Research Question

- **Qualitative research & Quantitative research**
  - Qualitative research : gain insights, discover hidden patterns, explore and generate ideas for quantitative analysis
  - Quantitative research : quantification of data, generalization, hypothesis testing
- **Different Question Types**
  - Discover find your way(maps), find relations, identify trends
- **Different Levels of Abstraction/Analysis**
  - Macro/Global level, Meso/local level, Micro level

Data Format

- Structured data

A	B	C	D	E	F
Case	Number	R.Use	Lexical.Item	Style	Store
1		1 retention	Fourth	normal	Saks
1		2 retention	Fourth	normal	Saks
1		3 retention	Fourth	normal	Saks
1		4 retention	Fourth	normal	Saks
1		5 retention	Fourth	normal	Saks
1		6 retention	Fourth	normal	Saks
1		7 retention	Fourth	normal	Saks

- Unstructured data

« Poissas lur di[s] tot en apert : (fol. 2)
« Vostre cor nom tengas cubert,
« Mais digas mi : si Dieus mi dona
« Un'aventura que m'es bona,
« Non sabra bon a totz ensems?
« Ieu ai desirat mout lonc temps
« C'ap N'Archimbaut agues paria,
« Ar son vengutz d'en lai al dia
« Ques el la quer e la demanda :
« Per son anel dominim manda
« Que Flamenca penra sim voil.

