

Principle of Data Visualization

How to choose the right chart type for
your data presentation



What we will cover....

- ☞ Why data visualization?
- ☞ What is data visualization?
- ☞ Choosing the right chart type
- ☞ What you should keep in mind when visualizing data?

Why data visualization?

- 👉 Difficult or even impossible to read data table to extract important information.
- 👉 Human brain can easily digest visual stuffs.
- 👉 Summarize data where it provides meaningful information.
- 👉 Well, it's eye-catching...

Data visualization- What is it? And What is not?

- ☞ **IT IS** the process of the attempt to transform data into visual feature displaying pattern, trend, and relationship.

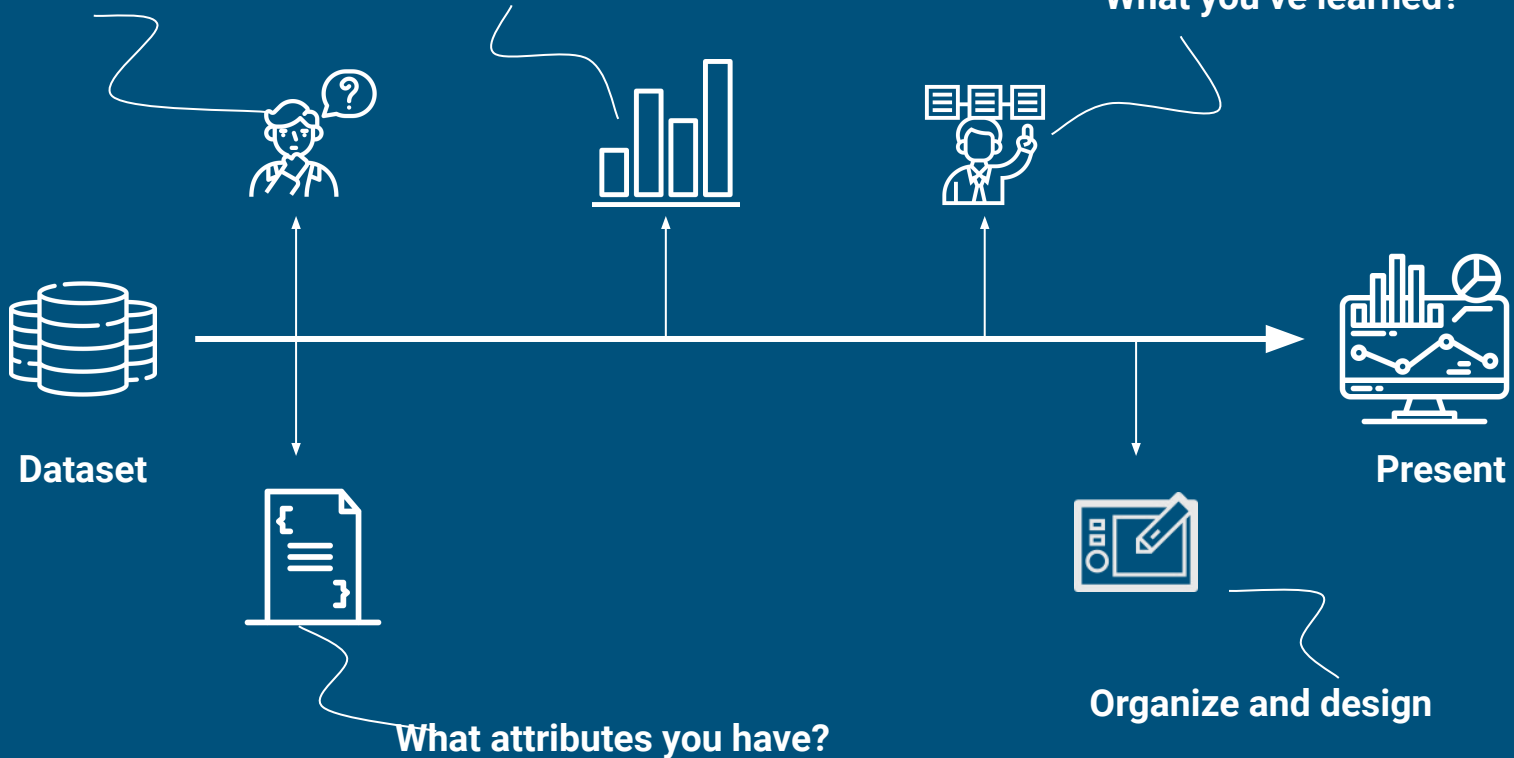
- ☞ **IT IS NOT** merely visual explanation of procedure, concept, or workflow.

