

Chapter 6: Fundamental Variations of Graphs

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7 November, 2022

Graph Variation

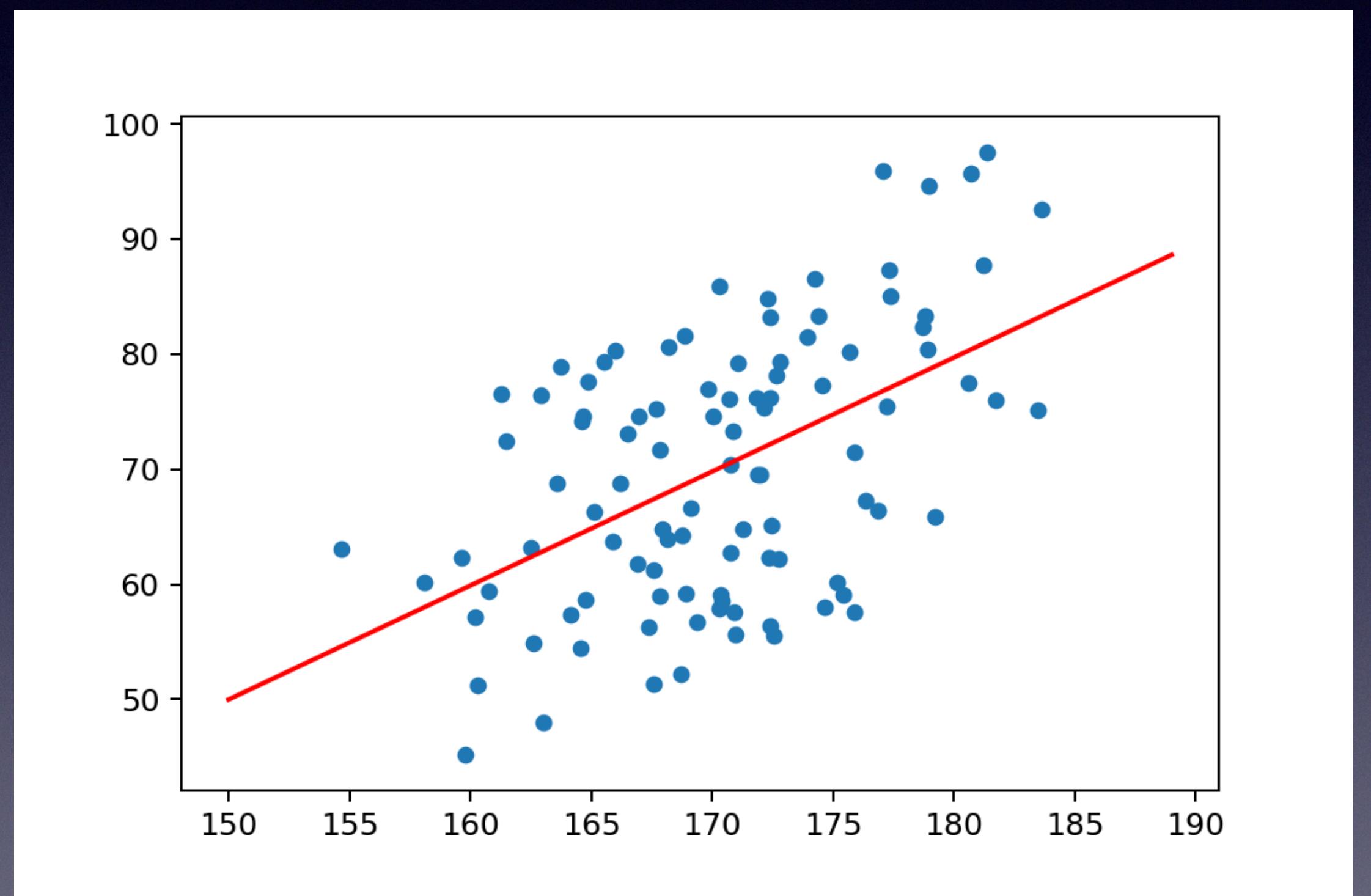
- Different quantitative relationships require different types of graphs.
- Selecting the appropriate graph is essential.

Graph Components

- Quantitative Values:
 - Points
 - Lines
 - Bars
 - Boxes
 - Shapes with varying 2-D areas
 - Shapes with varying color intensity

