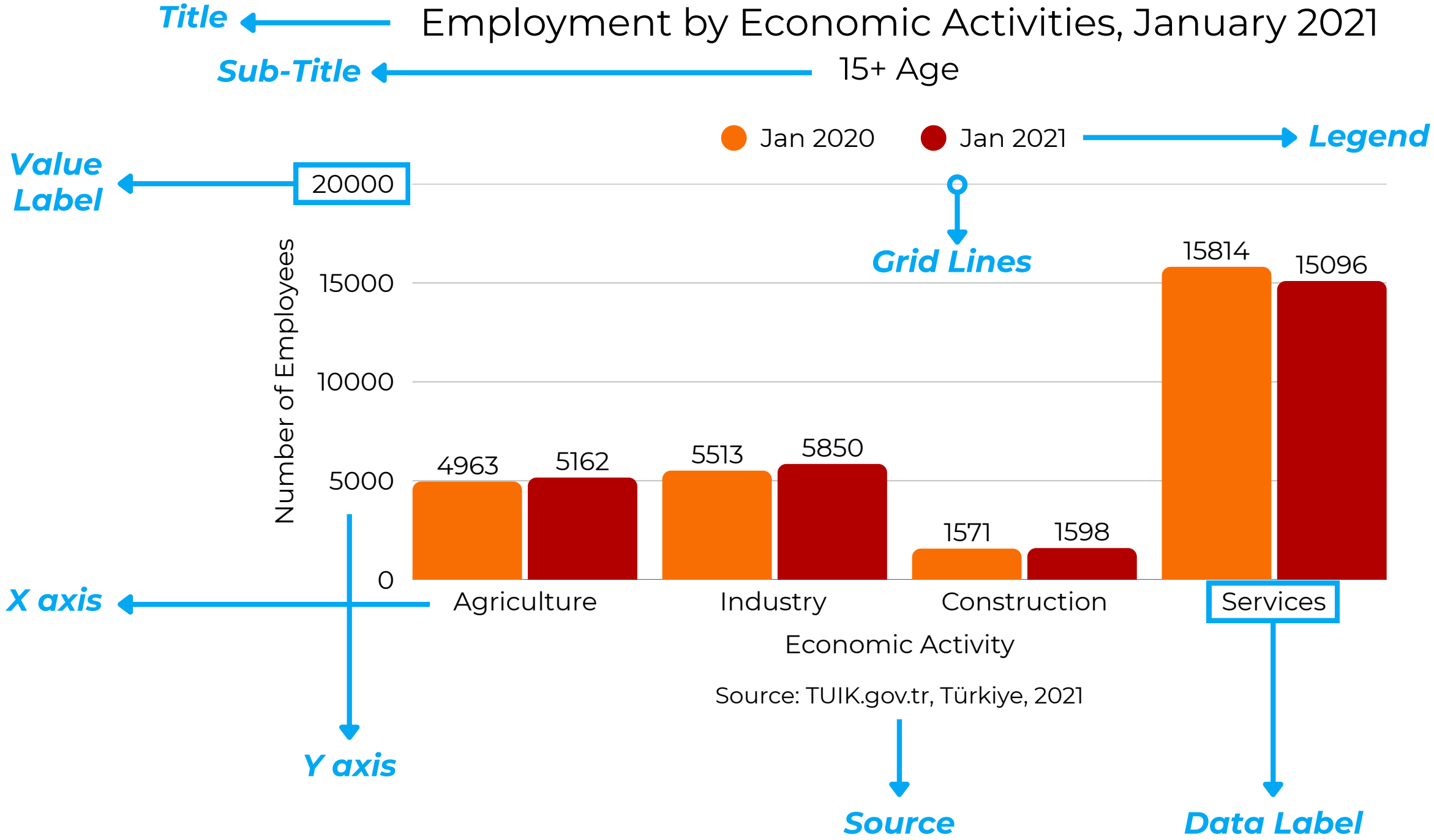
Every data visualization has a title that explains what the data is about. If necessary, a subtitle can also be used.

Description Text

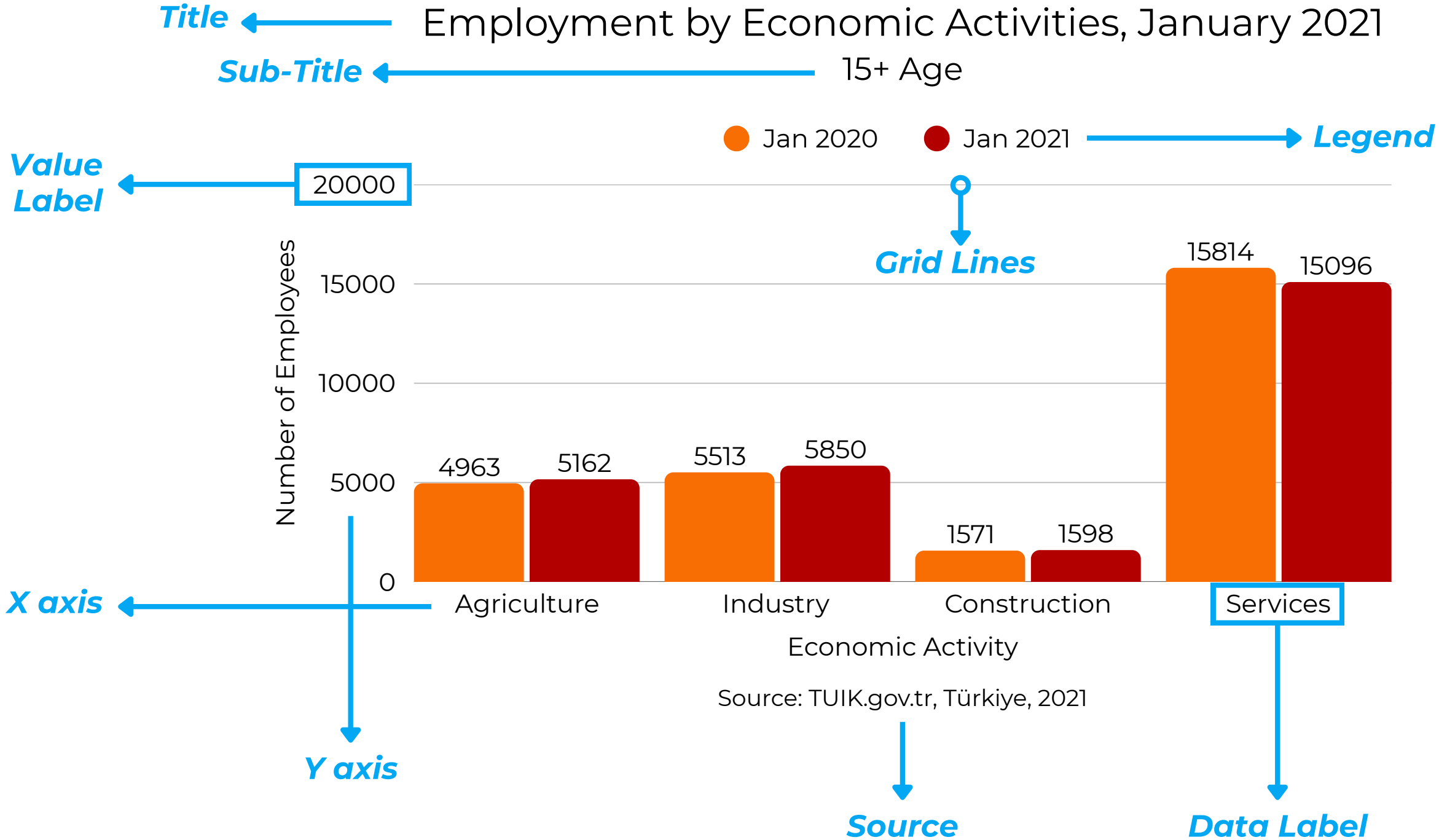
In many graphs, explanatory information about the graph is located mostly under the title.

Legend

A guide showing what the colors and symbols used in the graph represent.



Anatomy of Data Graphic



Labels

The small lines used to mark the values given on the axes are called value and data marks. The numbers or texts shown right next to the marks indicating what the value and data are are called labels.

Source

Usually, the source from which the data was obtained is specified at the bottom of the graph.

Grid Lines

Grid lines can be used to make the data in the graph easier to read. Grid lines are located in the background of the graph.

Principles of Data Visualization



The data you present must be accurate and understood correctly.

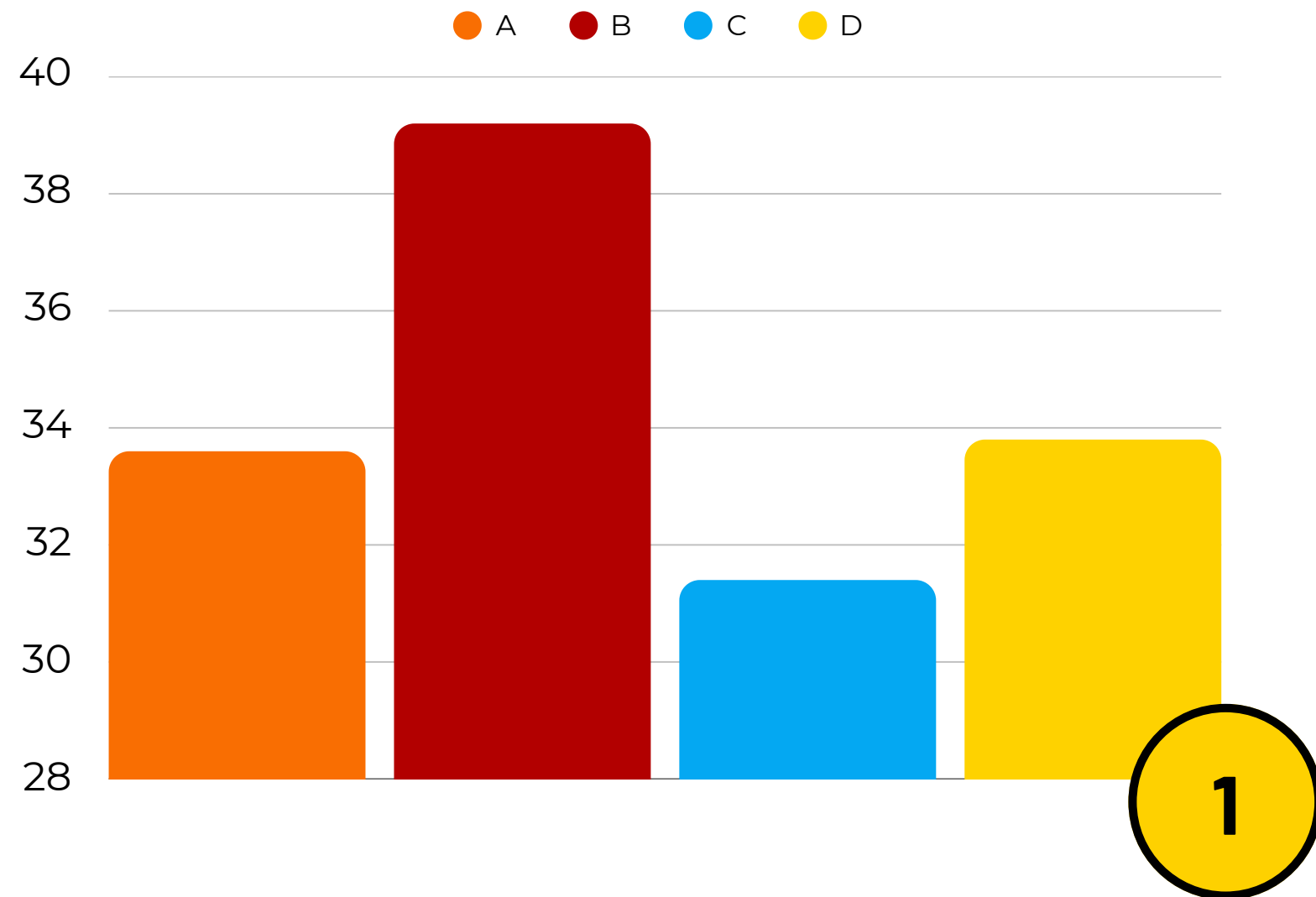
The accuracy of data covers not only numerical accuracy but also comparative accuracy.