What happen you visualize data?

What you want know?

Which chart appropriate?

What you've learned?






What you want to know?

Election case

- What is the share of votes won by each party?
- What is the share of votes won by each party in each province?
- Which province where the winning party won the largest number of vote?
- Where do the winning party tend to gain the largest share of votes?
- How is the trend of votes obtained by each party since 1998?
- Which party obtain gain the largest number of seats?
- How many commune dominated by each party?

What you want to know?

Which of the category bellow that your purpose fall into?

-  Comparison
-  Distribution
-  Relationship
-  Composition

What attributes contained in your dataset?

Knowing what attributes you have, can shape your purpose to be more achievable.

- Attributes are the content of characteristics of individual data record.
 - Qualitative
 - Ordered: e.g. *School (primary, secondary, undergraduate, master, PhD)*
 - Unordered: e.g. *Transportation (Car, Motorbike, Bus, Bicycle)*
 - Quantitative
 - Discrete: e.g. *population, enrollment, age...*
 - Continuous: e.g. *elevation, rainfall, tree cover loss...*

Your purpose determine which chart type to use

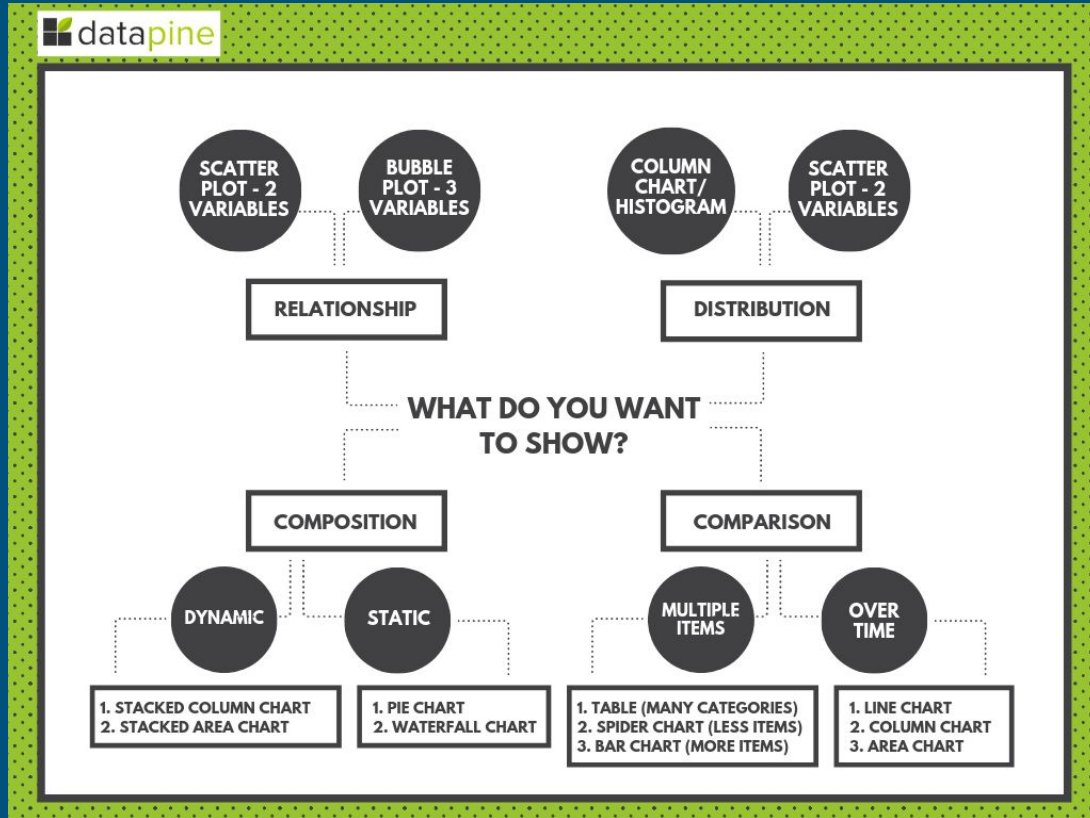
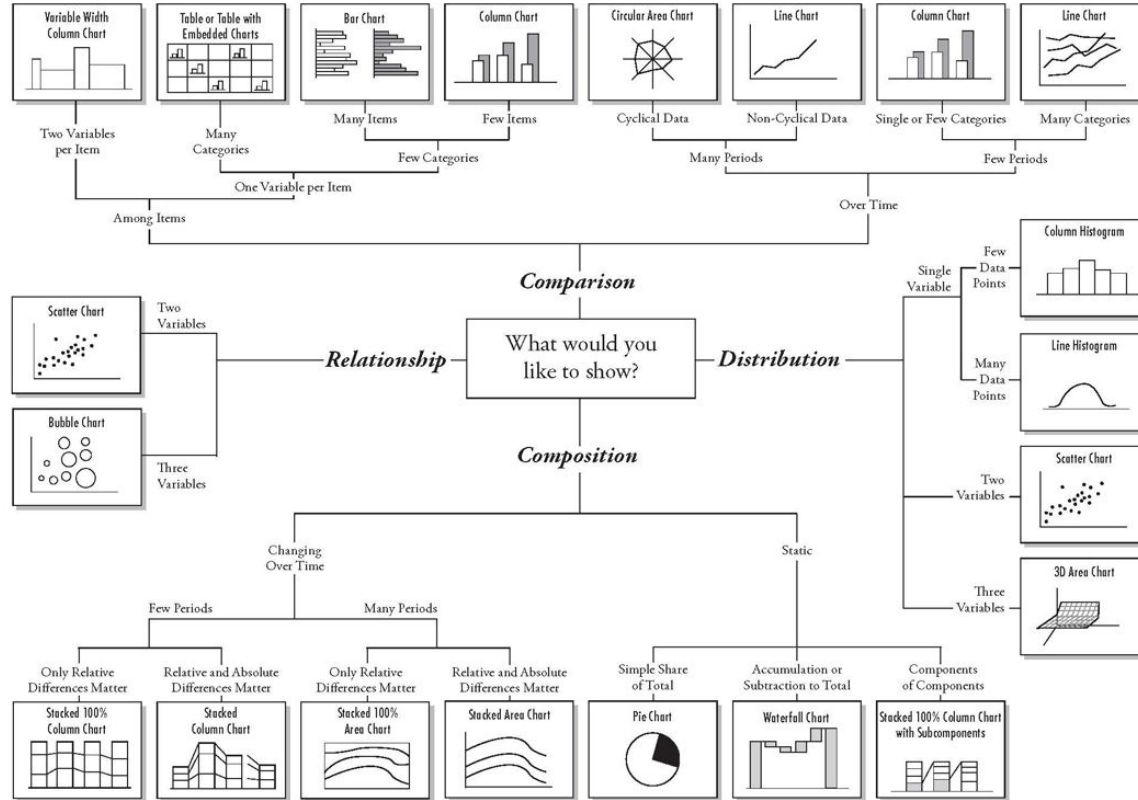