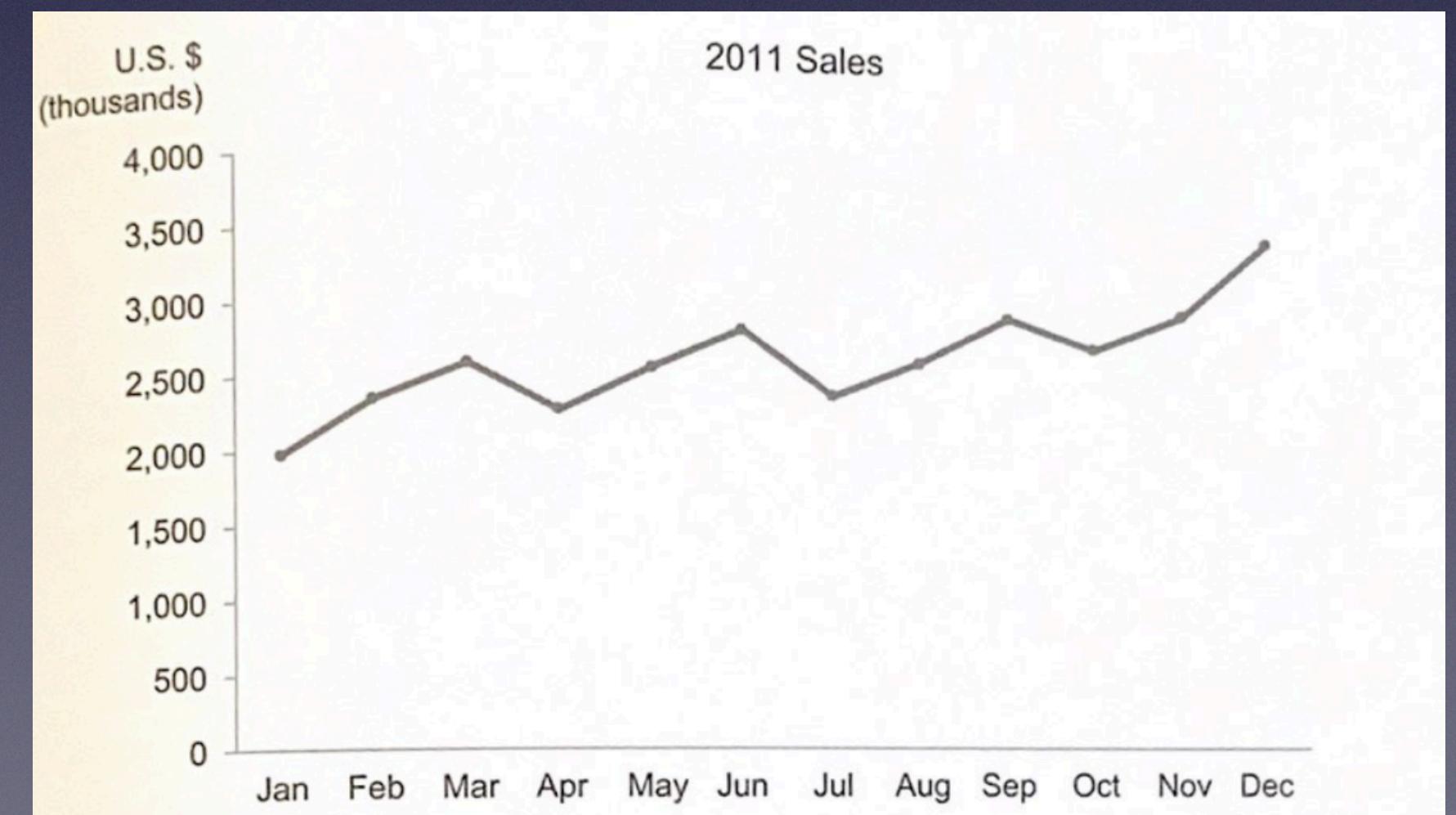
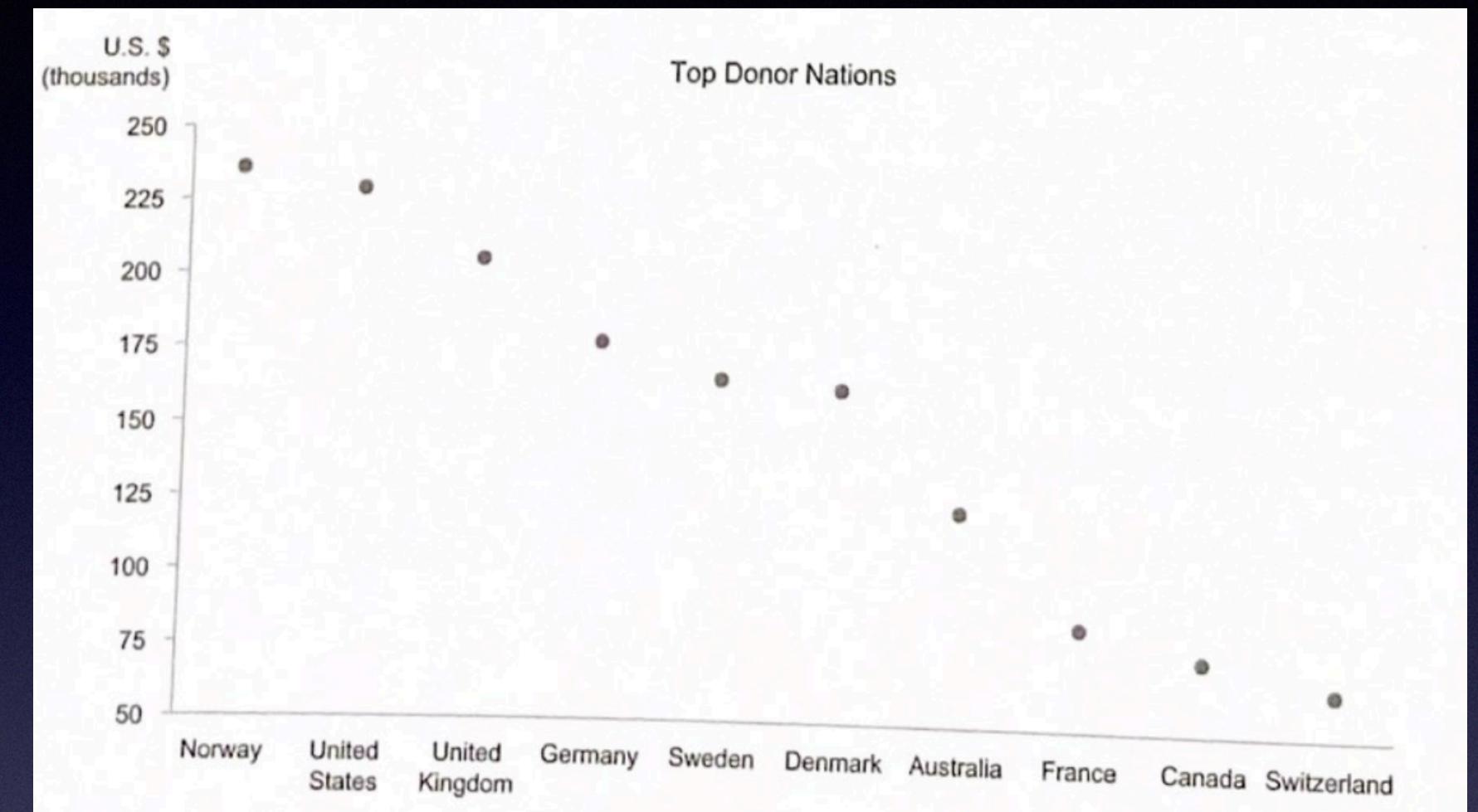
Points

- Scatter Plot
 - Represent quantitative values as a single point (dot, square, triangle, etc.)
 - Can be used to display a trend line or line of best fit.