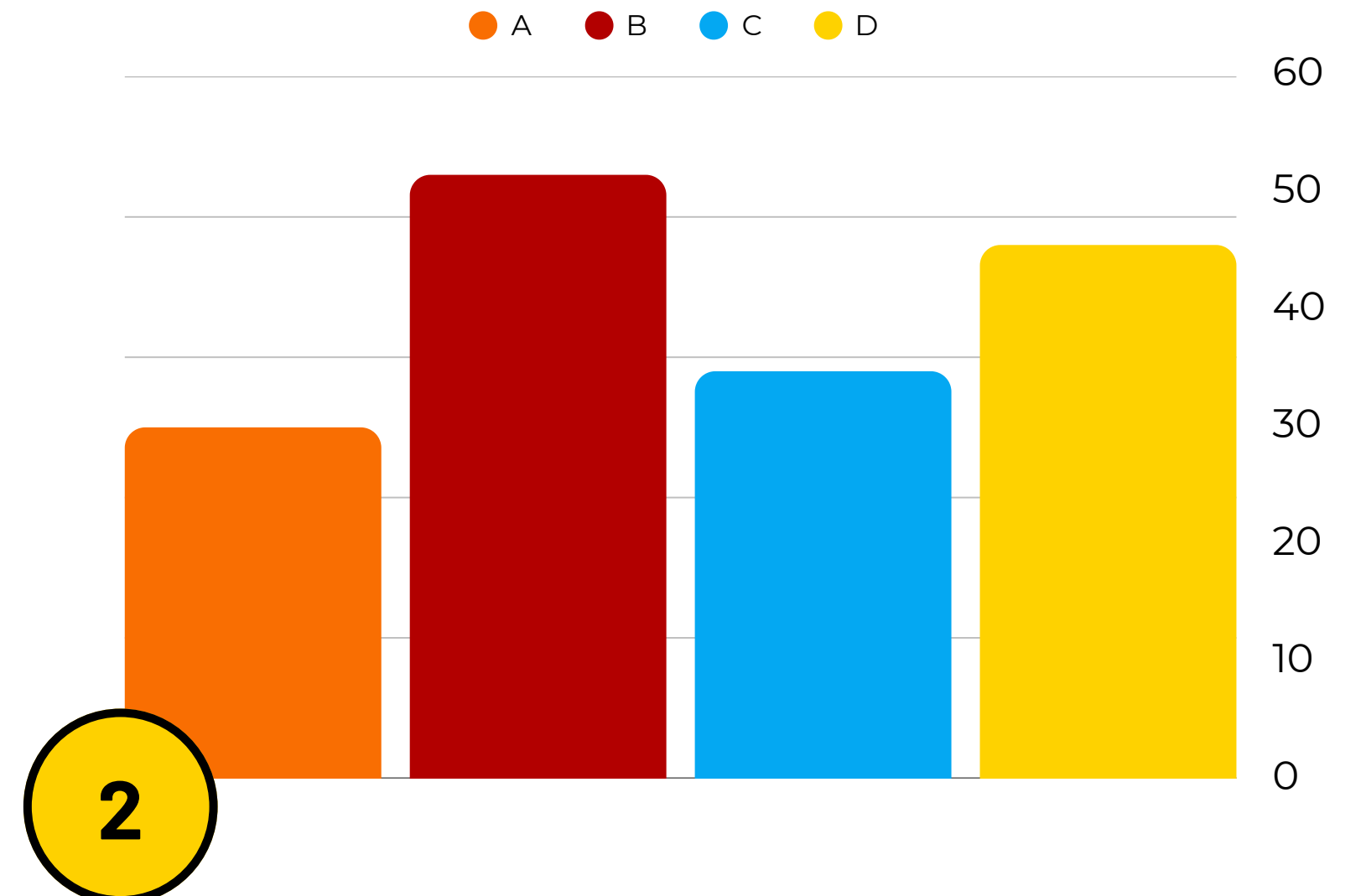
Data must be easy to understand. If people spend minutes trying to understand the data visual or if they get confused, you have not done a good visualization.

Principles of Data Visualization

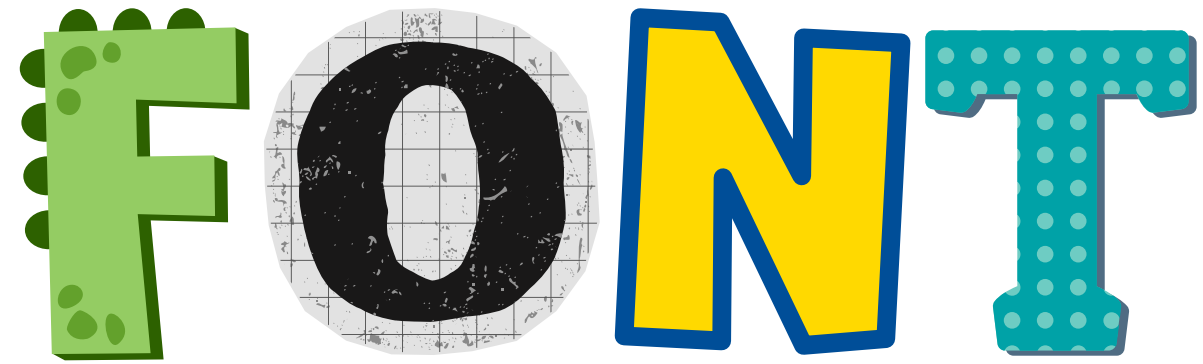
Number of patients who recovered by taking medications A, B, C, and D.



Number of patients who recovered by taking medications A, B, C, and D.



Principles of Data Visualization



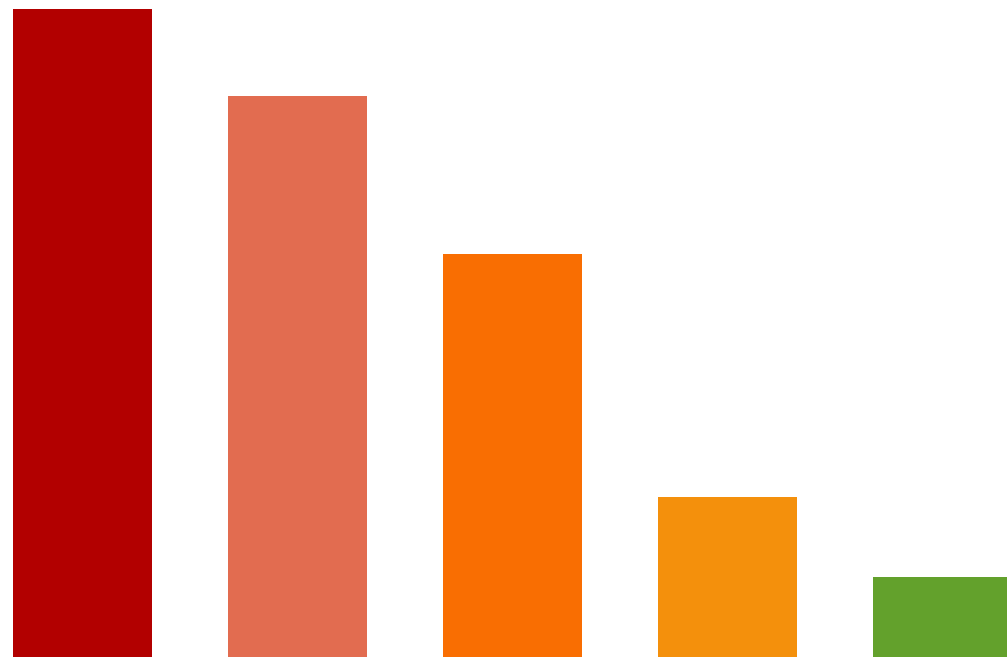
Use easy-to-read fonts. You can make the information you want to draw attention to more prominent with font sizes and boldness.



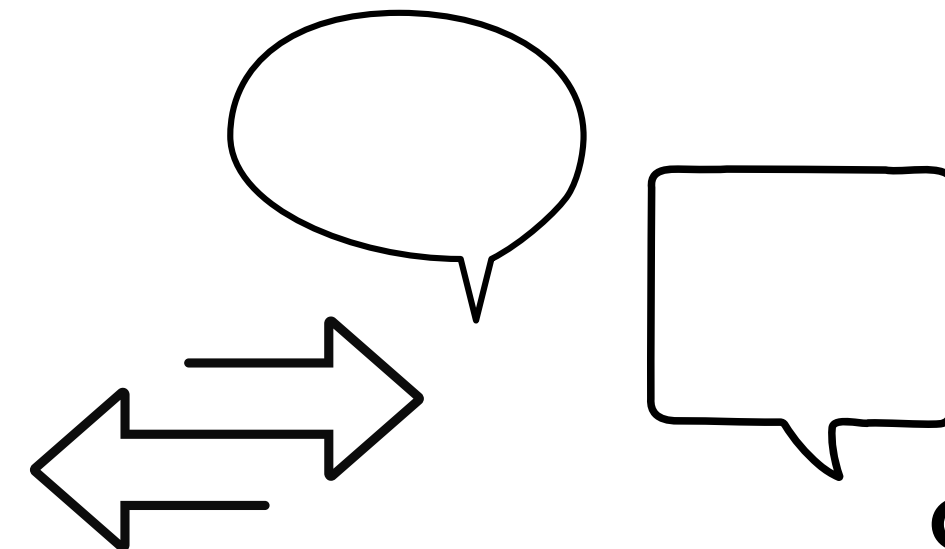
Use a **maximum of 5 colors** in a visualization. You can use colors to emphasize important information. *(If you don't have a specific (photo-based etc.) design)*

Principles of Data Visualization

Layout



Present data in a way that guides readers through a **logical hierarchy**.



Callouts

Use elements such as **callouts** and **speech bubbles** only for important data you want to highlight.

Principles of Data Visualization

Illustrations should only be used if they improve the content. They should be compatible with other visuals in terms of color and tone.



Principles of Data Visualization

When there is too much information in a visualization, messages can appear confusing and disorganized. Be careful to **use spaces** in the visualization.



Saving a life costs very, very little

Sample pricing in 2013 of vaccines contracted with suppliers by UNICEF, the world's largest vaccine buyer.



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Sample pricing in 2013 of vaccines contracted with suppliers by UNICEF, the world's largest vaccine buyer.