Chart Suggestions—A Thought-Starter



Let's explore common used charts

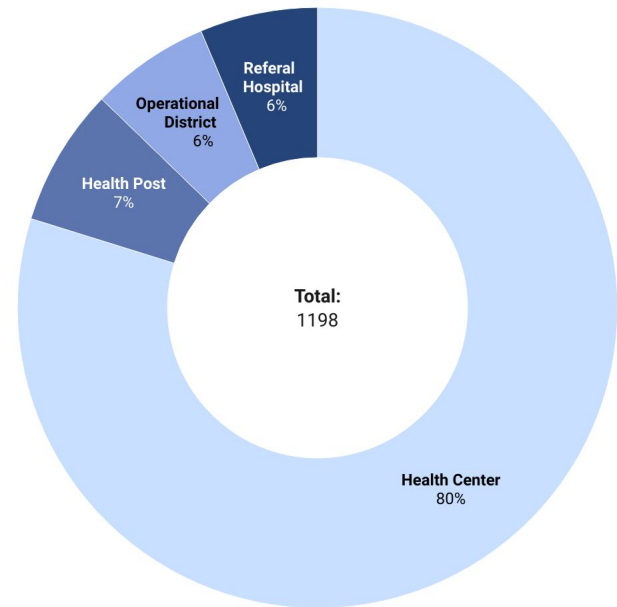
- Pie chart
- Column chart
- Line chart
- Table
- Pictogram
- Map chart
- Hierarchy chart

Pie chart is for part-to-the-whole

What is the share of health center?

Which category is the most dominate?