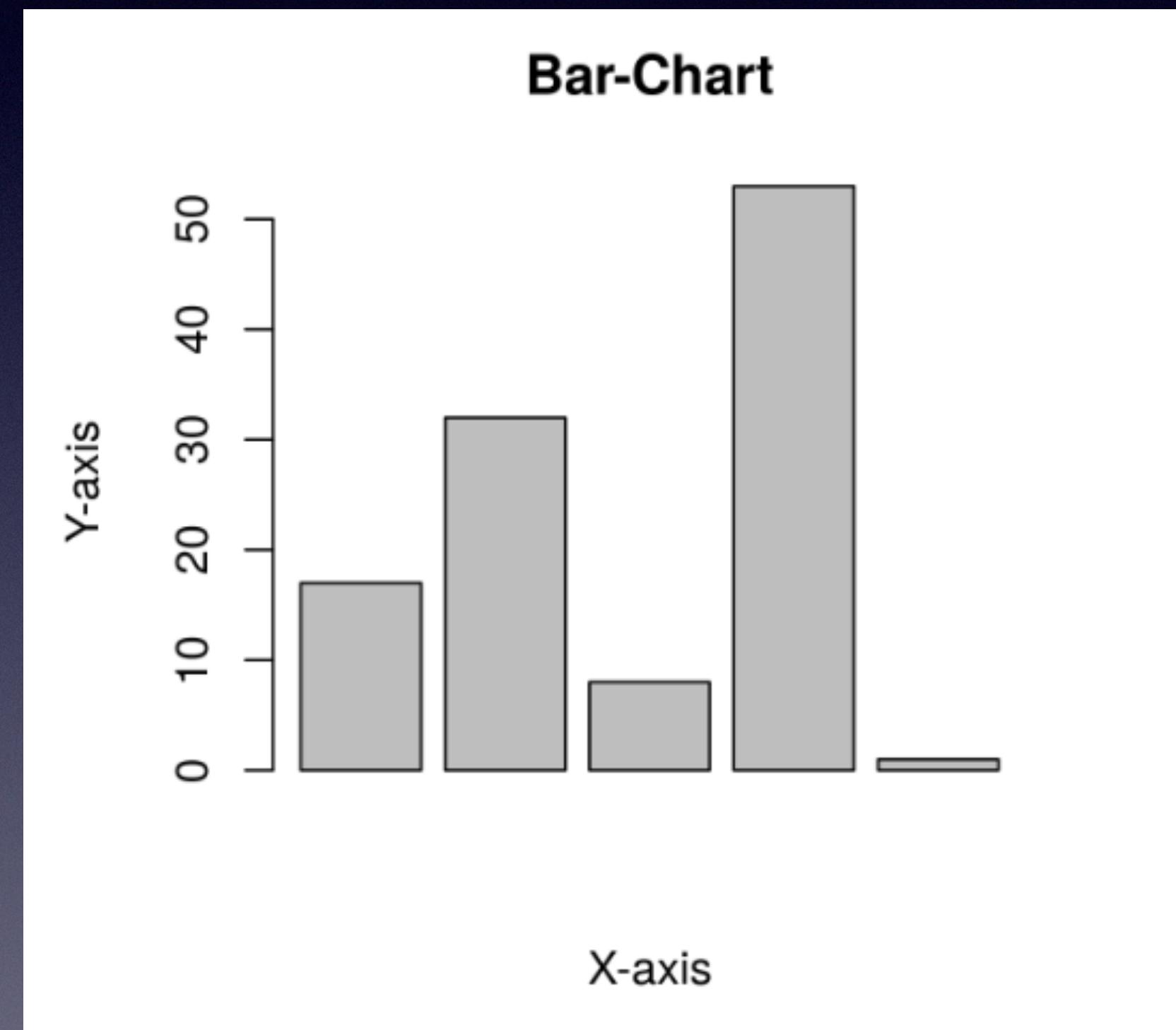
Points

- Dot Plot
 - Why don't we use bars?
 - We can use lines to connect a series of values within a graph.
 - Lines can be viewed as single patterns from left to right.



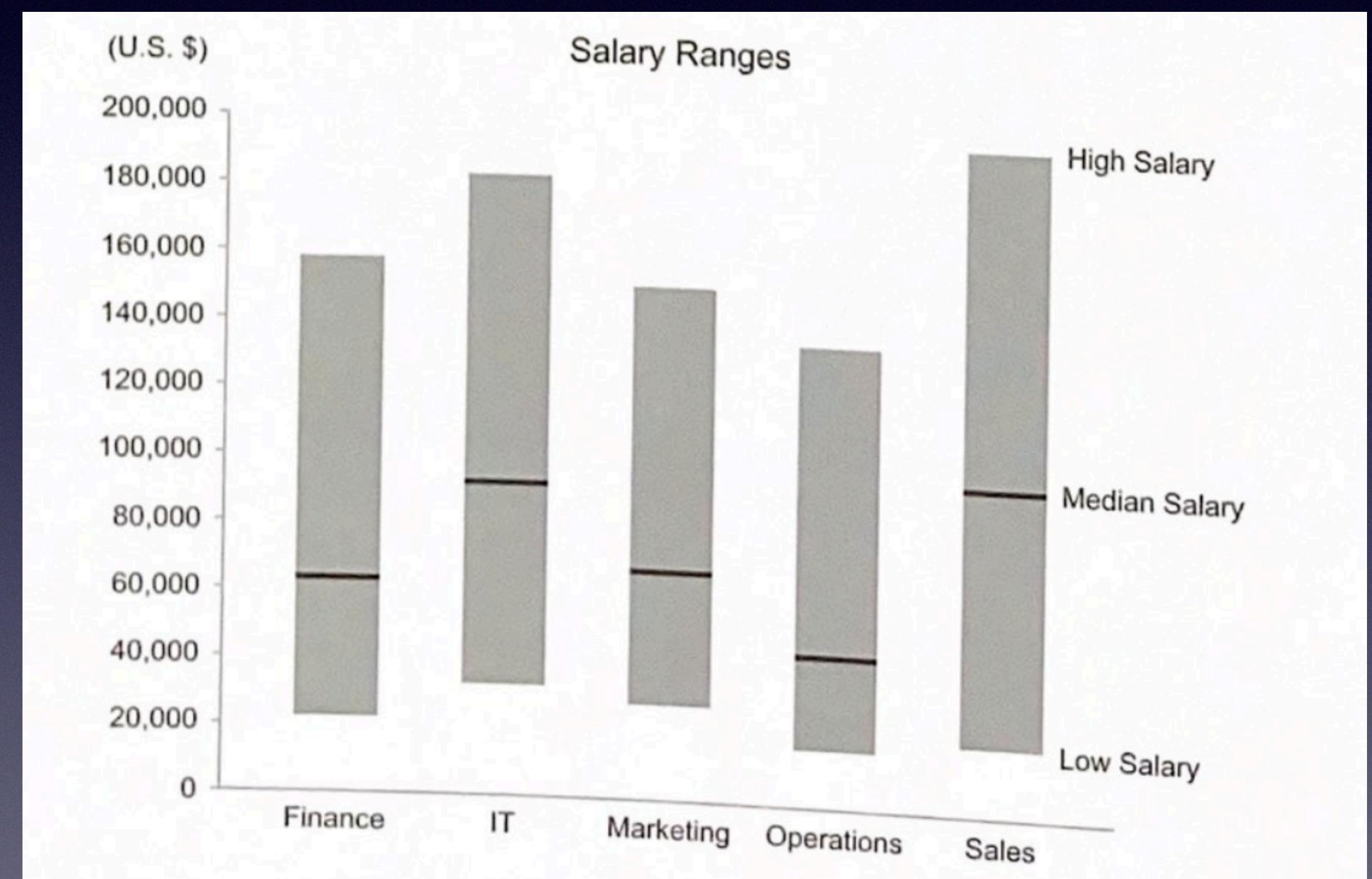
Bars

- Bar graphs
- Can run horizontal or vertical.
- Carry a visual weight, and can stand out clearly from one another.
- Really useful for displaying individual values discretely.
- Easy to focus on and compare values.