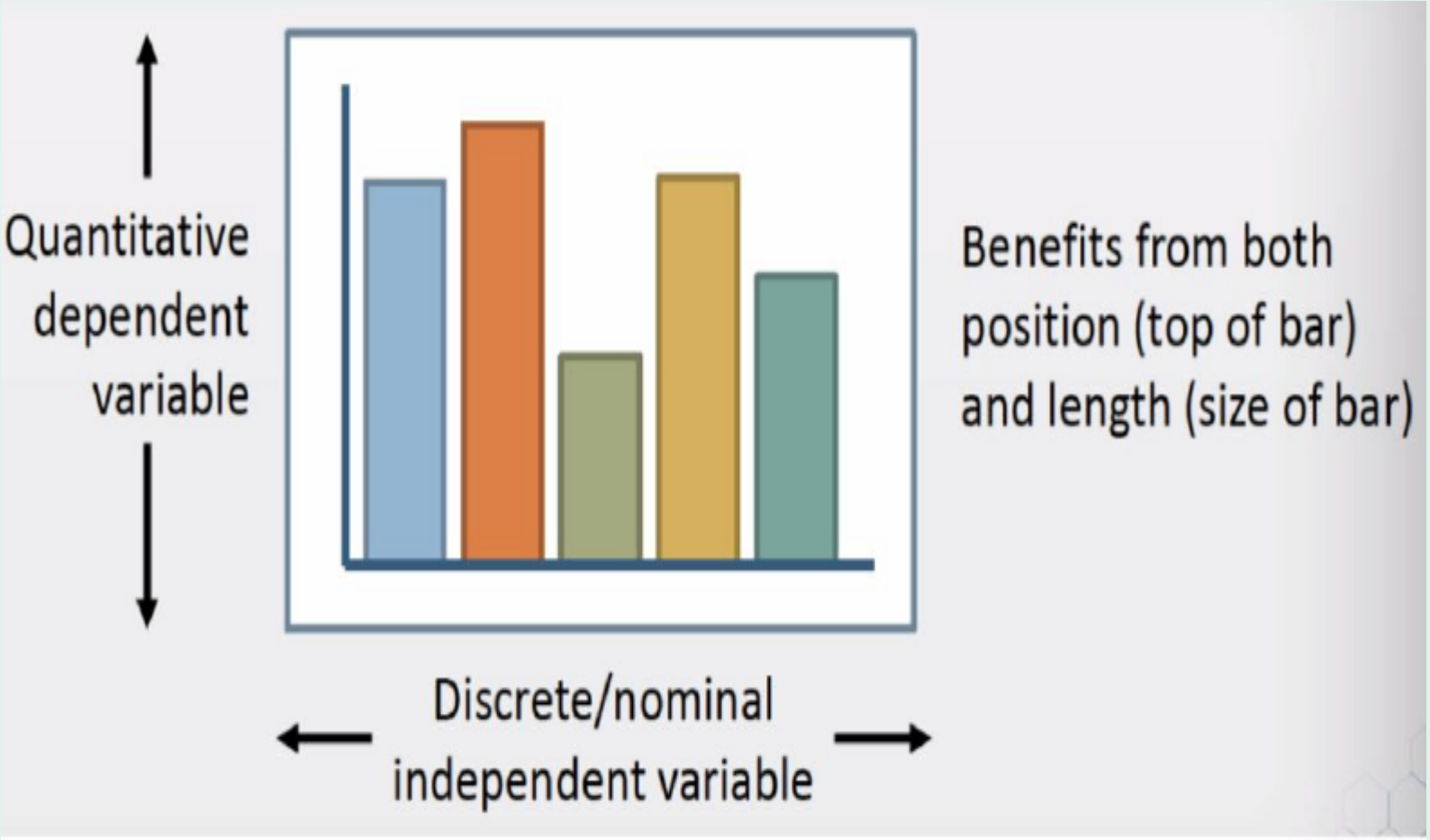
Variables

- Variable - a measurable characteristic
- Independent variables
  - What you have control over and what you think may cause variation
- Dependent
  - What you measure and what is affected by other factors

Variable Types

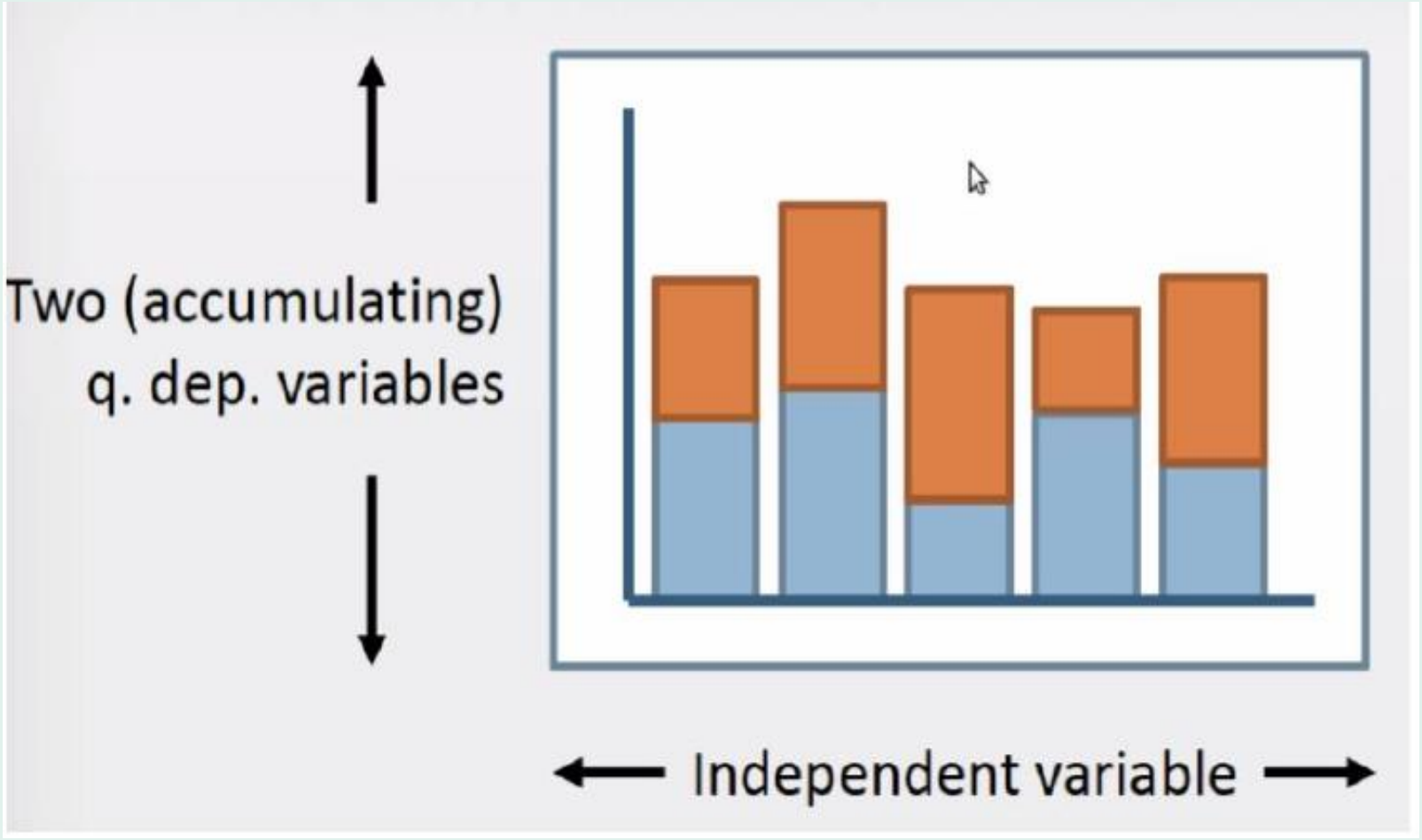
	Discrete (no between values)	**Continuous** (values between)
Ordered (values are comparable)	**Ordinal,** e.g. size: S,M,L,XL,... **Quantitative,** e.g. counts: 1,2,3,...	**Fields,** e.g. altitude, temperature
Unordered (values not comparable)	**Nominal,** e.g. shape: □○Δ **Categories,** e.g. nationality	**Cyclic values,** e.g. directions, hues