Most of hospitals in Cambodia are health center



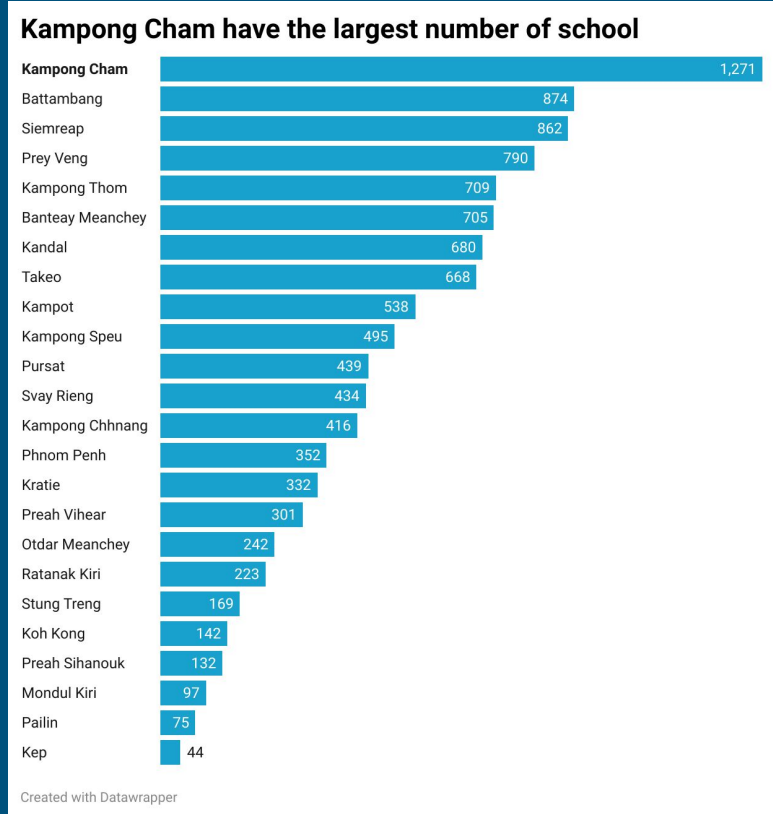
Health Center Health Post Operational District Referral Hospital

Created with Datawrapper

Column chart is for comparison of magnitude

It allows for comparing absolute value between categories.

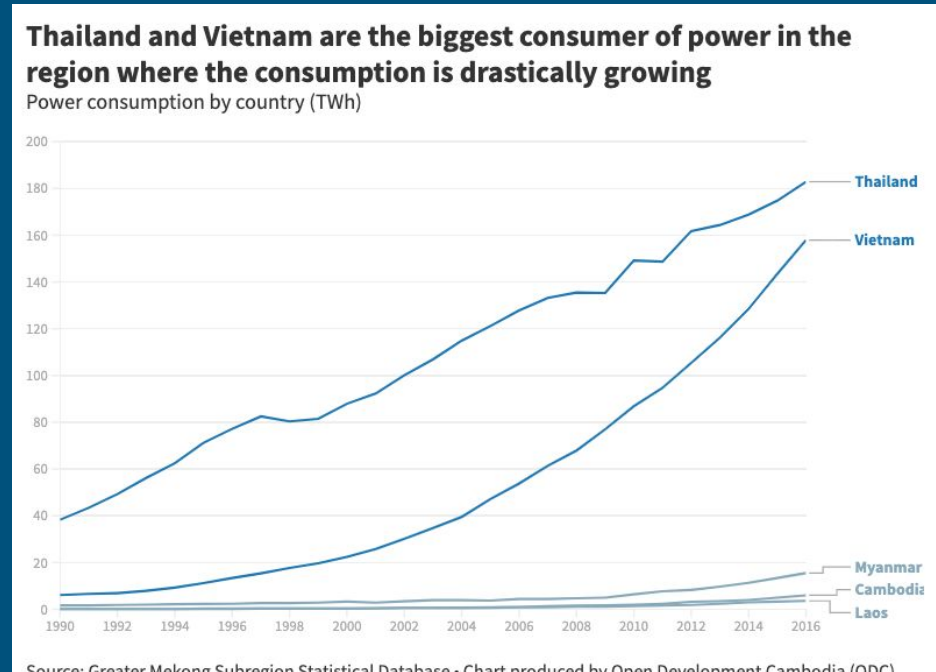
It's suitable for numerous categories.



Line chart is for observe trend

You can tell whether it increase or decrease and how strong the trend.

Line chart is only suitable for visualizing value changing over time.