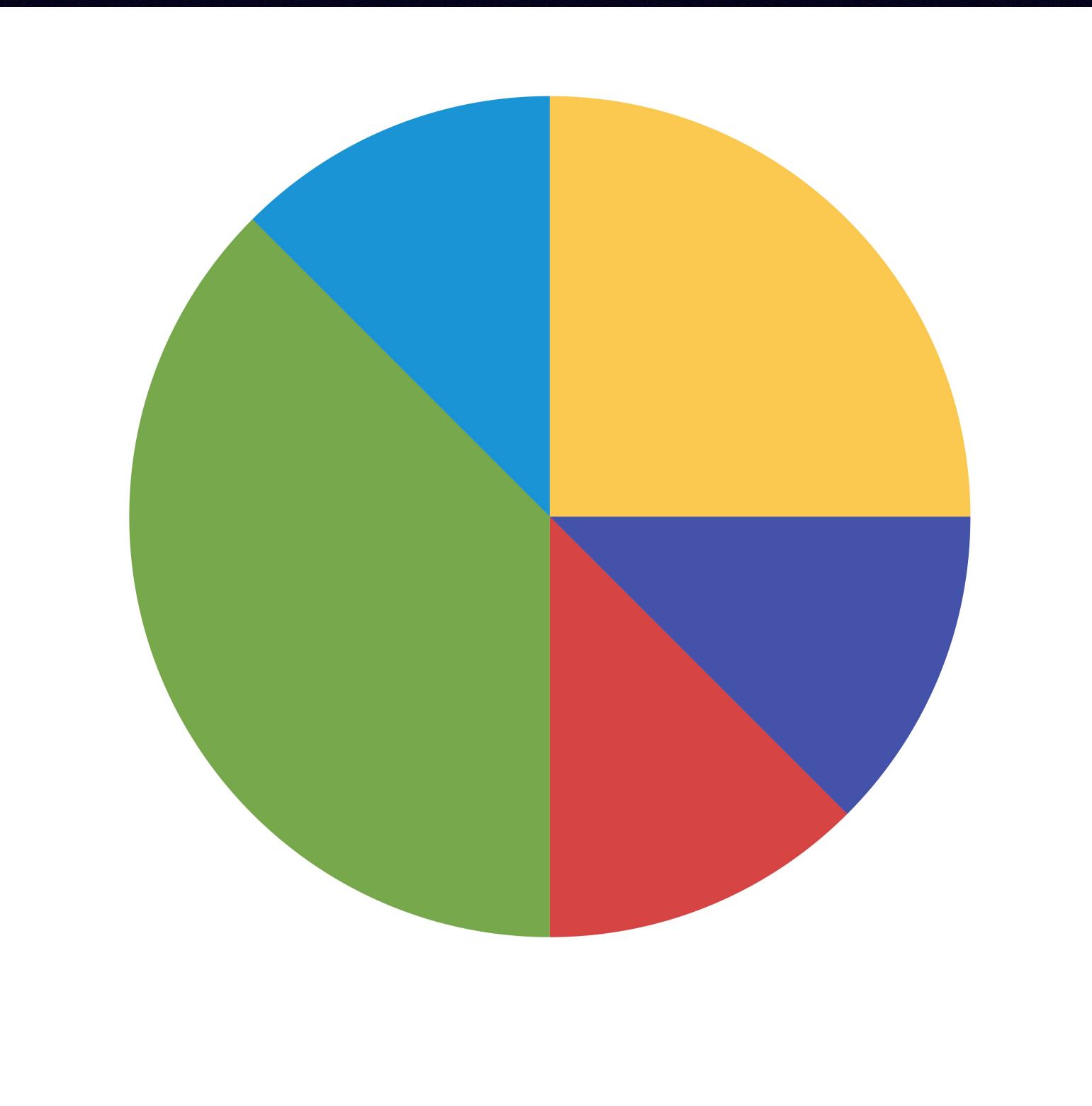
Boxes

- Box plots
- Used to compare the distributions of different sets of values.
- Unlike a bar graph, boxes encode an entire range of values.
- The lines in the middle denote the median.



