

Introduction to Statistics and Data Science using *eStat*

Chapter 2 Visualization of Qualitative Data

2.1 Graphs of Categorical Data

Jung Jin Lee

Professor of Soongsil University, Korea

Visiting Professor of ADA University, Azerbaijan

2.1 Graphs of Categorical Data

- **Categorical Data** : Data of a variable on finite possible value

Ex) Data on gender in a class

=> {male, male, female, ... }

raw data

=> male 10

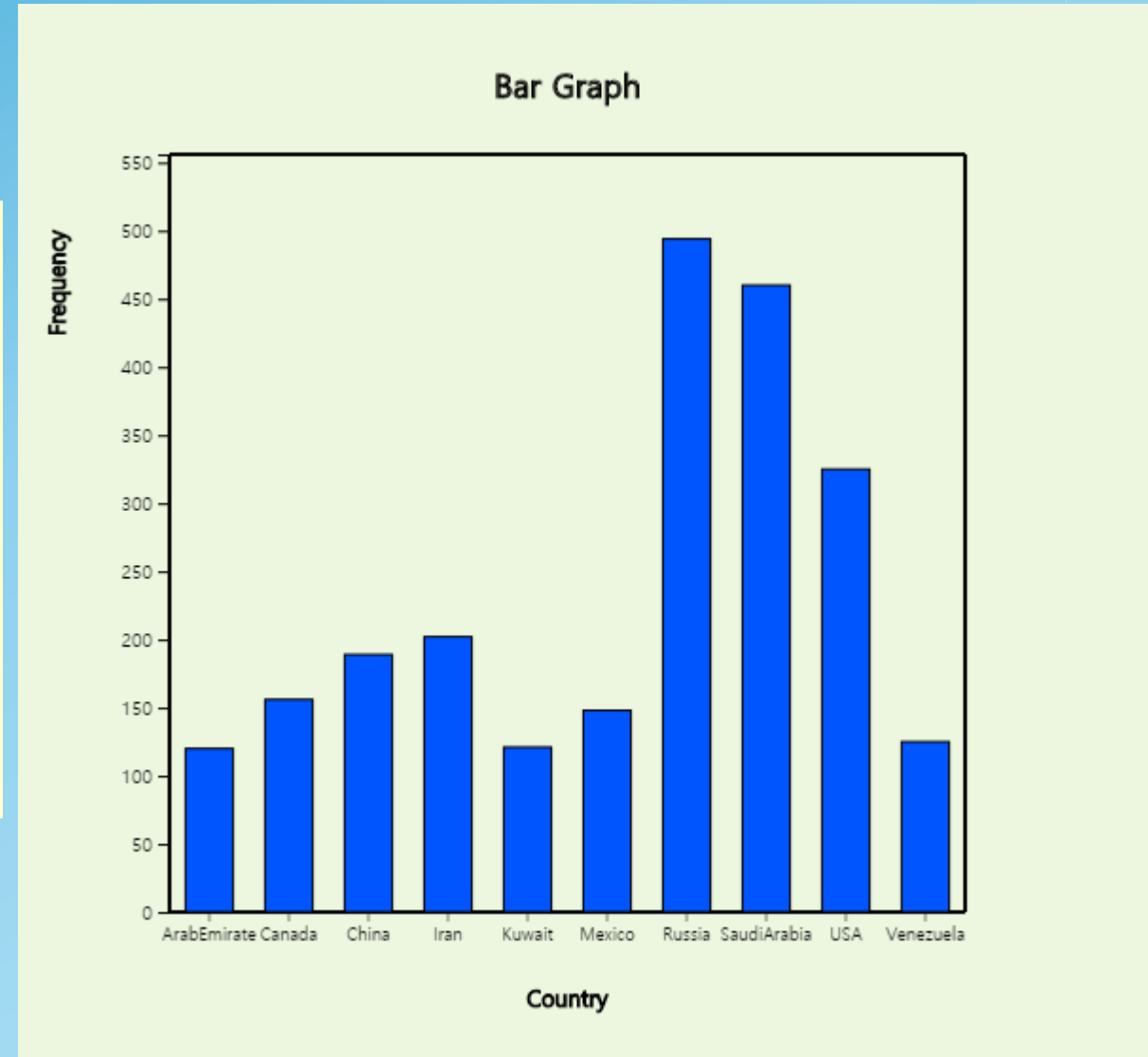
summary data

female 15

- **Bar chart, pie chart, band graph, and line graph** are used for visualizing categorical data.