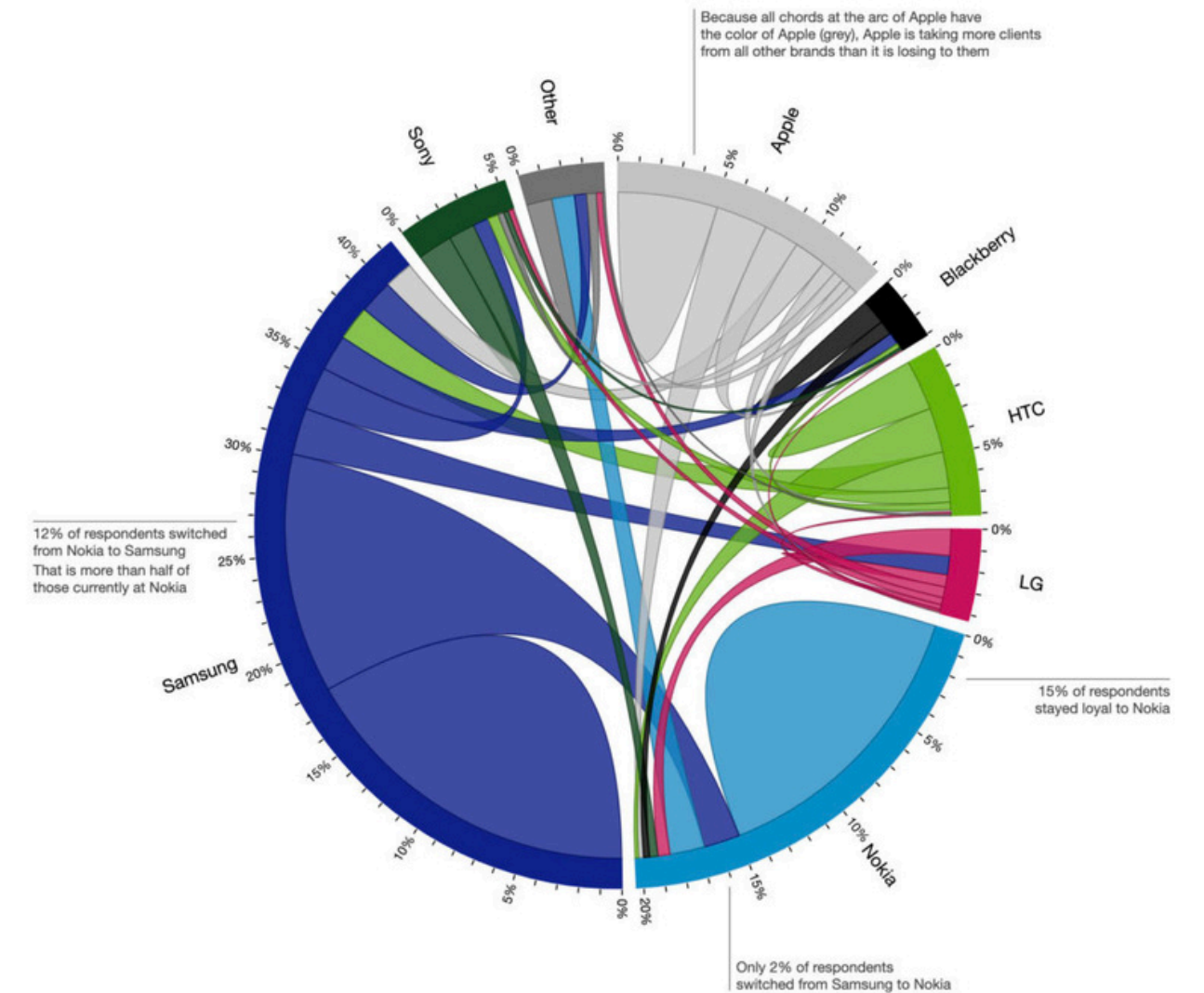


Principles of Data Visualization



Icon

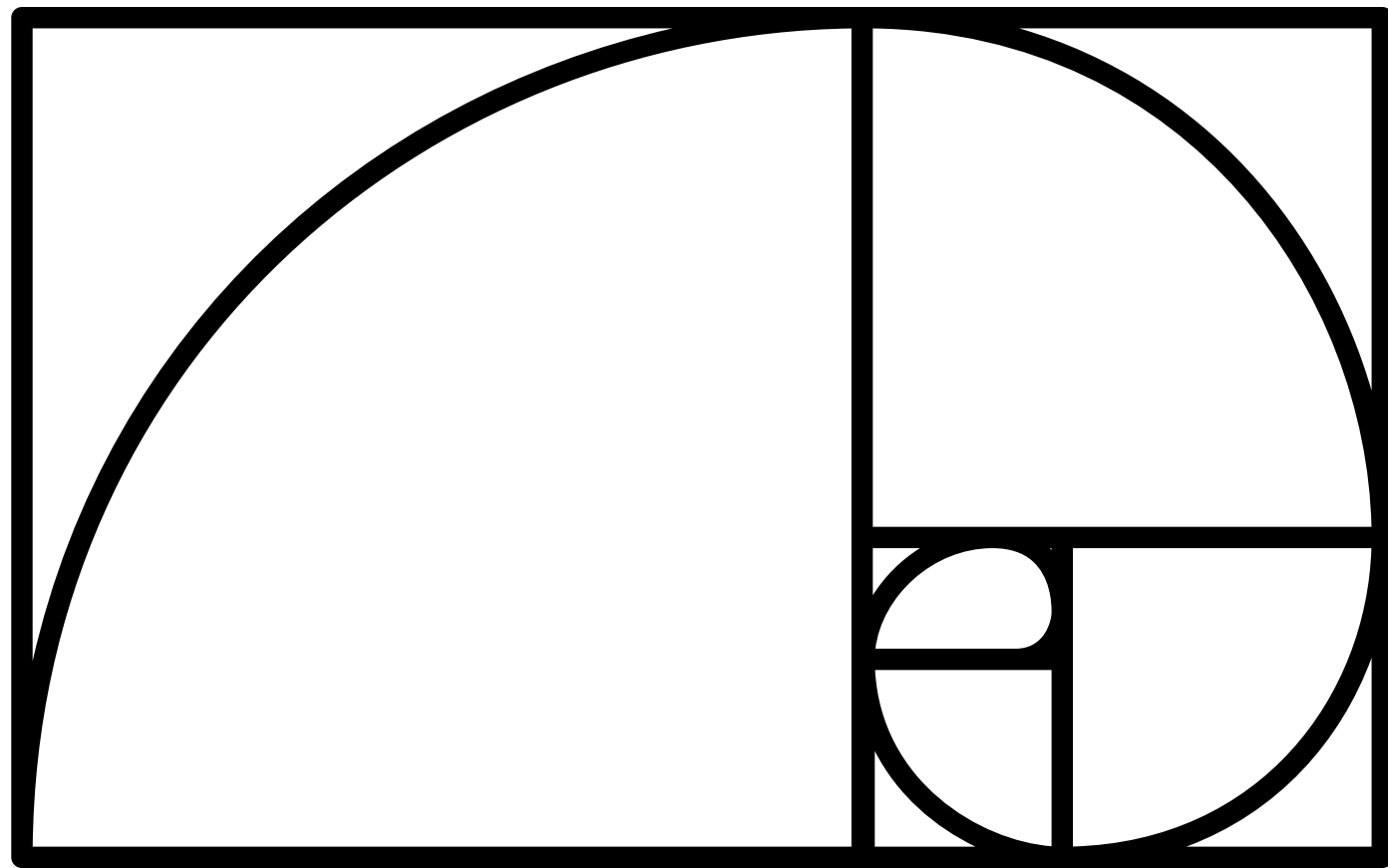
Icons should be easy to understand and universal. Icons that will confuse users should not be included.



Data Density

If a single data graph is sufficient for a piece of data, do not overwhelm the reader with multiple data points.

Principles of Data Visualization



Proportion

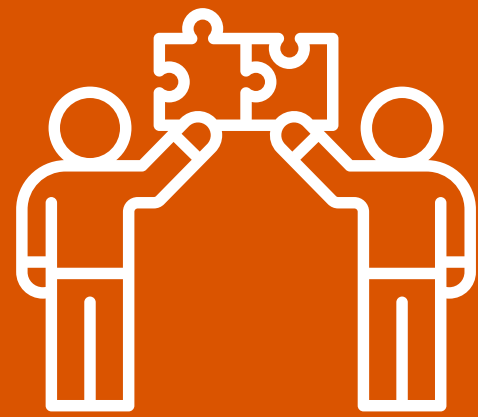
Ensure that data is given in appropriate intervals and sizes. Disproportionate visualization will lead to a wrong perception.



Simplicity

There should be no extra elements in your data visualization. Remember, the simpler it is, the more understandable it is.

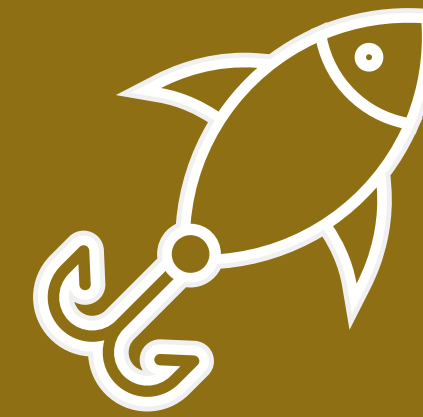
Key Points for Effective Visualization



The key principles of good data visualization allow the visualization to understand the data—**enabling readers to understand the data faster or understand the story in the data.**



You need to think about who **your audience is** and what they need, and above all, ensure that your data does not misrepresent the data in any way.



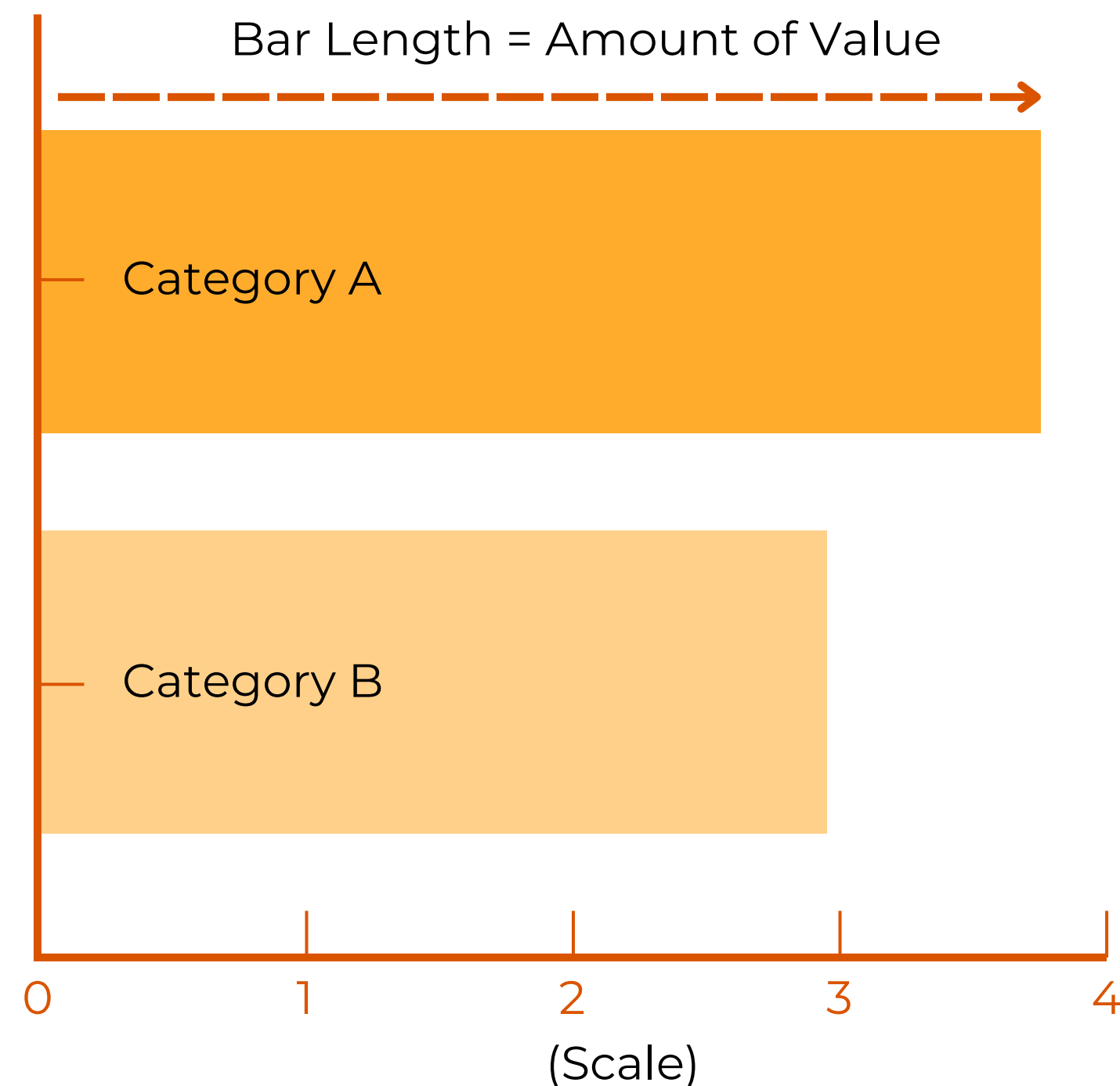
Data visualizations should be **attractive**, but being attractive does not require it to be complicated with decorations that will make it difficult for the reader to understand.