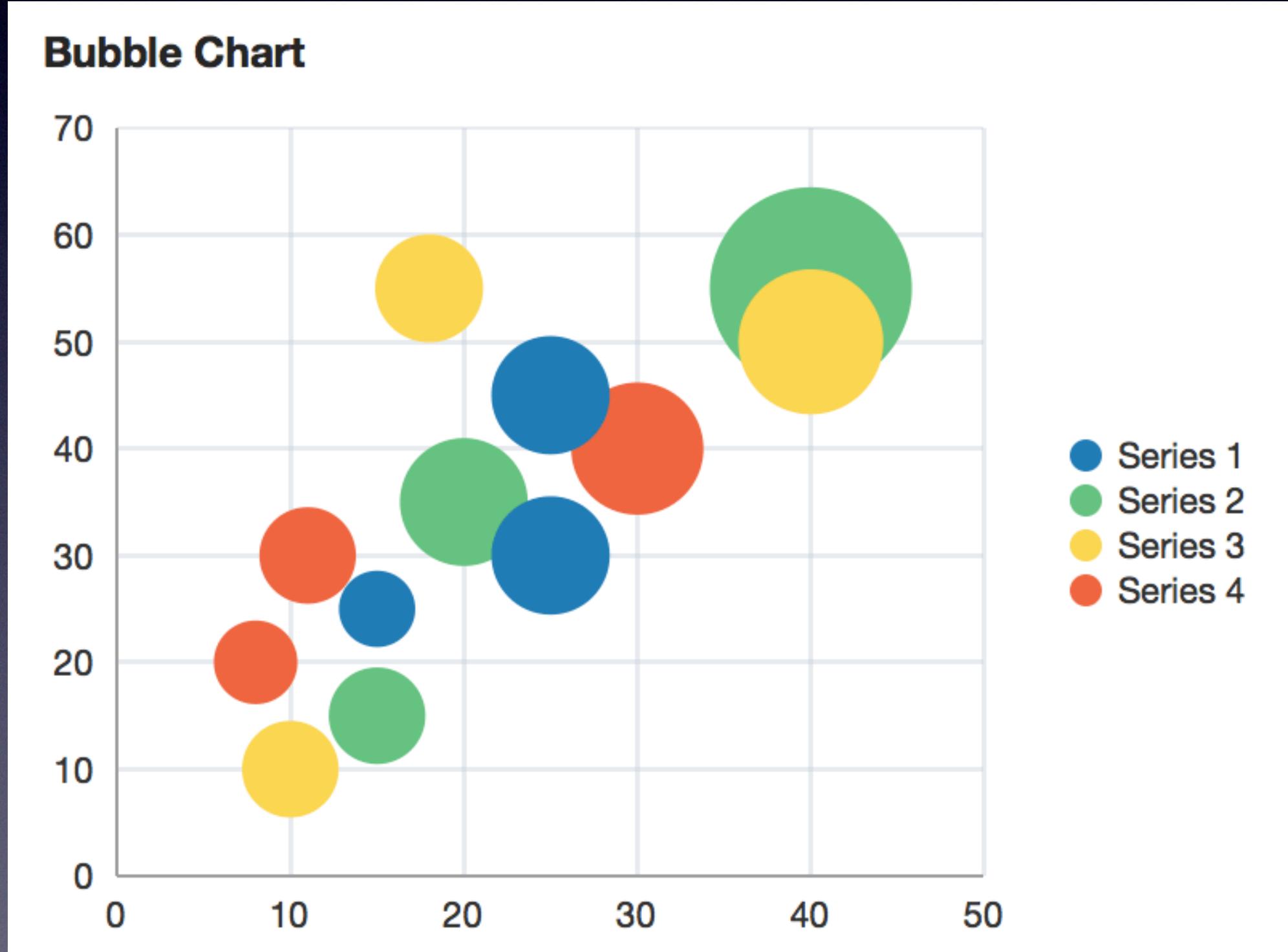
Shapes With 2-D Areas

- Pie charts
- Useful in representing values in proportion to their area.
- Sometimes used in addition to other graphs.
- Part of a larger family referred to as area graphs.



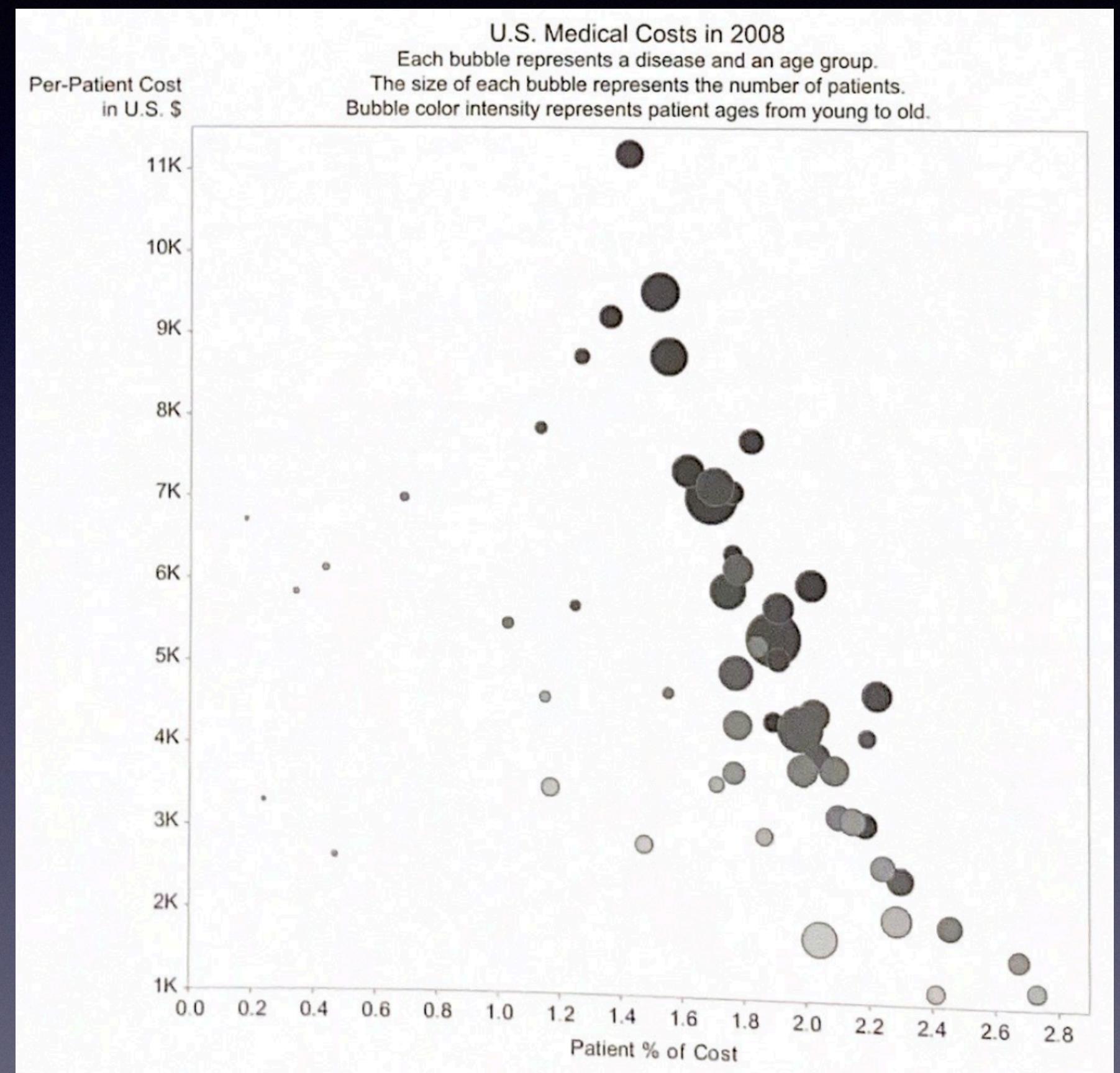
Shapes With 2-D Areas

- Bubble Plot
 - Vary the sizes of points on a graph such as a scatter plot or a map.
 - Points that vary in size are called bubbles.
 - Sizes encode another dimension of values.
 - Can be difficult to read, used when approximations is enough.



Shapes With 2-D Areas

- Color intensities
- Adds another dimension to the data representation.
- Useful when need to represent more variables in relation to one another.