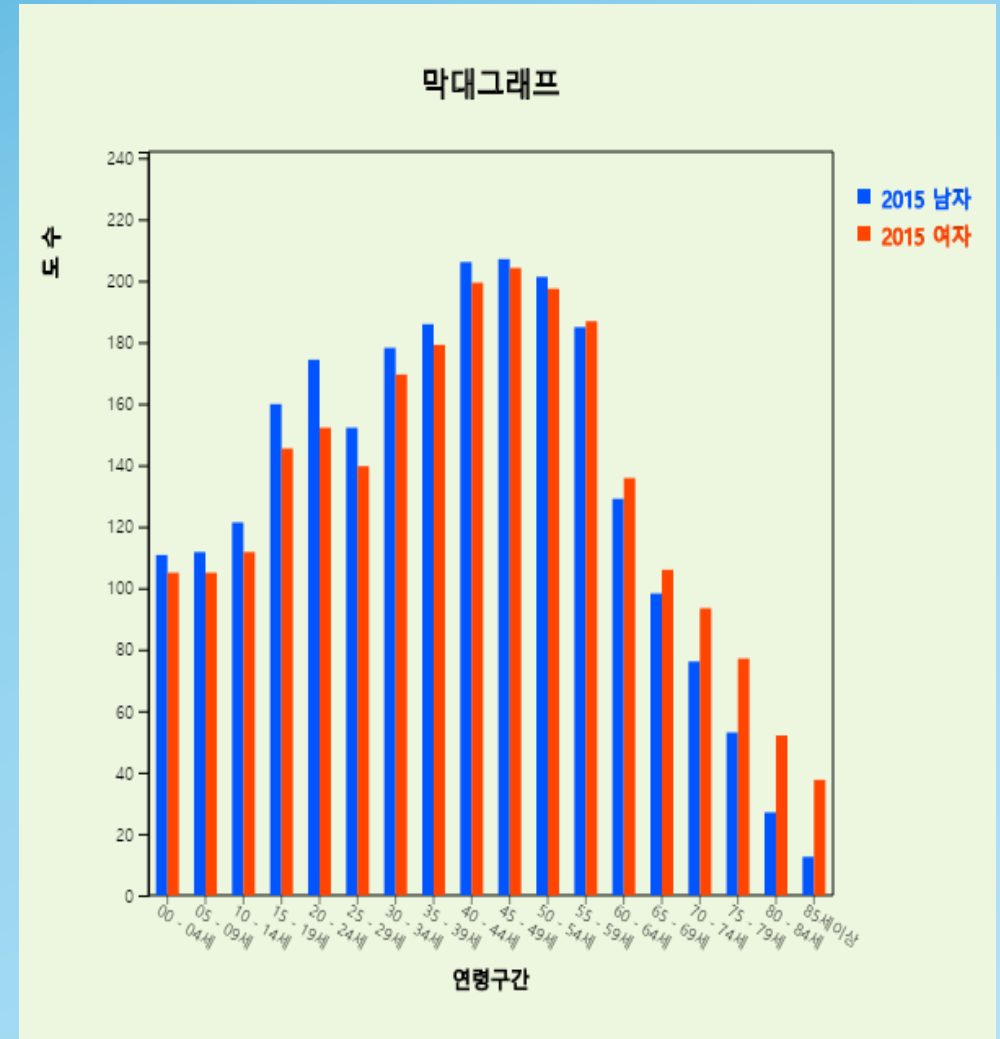
2.1 Graphs of Categorical Data

- **Bar chart** shows the frequency of each category as the height of the bar to compare the frequency of the data for each category.
 - Spacing the bars to emphasize that they are categorical data.



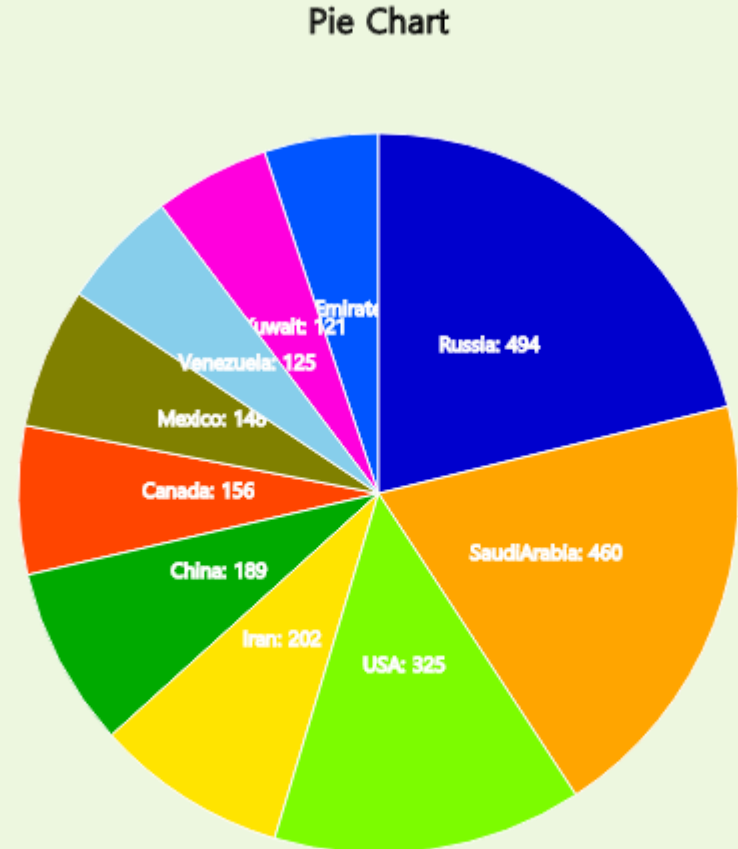
2.1 Graphs of Categorical Data

- Bar chart can be drawn by dividing the frequency of one categorical variable by another (called a group variable) such as gender.
- separated bar chart
- stacked bar chart
- ratio bar chart
- side by side bar chart



2.1 Graphs of Categorical Data

- **Pie Chart** shows the frequency of each category divided by the amount of aid angle.
- Draw the largest category of aid angles in a clockwise order so that the ratio can be compared well.
- **Doughnut graph** with the center of the circle empty is also used.