Graphic Types

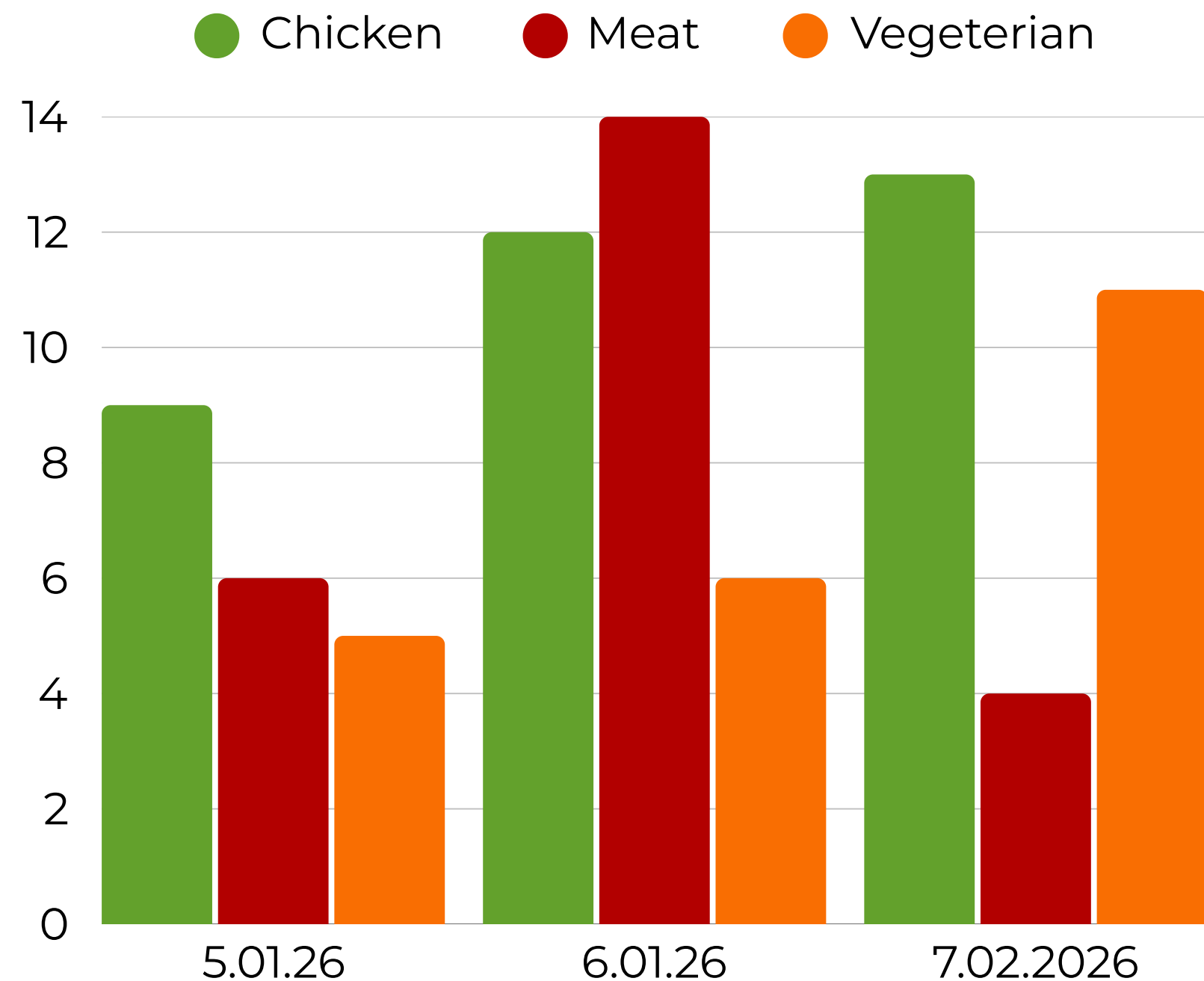


Column (Bar) Chart

- The column chart is one of the **most common graph** types, also known as a bar chart.
- It is used to show **numerical comparisons** between values.
- Each column represents a specific category. The length of the column shows the value.
- A vertical column chart is used to show how a **value changes over time**.
- In horizontal column charts, **categories** are used on the vertical axis and values on the horizontal axis.
- Use a stacked column chart to show the total amount and the sub-category amount at the same time. Grouped column charts are used for comparison.



Column (Bar) Chart



Do

- Columns should be in the appropriate order. Unless there is a clear natural order such as size, age, or time, the order of magnitude is generally best.
- The axis must start at zero and be clearly stated.

Don't

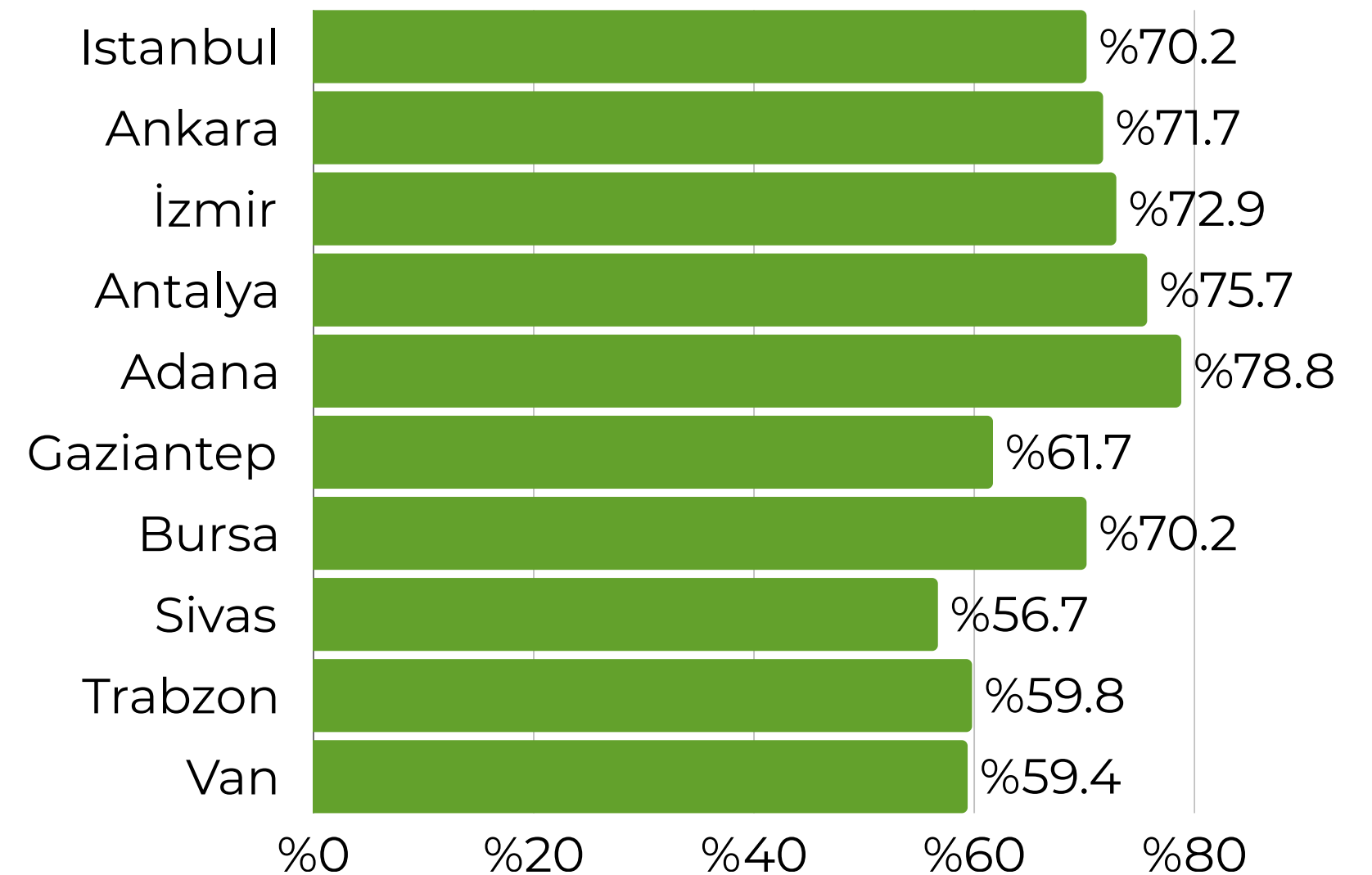
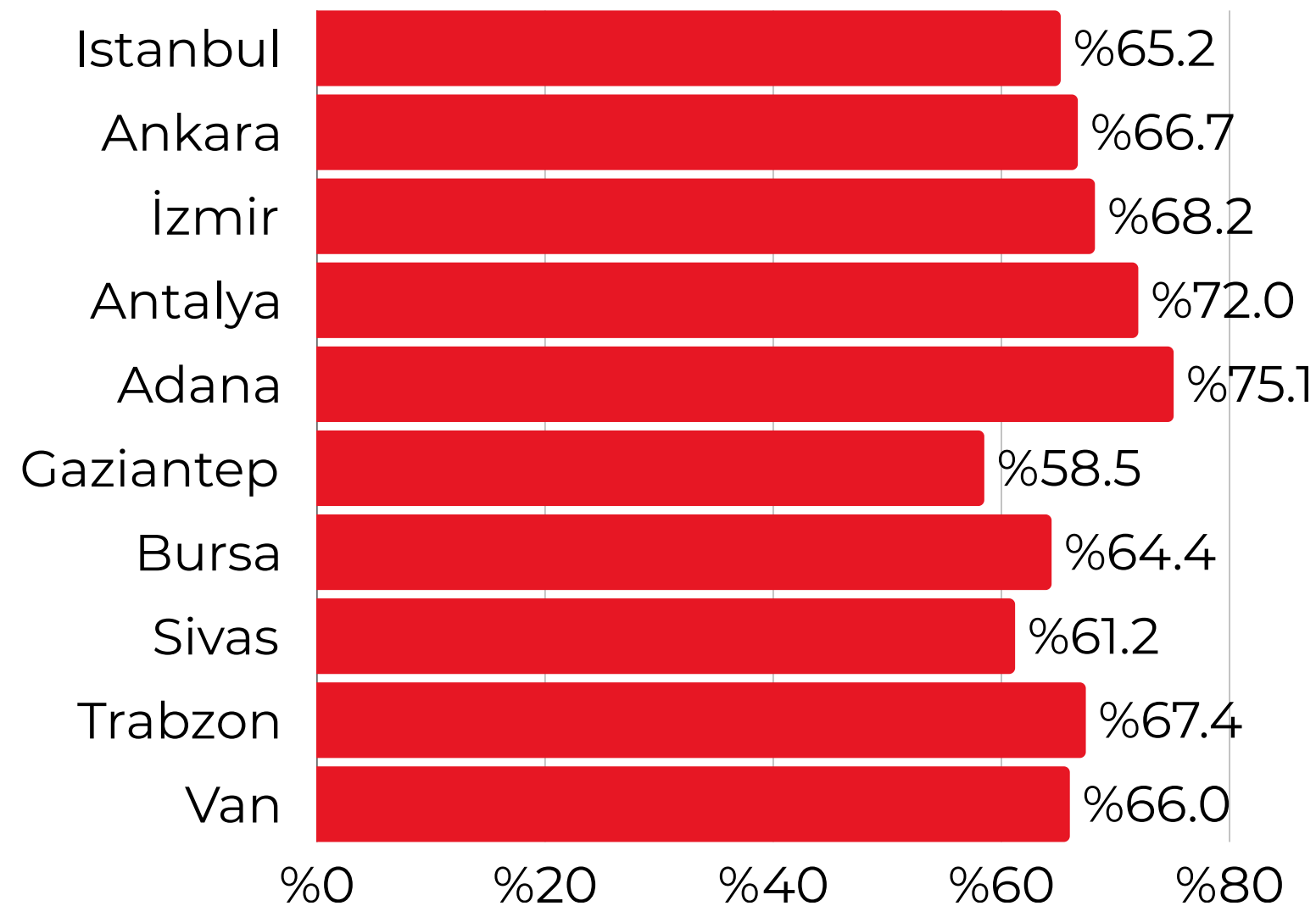
- Avoid using 3D effects for columns, as they can make data look too large and confuse the viewer.
- Do not use alternating colors in the barriers; the viewer will think the colors mean something.