Mapping Data – Bar Chart



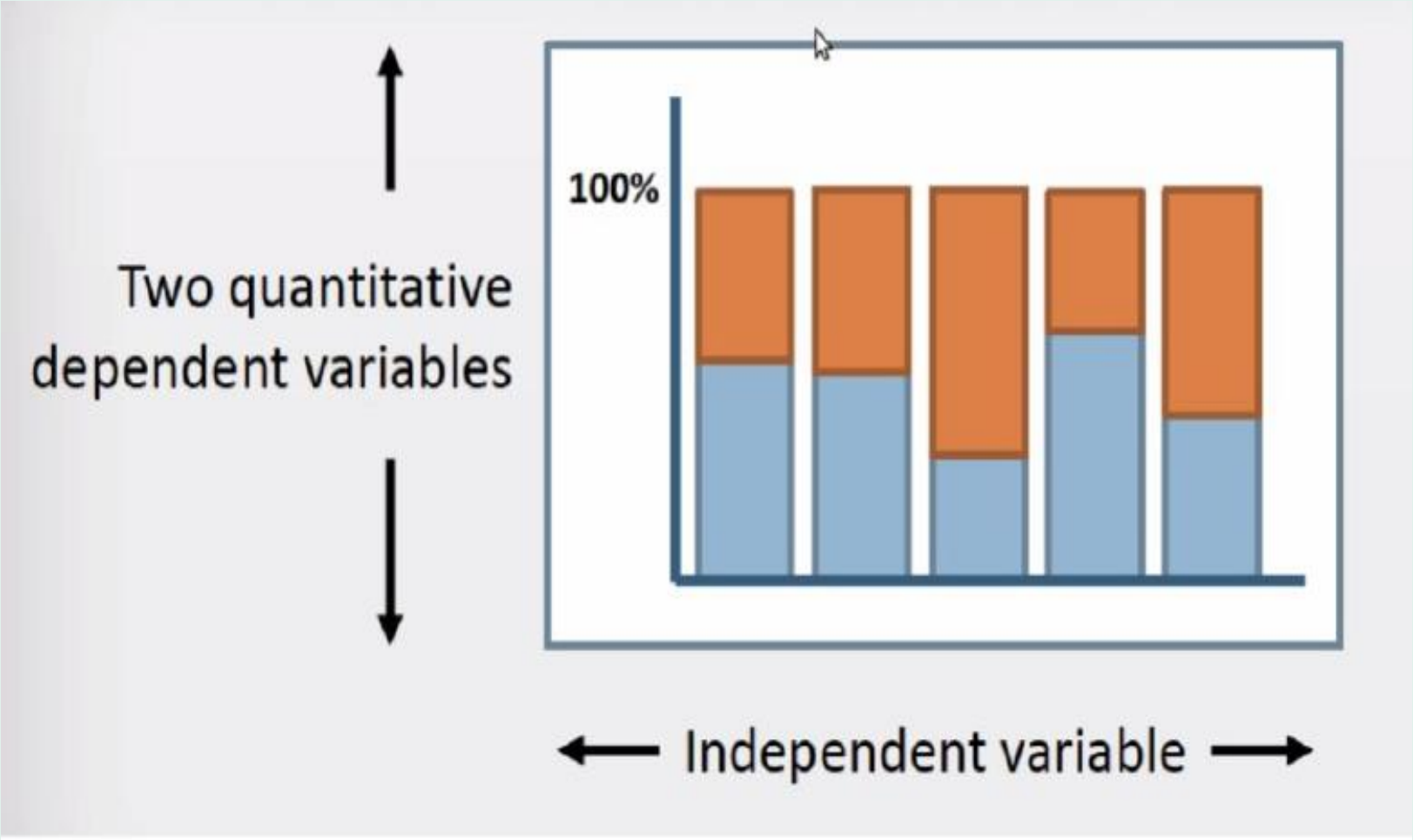
Source: https://www.coursera.org/learn/datavisualization