2.1 Graphs of Categorical Data

- **Band graph** is a graph that shows the ratio of frequency in each category to total data divided by square pieces in the form of a pie chart.

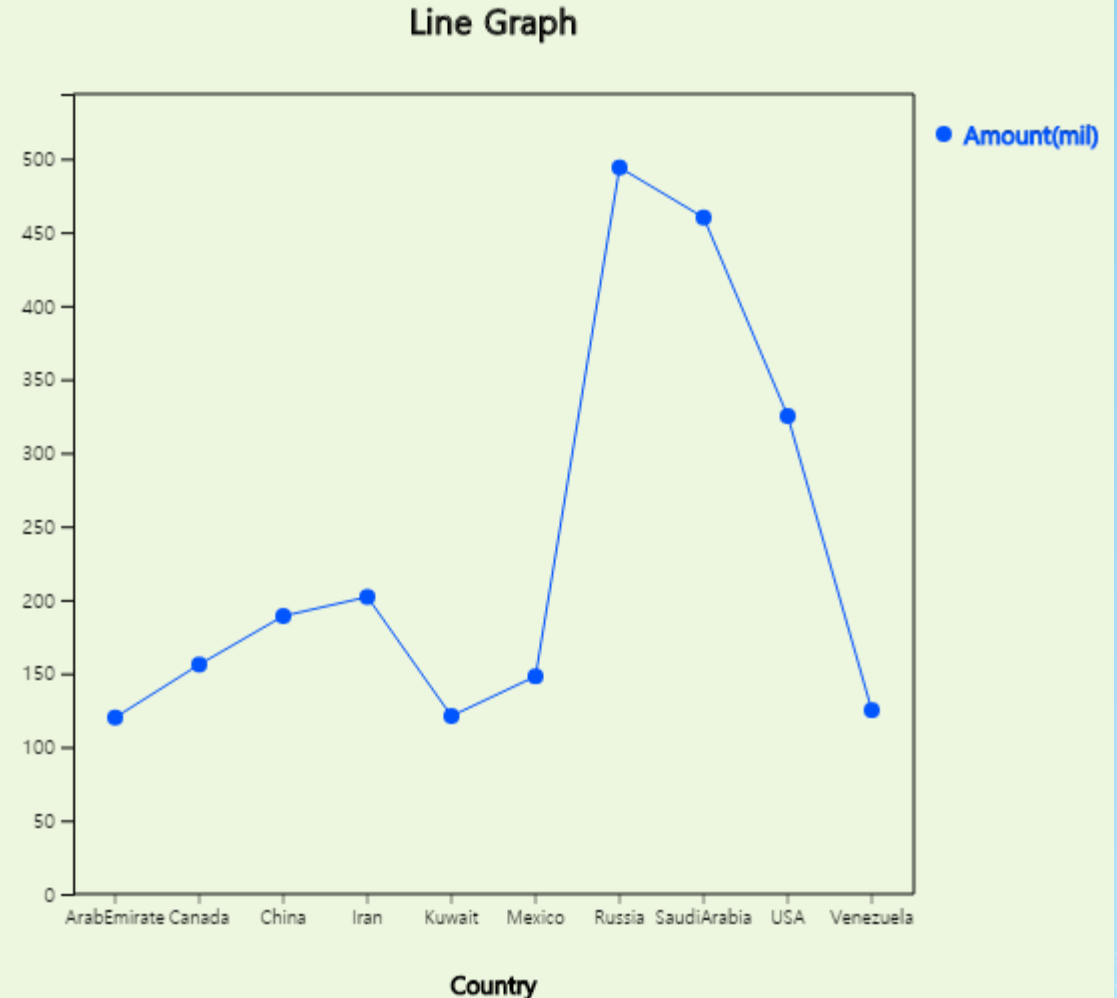
Band Graph



■ ArabEmira ■ Canada ■ China ■ Iran ■ Kuwait ■ Mexico
■ Russia ■ SaudiArab ■ USA ■ Venezuela

2.1 Graphs of Categorical Data

- **Line graph** shows the X-axis as a category value and the value of the other variables as a Y-value in relation to the values of each category, and then connects them as a line.
- It is similar to the bar chart, however, as the amount of exports per year, the change in data over time can be easily observed.





Thank you