ATTITUDES TOWARDS GENDER ROLES BY PROVINCE

Percentage of women who participated in the aforementioned interviews regarding gender roles, Türkiye 2014

“A woman should be able to spend her money as she wishes.”

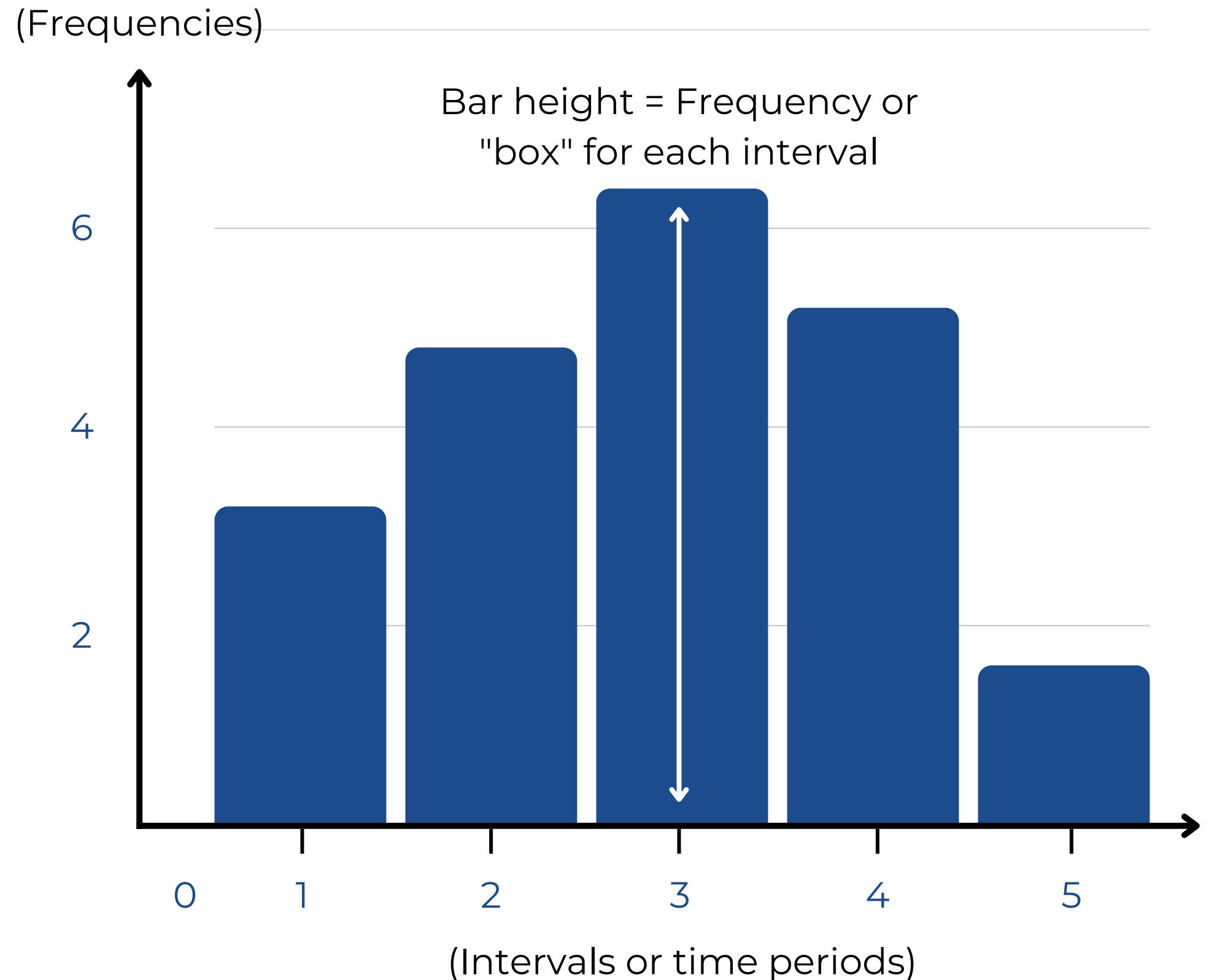
“Men should also do household chores such as cooking, washing dishes, and ironing.”



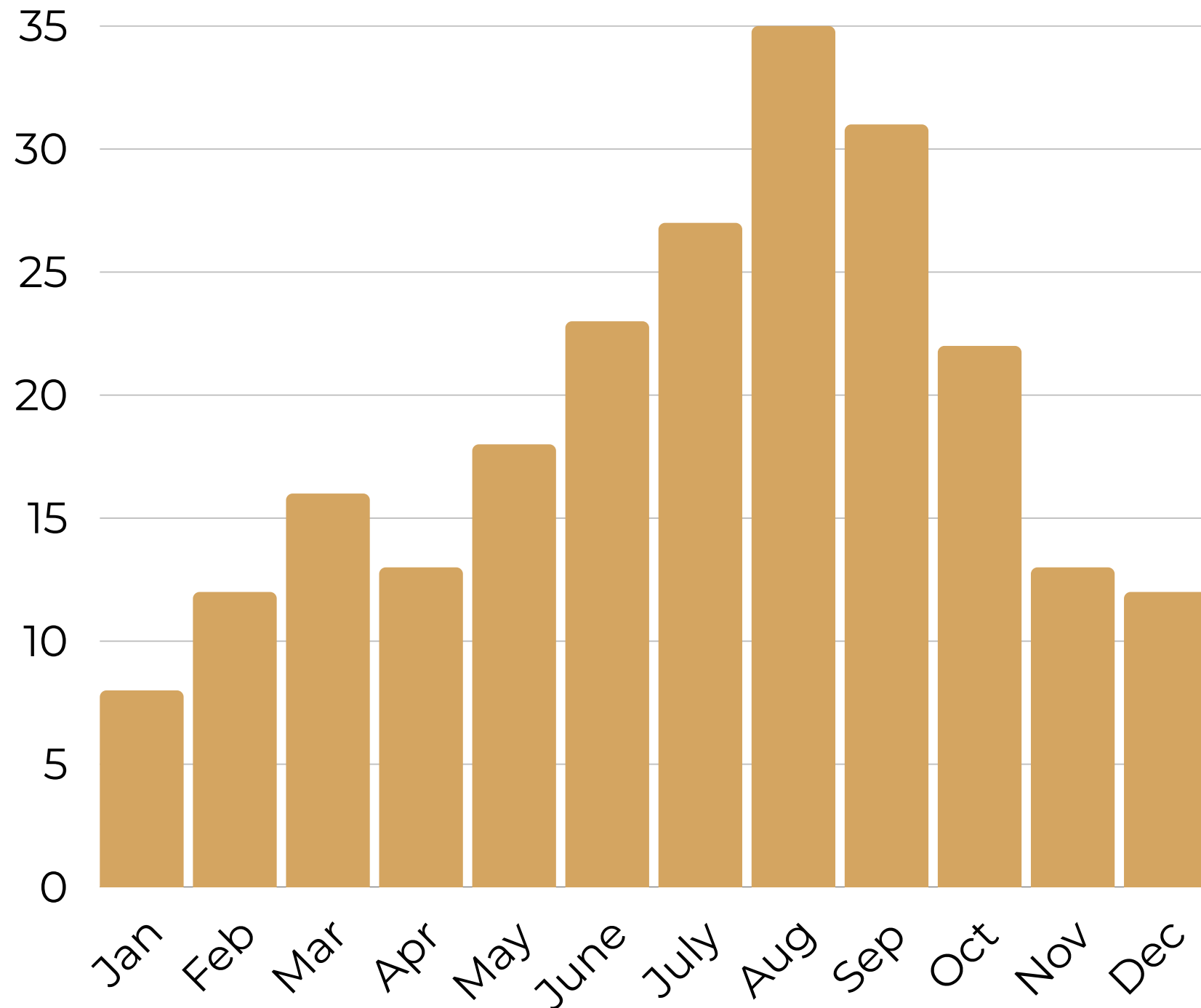
Source: A hypothetical university

Histogram

- A histogram is a method of graphically showing groups of numbers according to how often they appear.
- In a column chart, the discrete data are categorical data and therefore answer the "how many" question.
- In a histogram, each bar represents the table frequency in each interval/box.
- Histograms help to make an estimate of **where values are concentrated**, what the **extremes** are, and whether there are any gaps or unusual values.



Histogram



Do

- A histogram has a scale on both the X and Y axes.
- Histograms are based on the area, not the height of the bars.
- Ensure that the sum of the values shown by all bars is equal to the numerical value of the data used in the graph.