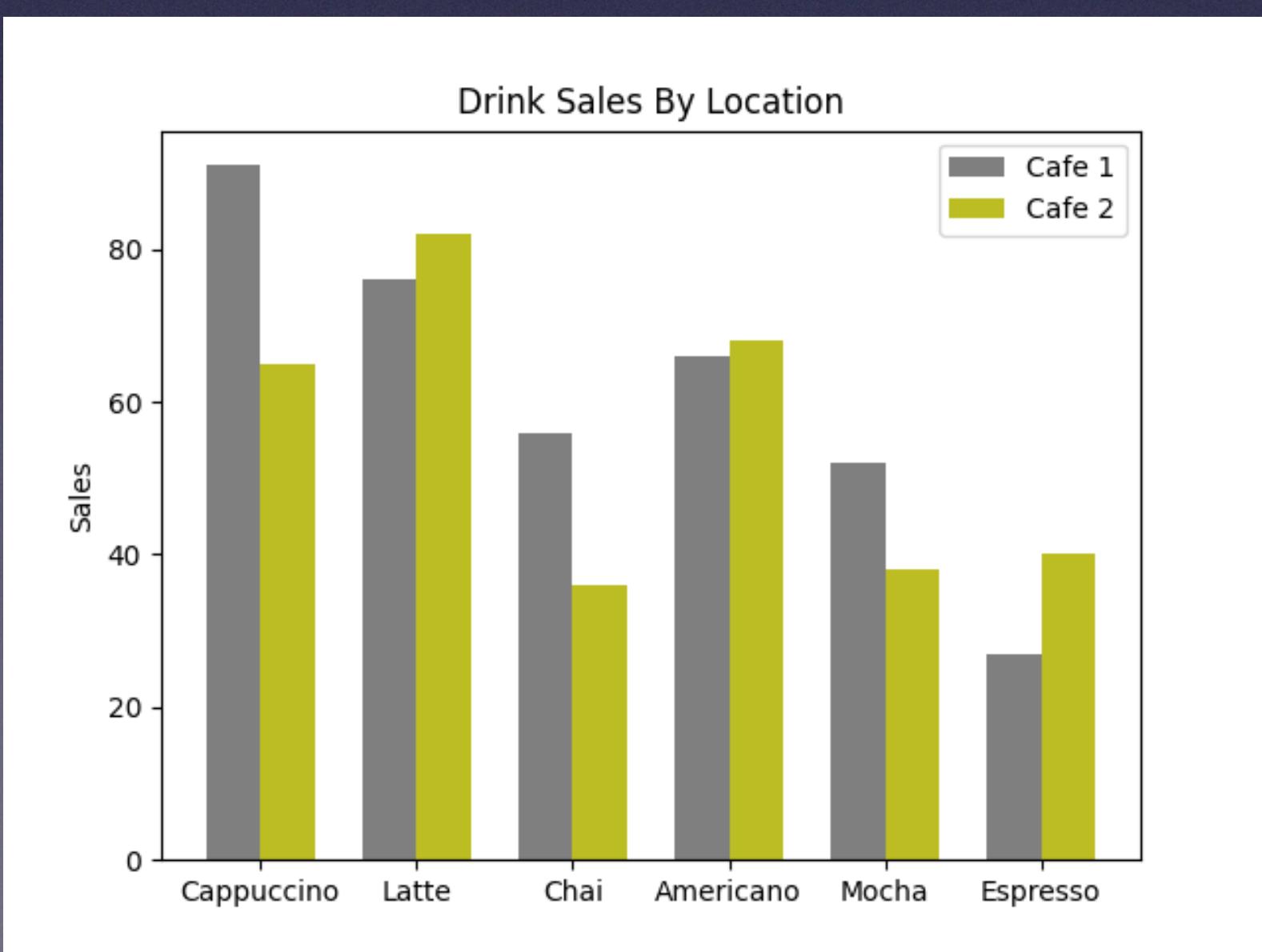
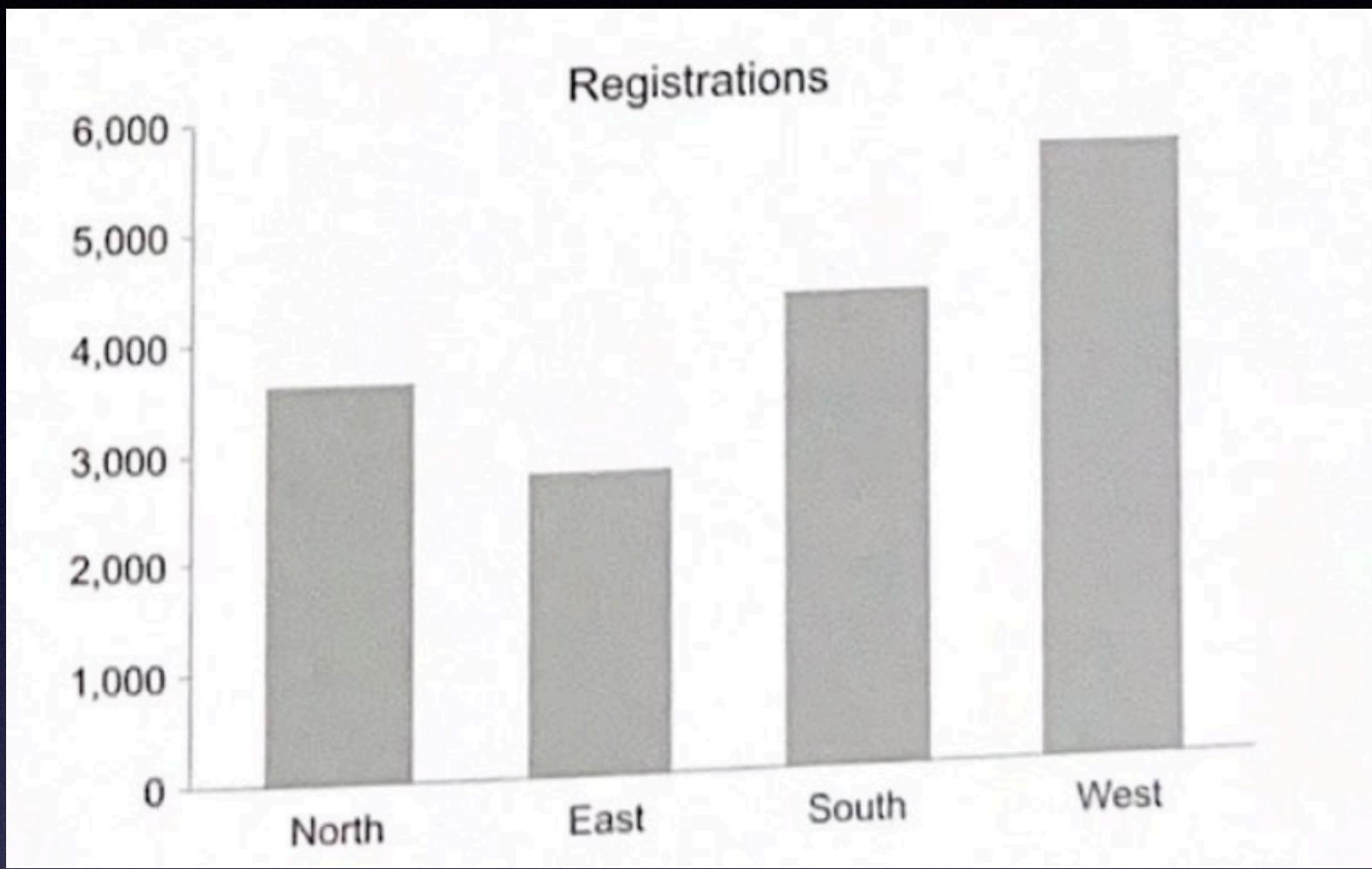