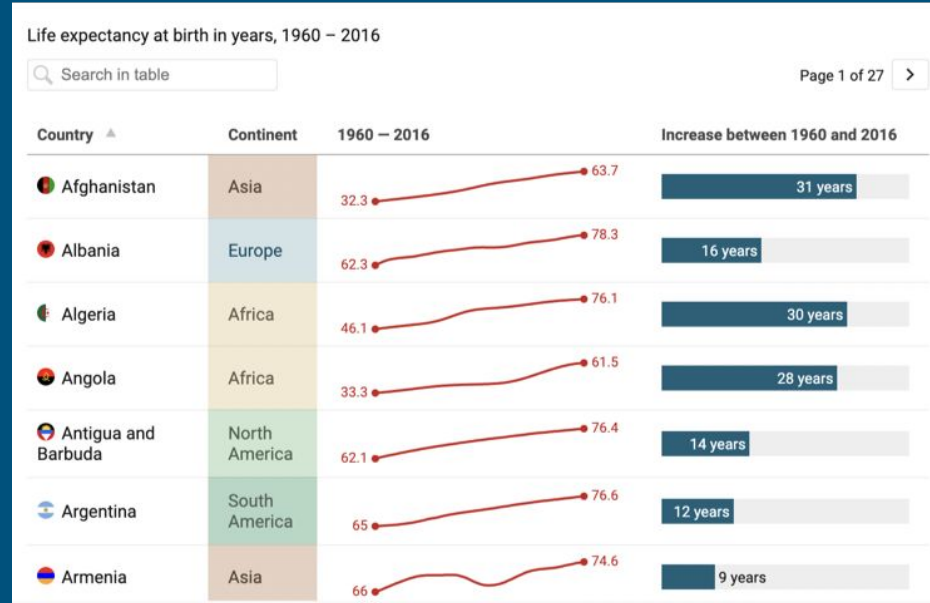


Source: Greater Mekong Subregion Statistical Database. Chart produced by Open Development Cambodia (ODC)

Table is for exploring data in interactive way

It can index each record of information which allow reader to examine the individual in detail.

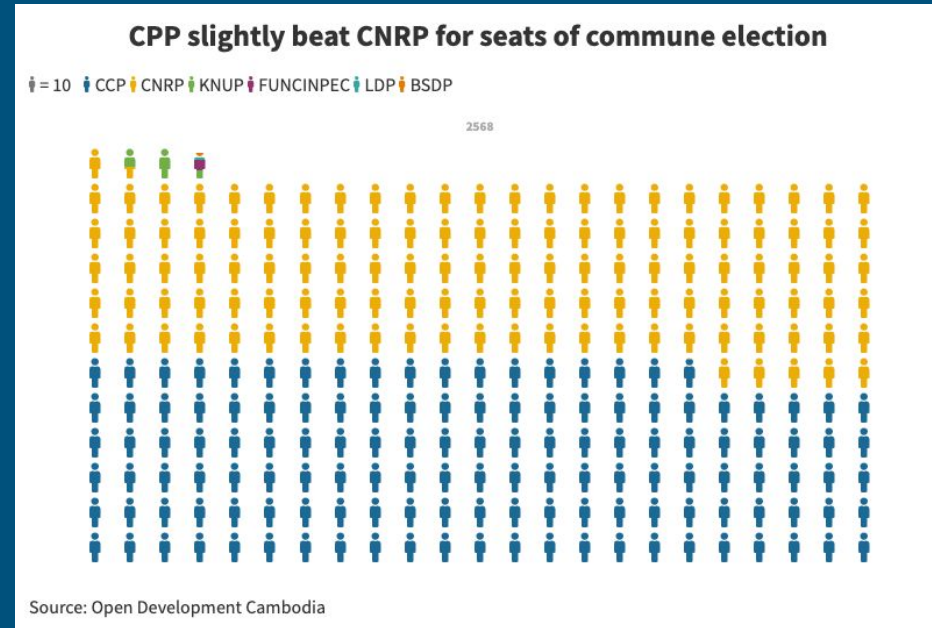
Table should be added visual element that allow readers to spot the interesting features.



Pictogram is for pictorial comparison and composition

Pictogram is more intuitive than pie and column chart.