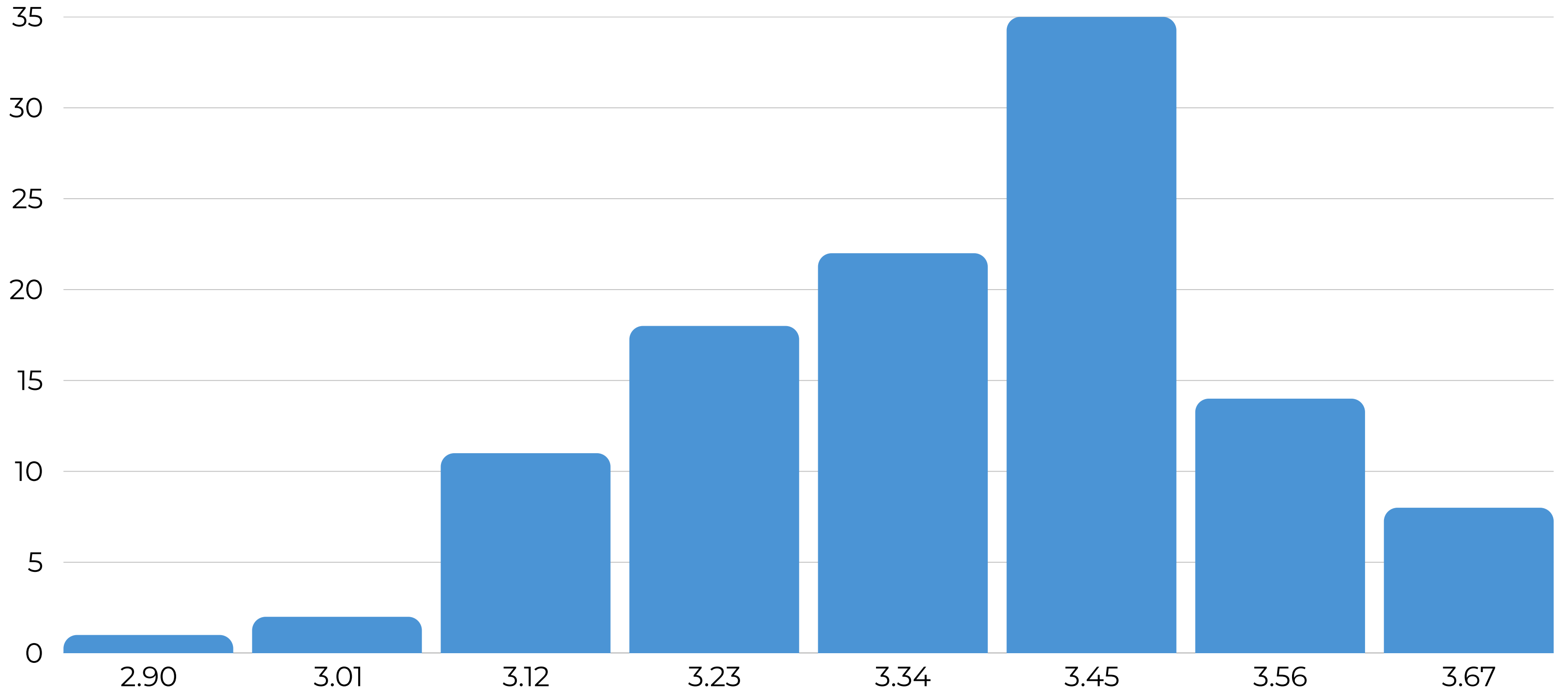
Don't

- Ensure that the bars are not too wide or too narrow.
- Do not leave too much space between the bars in a histogram.

Table: Frequency chart for baby boy weights.

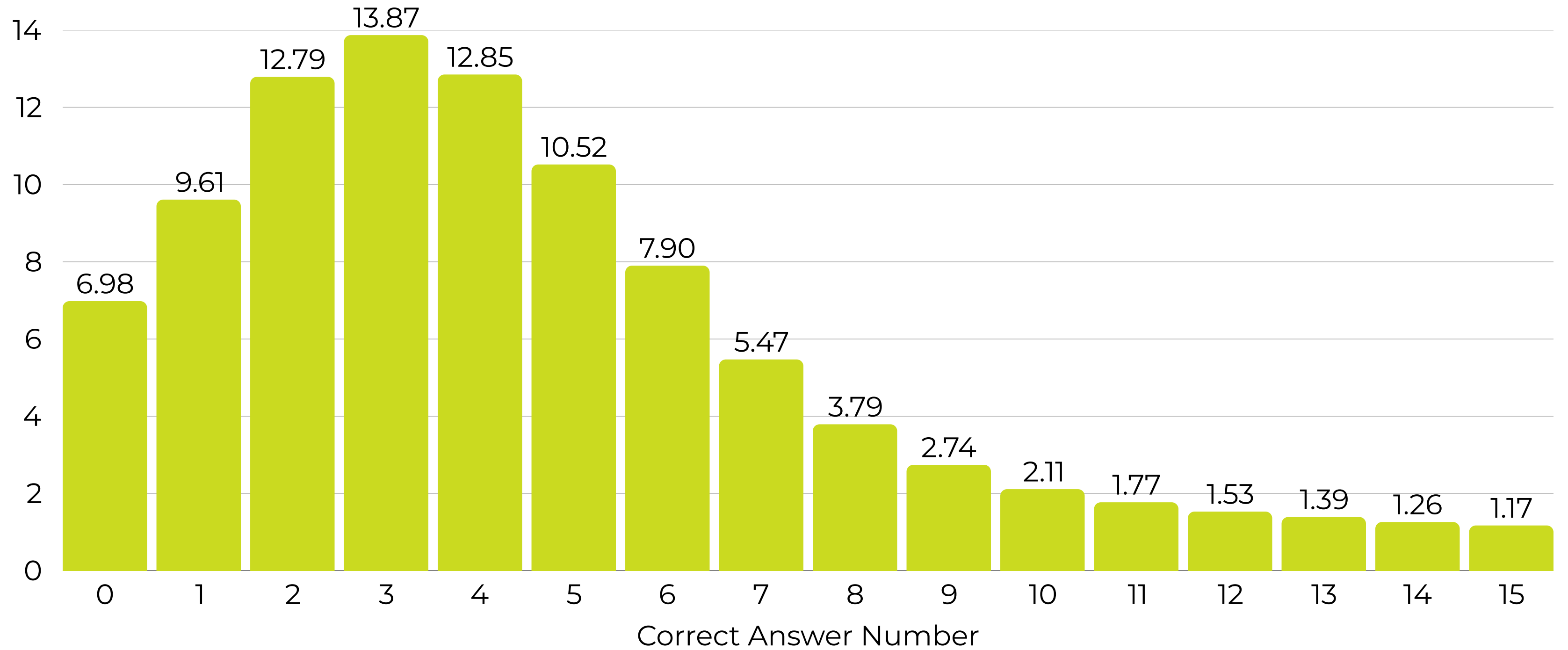
Class Mark	Frequency	Relative Frequency
2.9	1	0.01
3.01	2	0.02
3.12	11	0.09
3.23	18	0.15
3.34	22	0.18
3.45	35	0.29
3.56	14	0.12
3.67	8	0.07

X HOSPITAL MALE BABY BIRTH WEIGHTS



Source: X Research Comp.