Encoding Categorical Items

- Quantitative values are also associated with categorical items.
- These relationships can be visualized in different ways:
 - 2-D position
 - Hue
 - Point shape
 - Fill pattern
 - Line Style

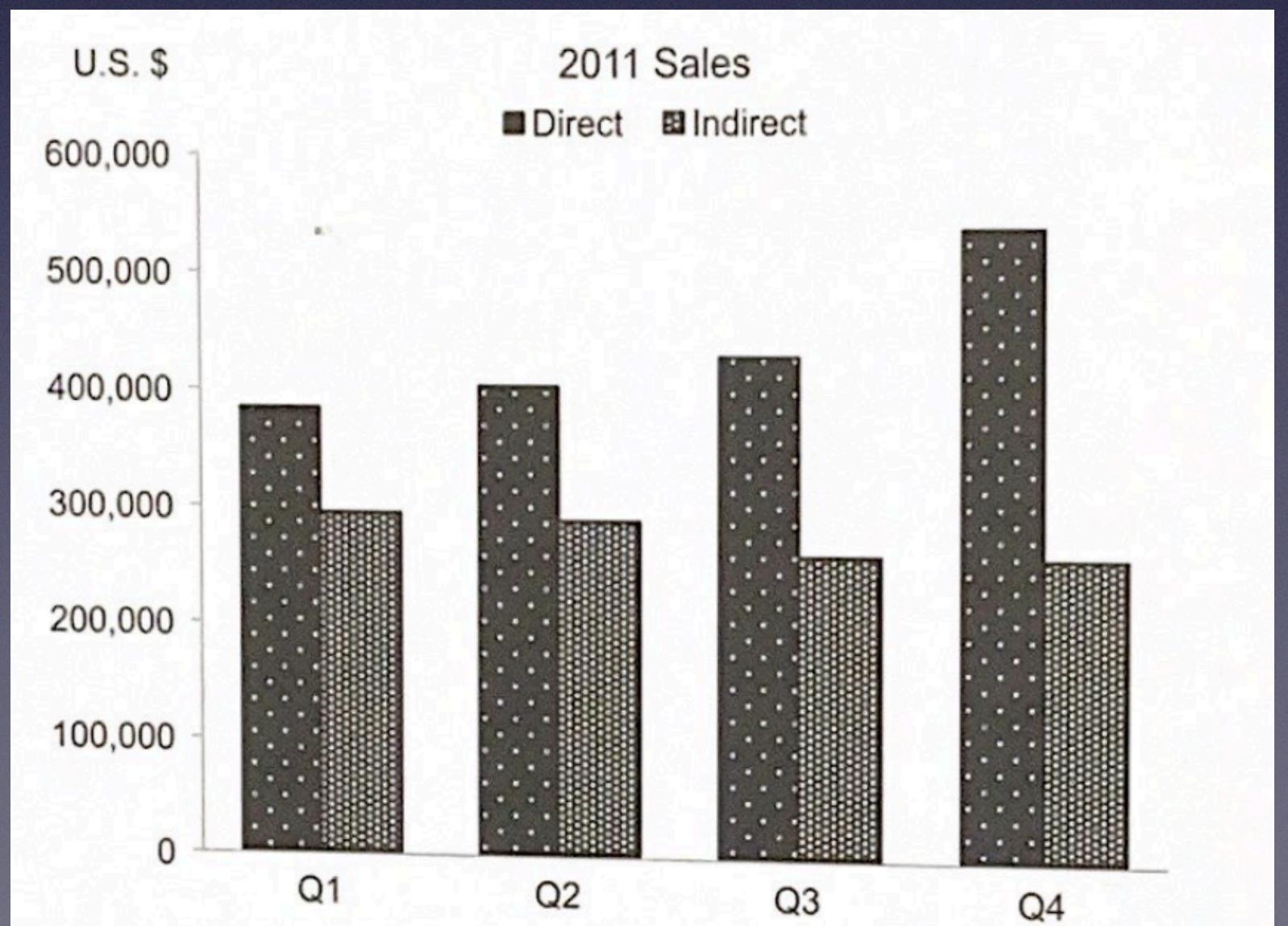
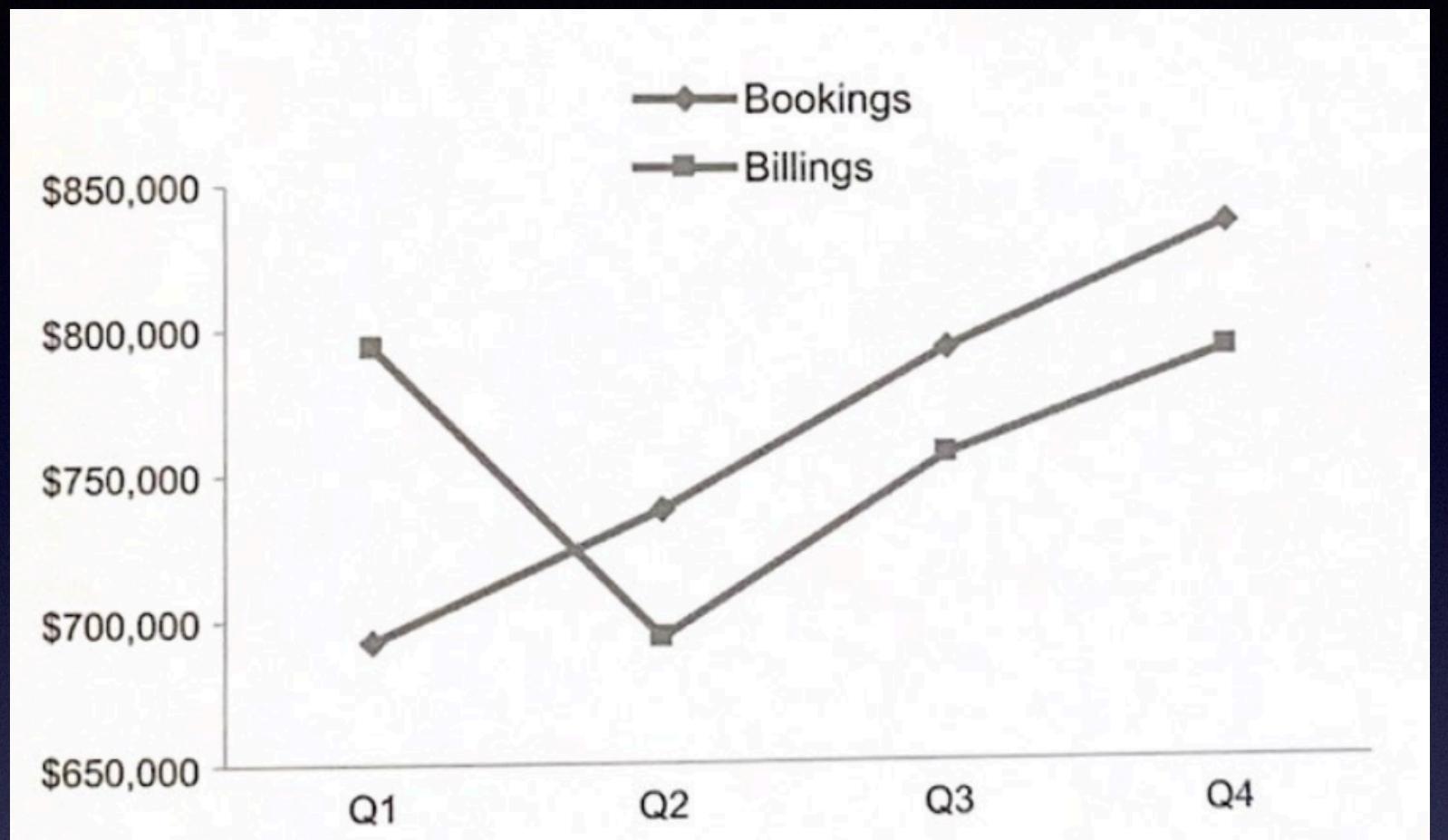
2-D Position and Hue