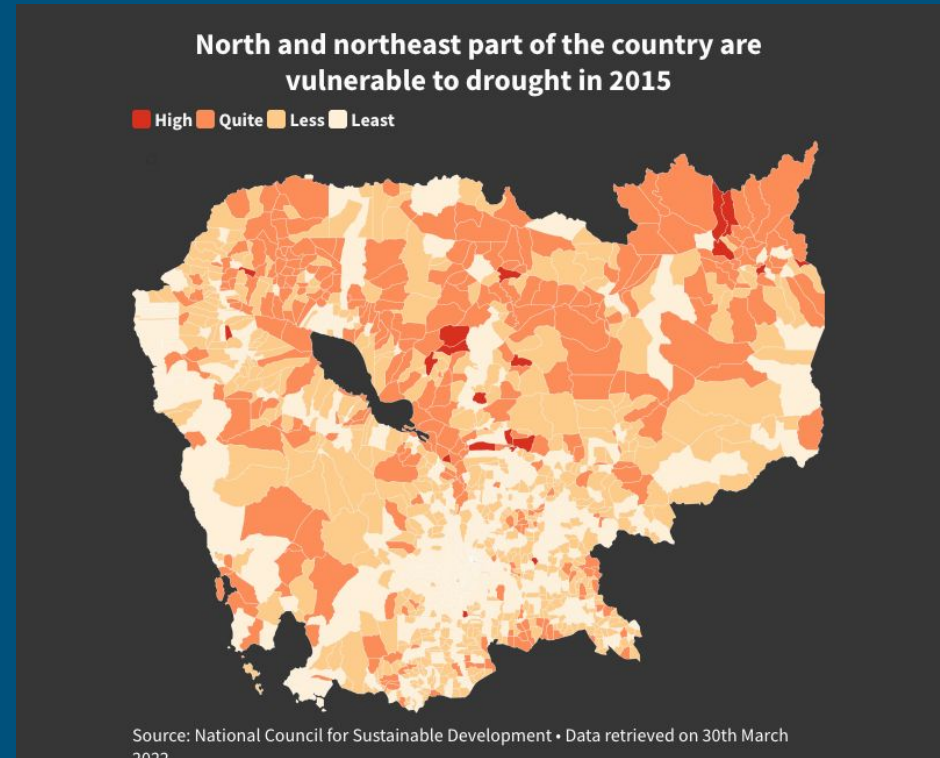
It is ideal for discrete data. Ex:
Population, School, Household...etc.



Map chart is for spatial comparison and distribution

Choropleth Map

It is ideal for comparing and observe the pattern spatially for data representing each county.



Map chart is for spatial comparison and distribution

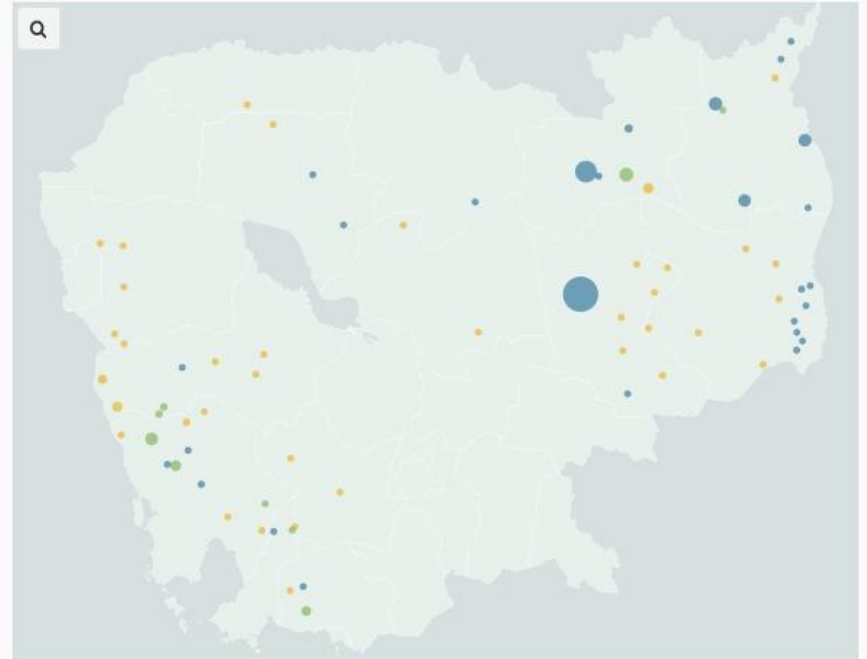
Symbol Map

It is ideal for comparing and observe the pattern spatially for each data point.