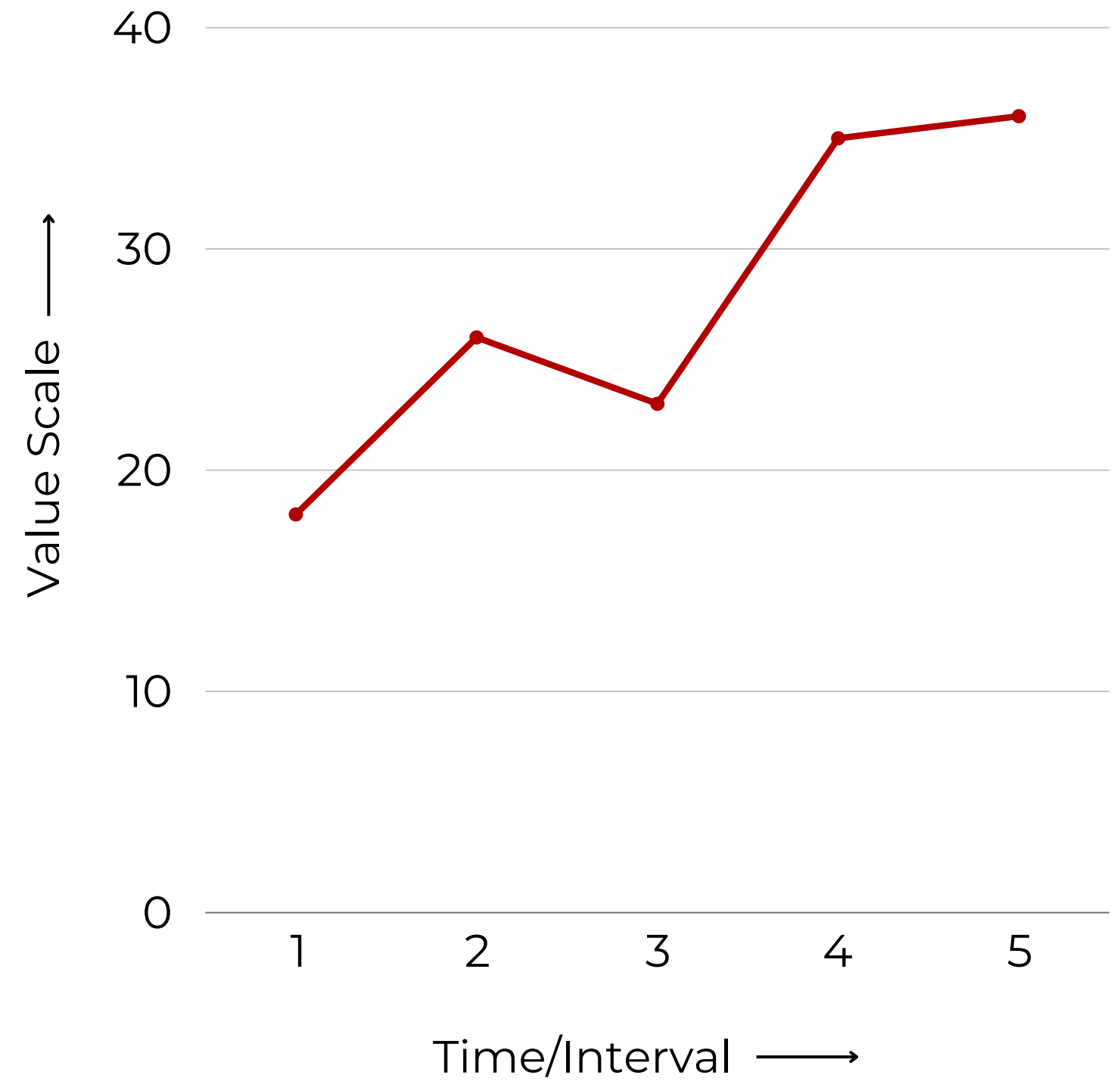
2019 UNIVERSITY ENTRANCE EXAM MATHEMATICS SECTION CORRECT ANSWER DISTRIBUTION



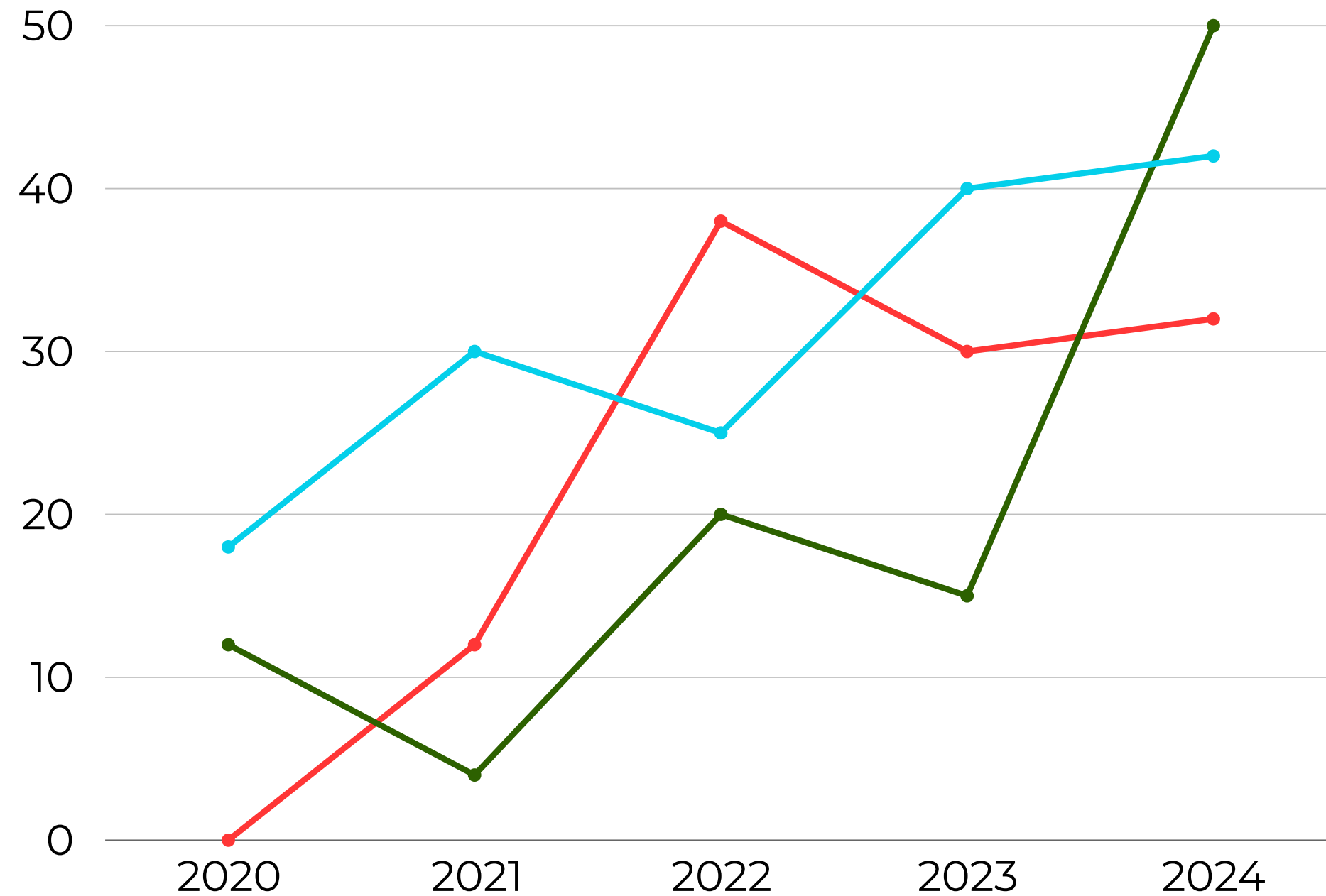
Source: X Research Comp.

Line Graph

- A line graph is best used to present a series of values that **change over time**.
- Time is always on the horizontal axis, and frequency is on the vertical axis.
- It is most frequently used to show **trends** and analyze how data changes over time
- The direction of the lines serves as a good metaphor: an upward slope indicates increasing values, and a downward slope indicates decreasing values.
- The progression of the line across the graph can create models that reveal trends in a data set.



Line Graph



Do

- Start the Y-axis from zero; if you don't, you may hide data.
- Use one line for each data set.
- Be sure which line is which.

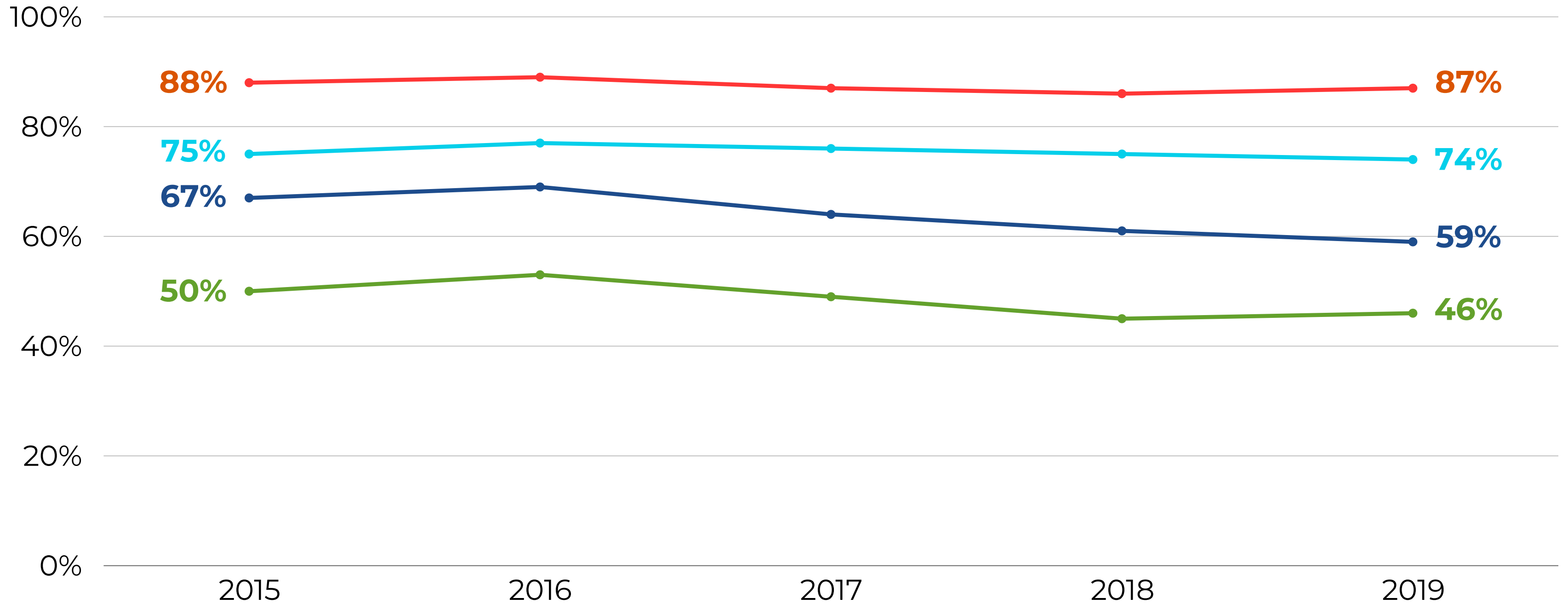
Don't

- Use line graphs only for numerical data; choose another graph type for categorical data.
- Do not use too many lines, as they can be difficult to read diagonally.

SOURCES OF NEWS

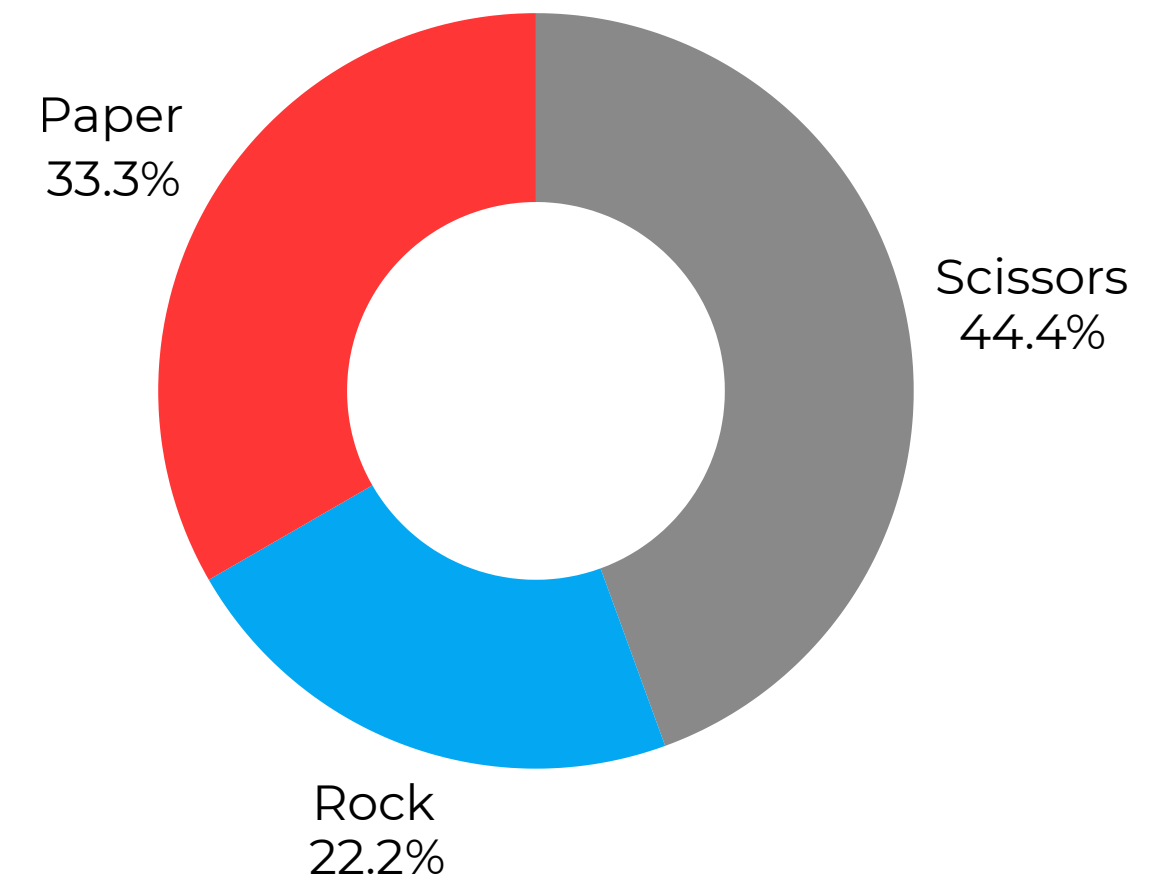
News sources used by participants in Turkiye between 2015 and 2019