- 2-D Position
 - Relative position on graph.
 - Works well with different graphs
- Hue
 - Different color use to distinguish different categories



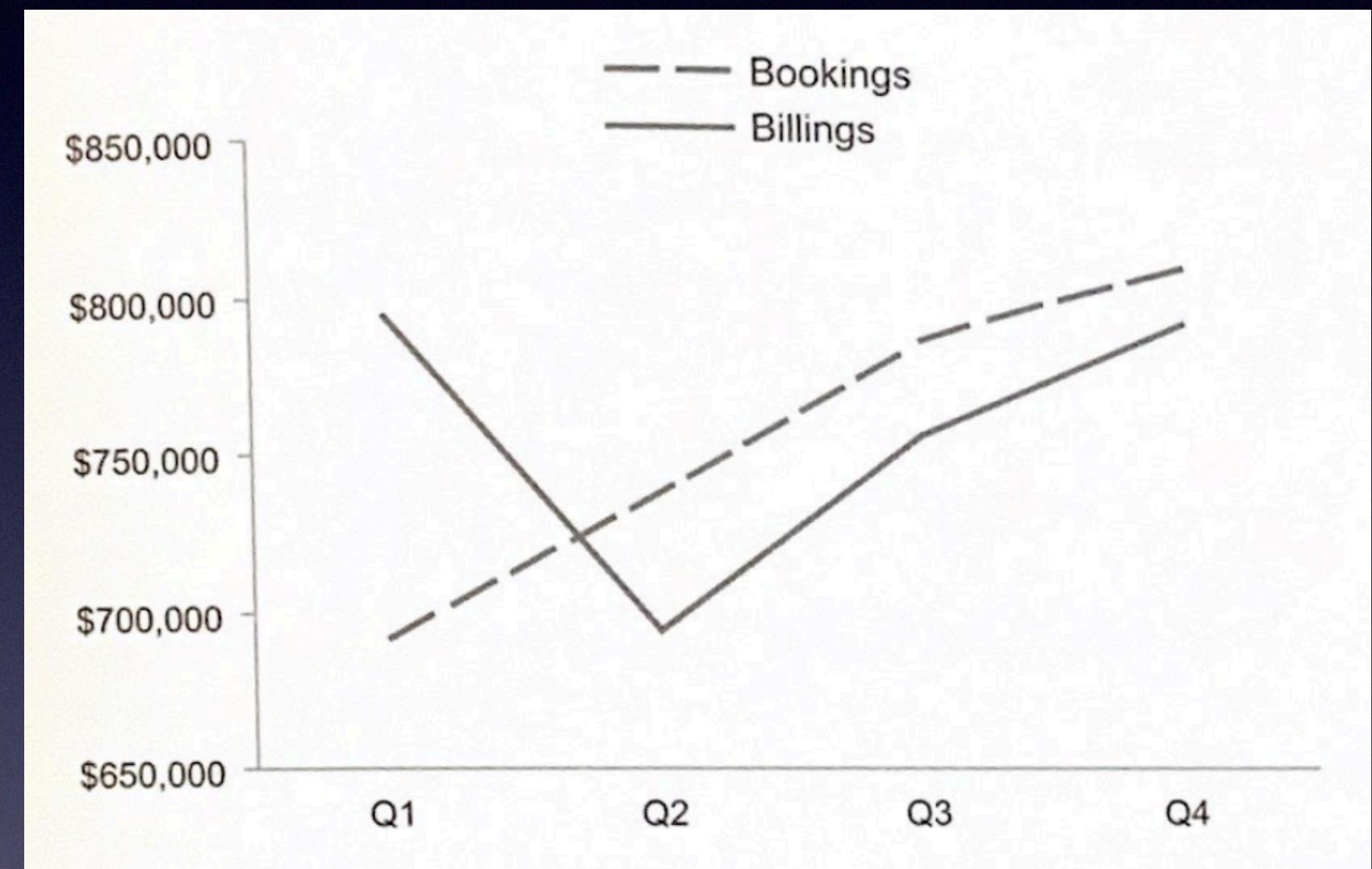
Point Shape and Fill Pattern

- Point shape
 - Only used with points
 - Different shapes distinguish quantitative values that belong to different categories.
- Fill patterns
 - Used for bars or boxes
 - Not common, use as last resort



Line Style

- Variation of line styles to distinguish categories
- Also not common, use as last resort



To Be Continued
Thank You