Where are the large scale energy project in the Mekong region concentrated?

50 ○ 1000

■ Under study ■ Potential site ■ Operational

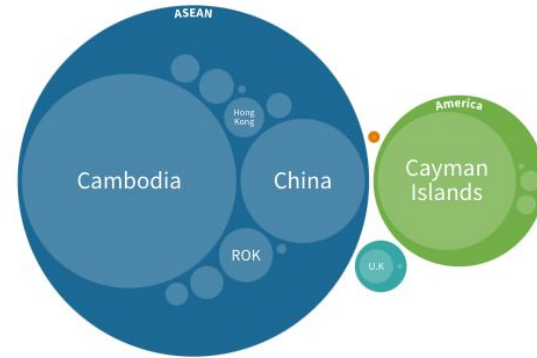


Hierarchy chart is for sub-category comparison

It is ideal for comparing absolute value at sub-category level.

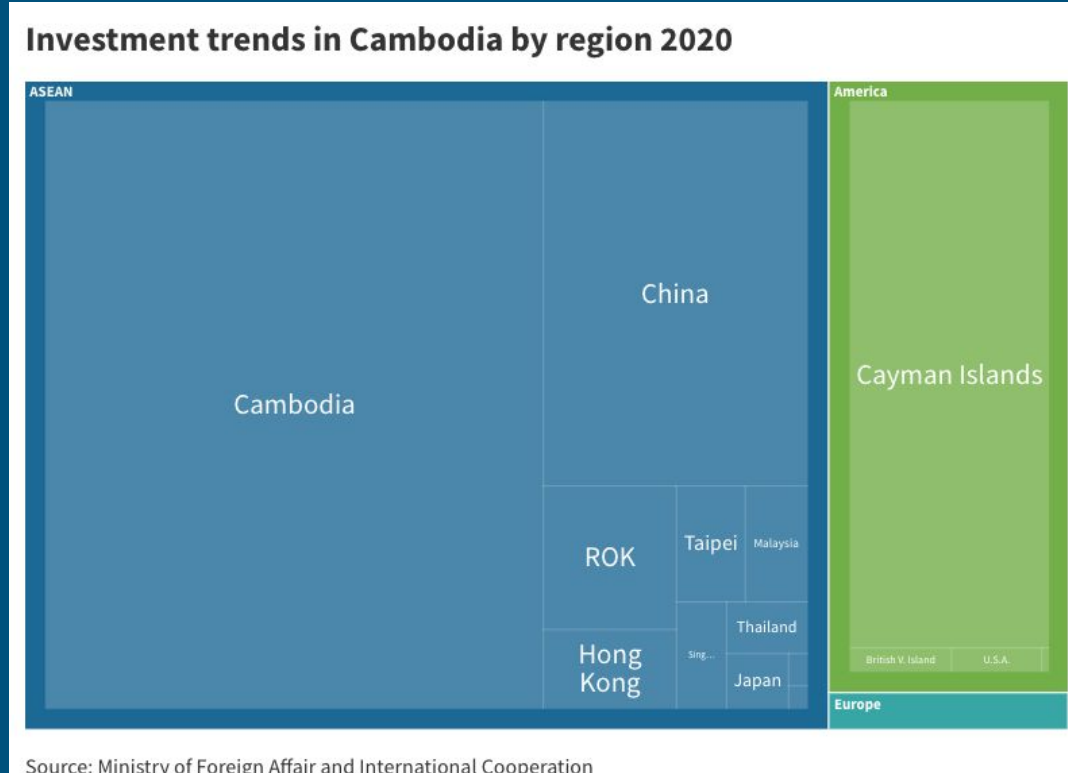
It is suitable for continuous data.

Investment trends in Cambodia by region 2020



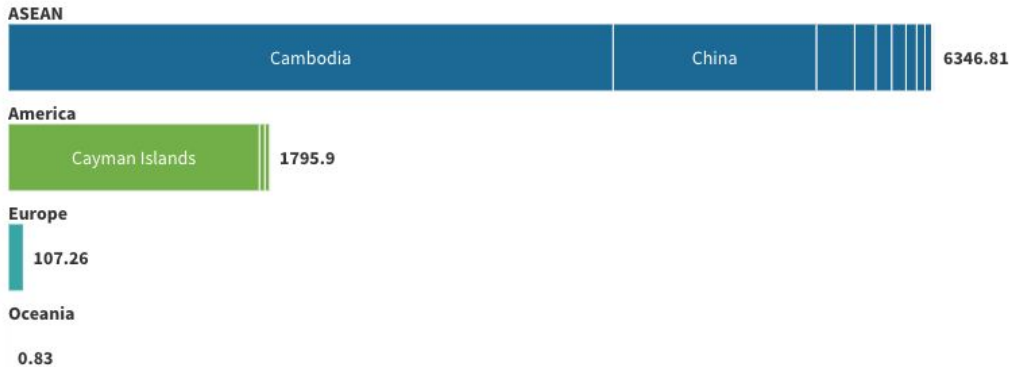
Source: Ministry of Foreign Affair and International Cooperation