Mapping Data – Stacked Bar Chart



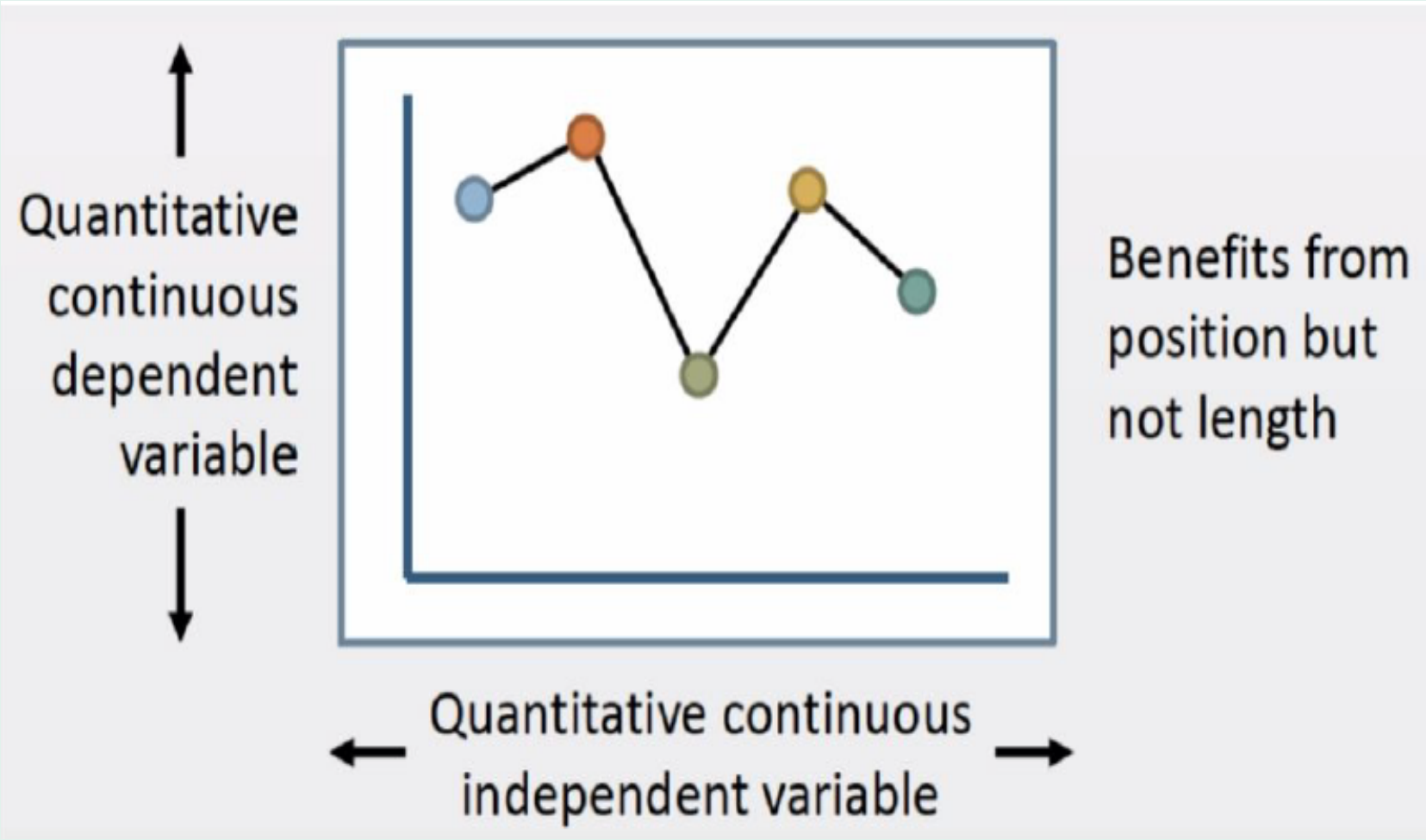
Source: https://www.coursera.org/learn/datavisualization