● Online ● TV ● Print ● Social Media



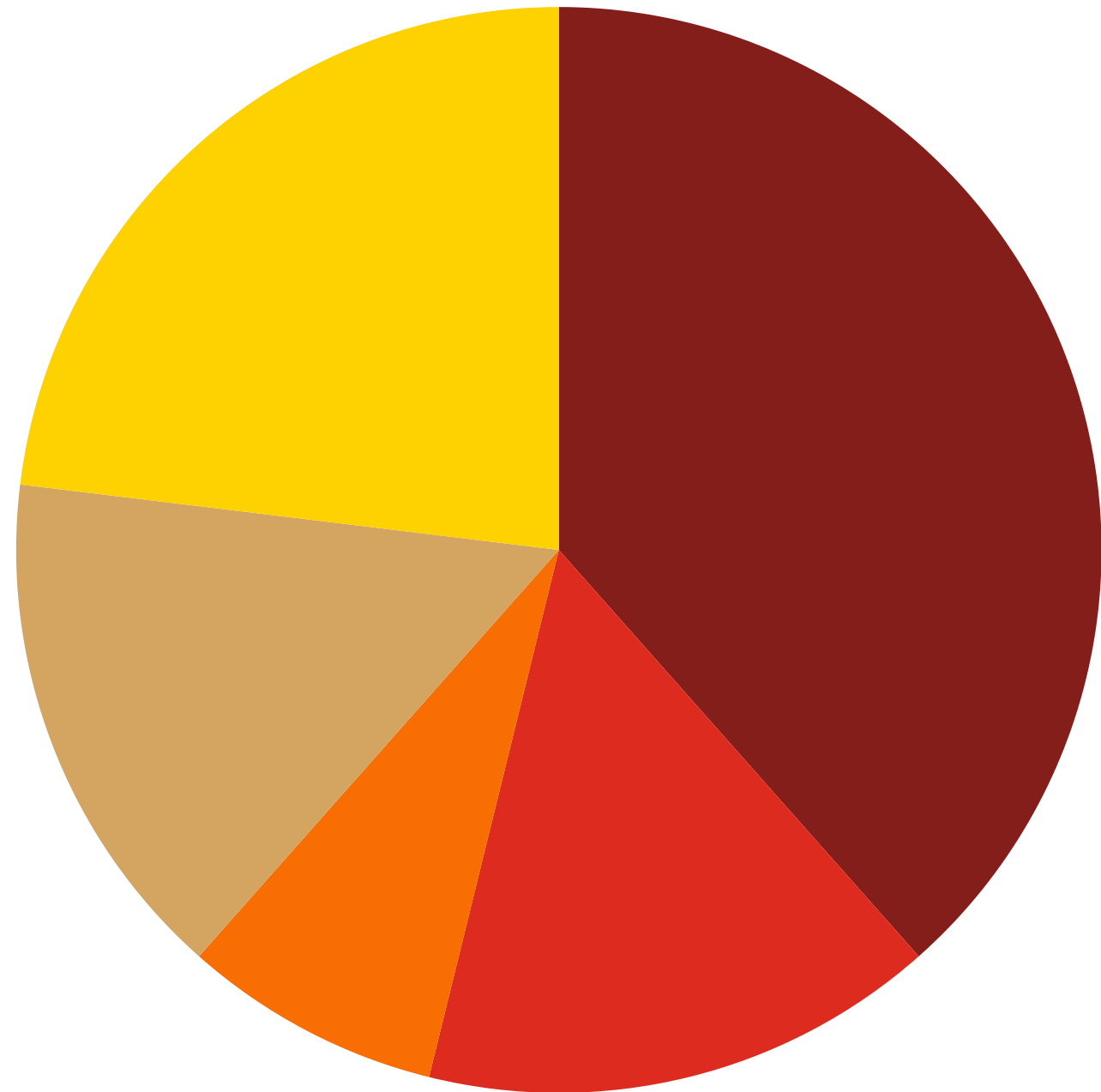
Pie and Donut Chart

- Pie and donut charts are **circular** graphs that show how different categories contribute to the total by comparing them.
- They divide your entire data set into different groups. This means if you add the frequency of each slice together, you should get 100%.
- Pie charts are less useful if all slices **have similar sizes**.
- These graphs **do not have an axis**.
- A pie chart is suitable for one data set, while a donut chart can be used for multiple data sets. Each ring of the donut chart represents a data set.



DATA			
Rock	Paper	Scissors	Total
2	3	4	9
PERCENTAGES			
$2/9=22.2\%$	$3/9=33.3\%$	$4/9=44.4\%$	100%

Line Graph



Do

- **Limit** the number of slices in the pie chart.
- Sort slices clockwise **from the largest** values to the **smallest slices**.
- If there is a slice that does not fit into a category, group it as “other”.

Don't

- Some data types are not suitable for pie charts. For example, do not use a pie chart for survey responses where participants are given more than one answer option.
- If you have **more than 6 variables**, do not use a pie chart.

Example

The following table shows the frequency of educational levels of the mothers of 120 students in a school.

Table 3: Frequency table of mothers' education levels.

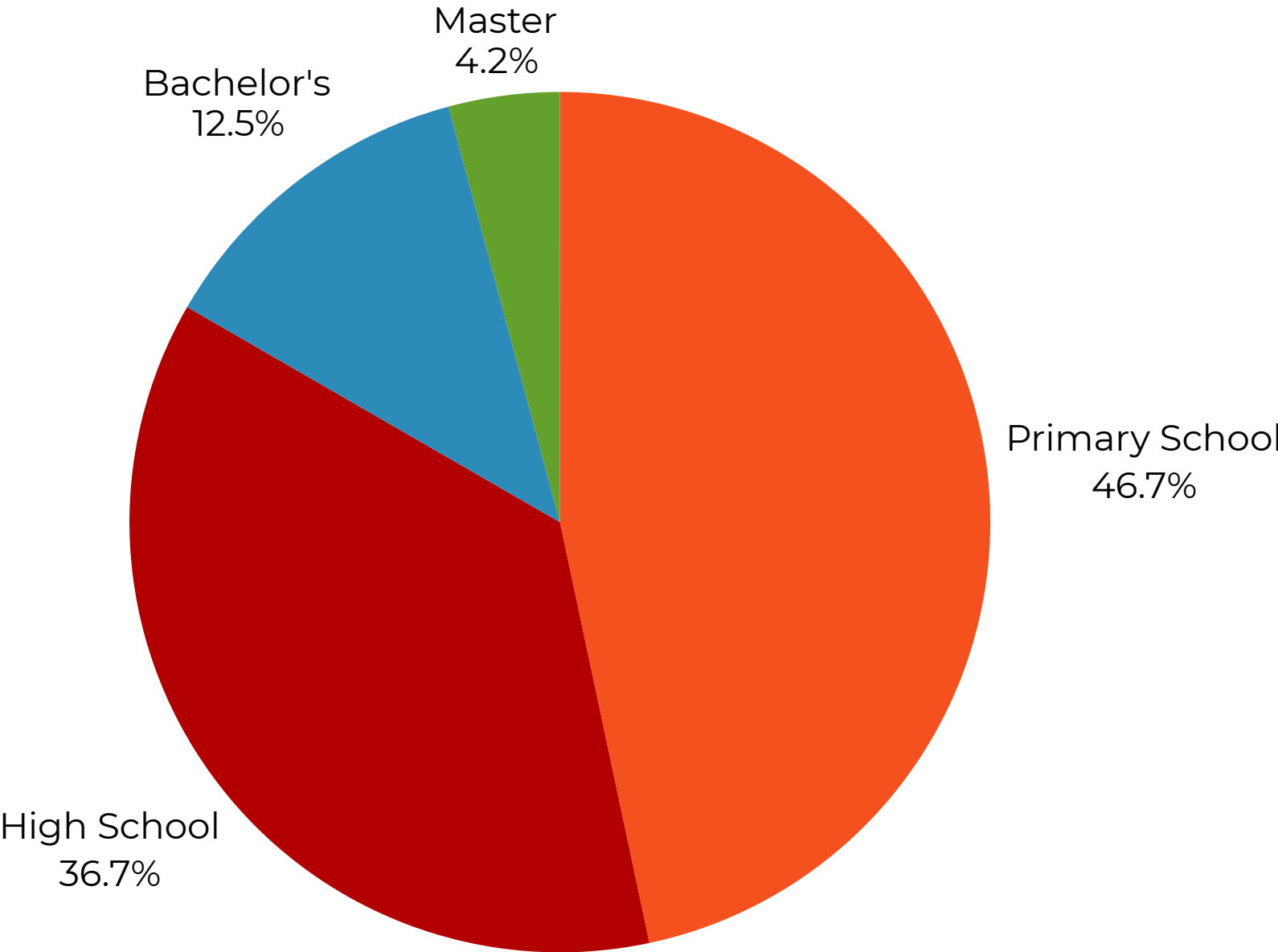
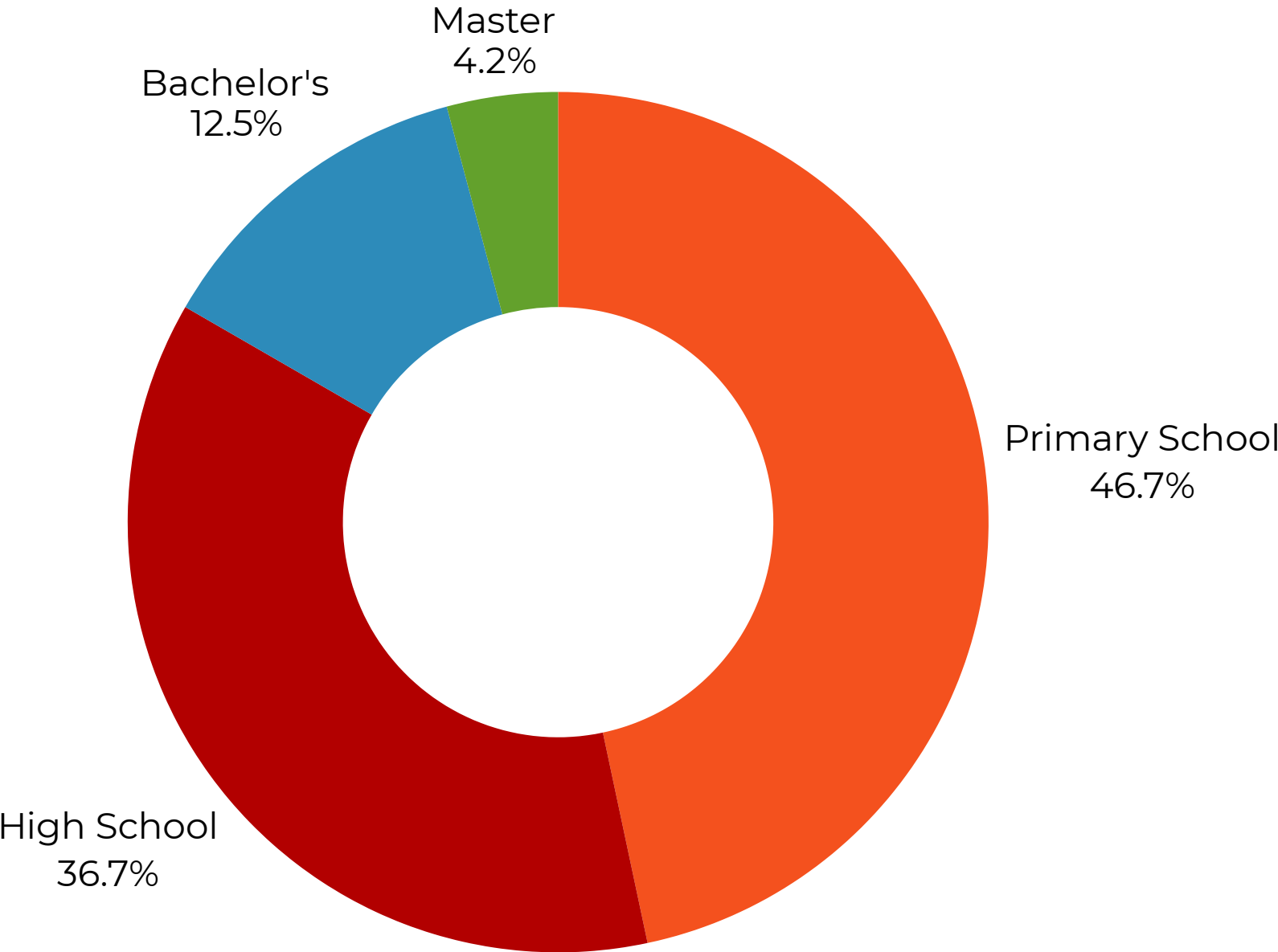
Class	Frequency	Relative Frequency
Primary	56	56/120
High School	44	44/120
Bachelor's Degree	15	15/120
Master Degree	5	5/120

Source: Babacan, E., & Kemaloğlu, S. (2013). Frequency distributions. Retrieved October 13, 2013 from <http://acikders.ankara.edu.tr/mod/resource/view.php?id=452>

EDUCATIONAL BACKGROUND OF PARENTS AT SCHOOL X

- Primary School
- High School
- Bachelor's
- Master

- Primary School
- High School
- Bachelor's
- Master





the presentation is over

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