Hierarchy chart is for sub-category comparison



Hierarchy chart is for sub-category comparison

Investment trends in Cambodia by region 2020



Source: Ministry of Foreign Affair and International Cooperation

Visualize to explore

You visualize to explore insights!

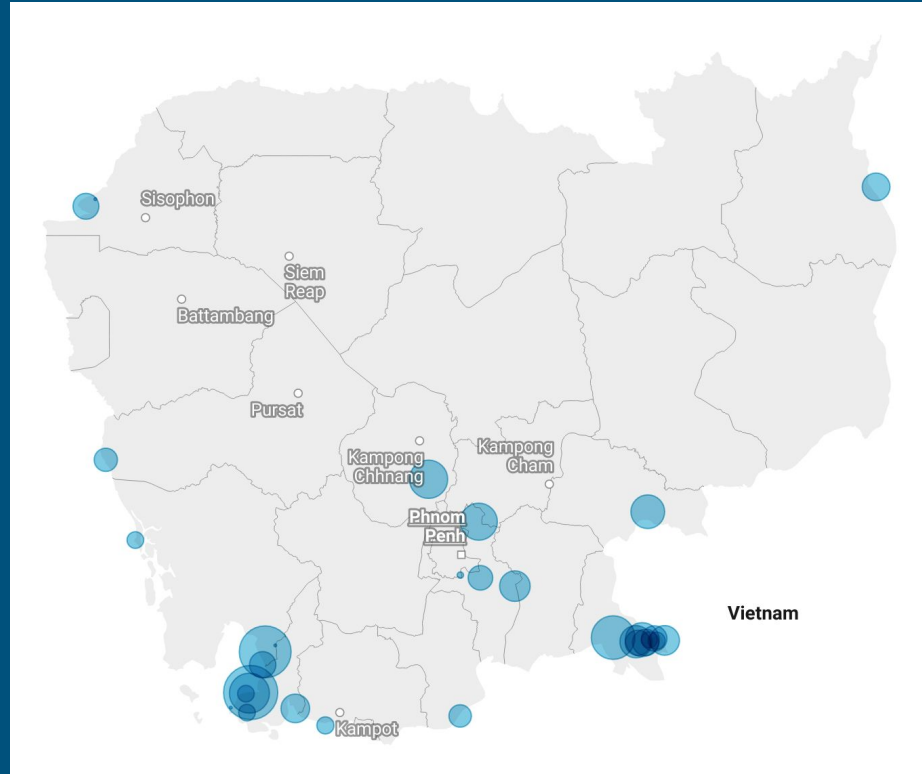
Question we might have when explore the visualized data:

- What is interesting about the features in the chart?
- Why it is like that? And what will be the consequences?
- What is relevant that explain or make it more meaningful?

Visualize to explore

Special economic zones in Cambodia.

- How the SEZs are distributed?
- Where do the SEZs are mostly concentrated?
- Why they show in these pattern?
- What would be the impact?



Then visualize to explain

You explain the insight you found in the visualization.

- Where in the chart the audiences should pay attention?
- What is the insight the audiences should know?

What you produce when you produce chart?

- 👉 Data visualization allows us to see the pattern, relationship, and trend.
- 👉 From these visual presentations, we can explore what is interesting.
- 👉 It helps us to digest for deep understanding.
- 👉 That is called insight, the actionable information for telling story and support decision making.
- 👉 **Thus the goal is not the chart but the insight in it.**
- 👉 **And you ain't show chart but insight, your message to the intended audiences.**

Recap

- Data visualization allows us to draw clear and deep insight through visual representation.
- Data visualization is the visual representation of data in where pattern, trend, and distribution can be revealed for the investigation.
- What to consider when visualizing data: Purpose, Chart type, Findings, Design.
- Remember that when you produce chart, you produce insights.