Mapping Data – Relative Stacked Bar Chart



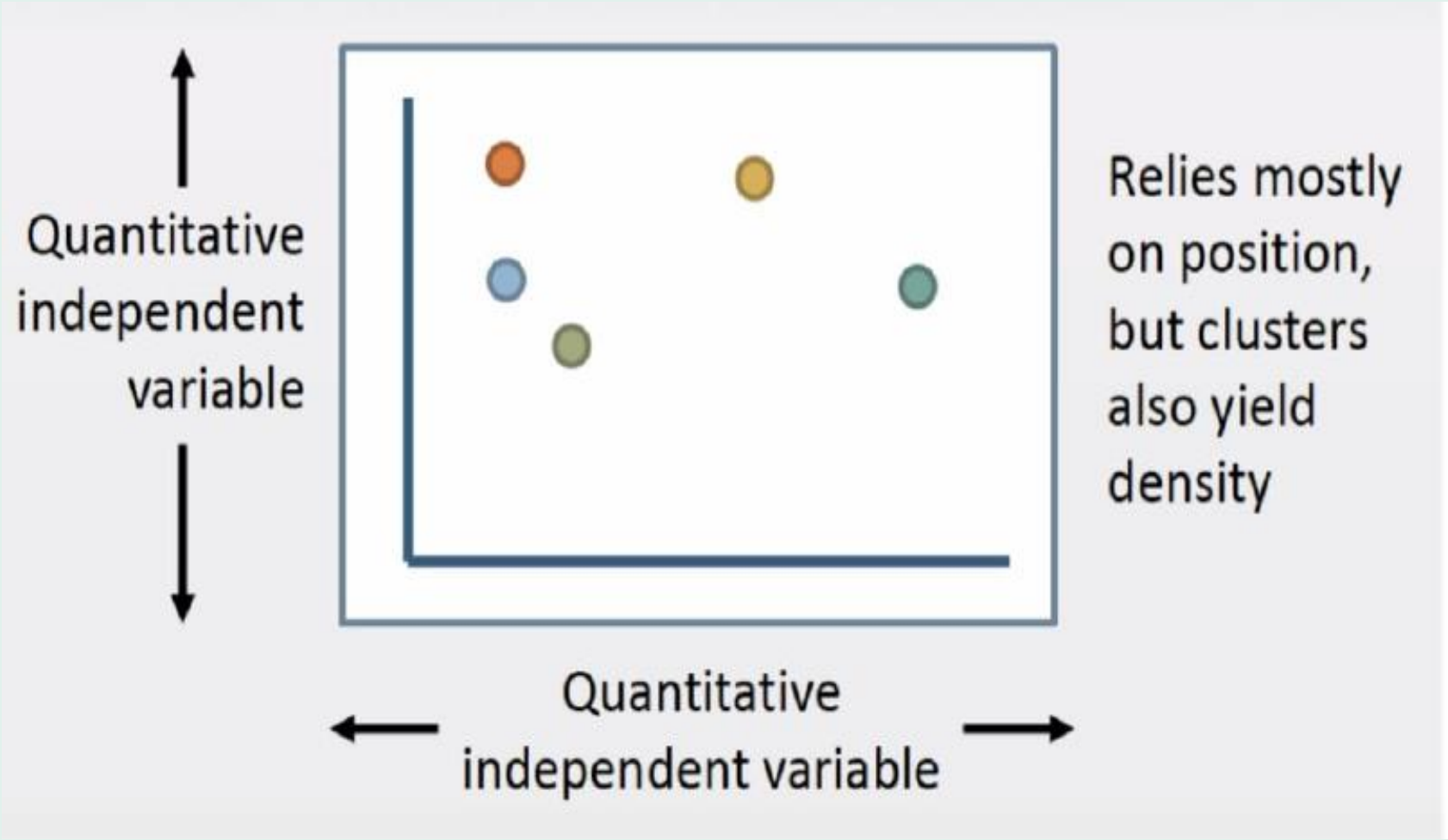
Source: https://www.coursera.org/learn/datavisualization

Mapping Data – Line Chart



Source: https://www.coursera.org/learn/datavisualization

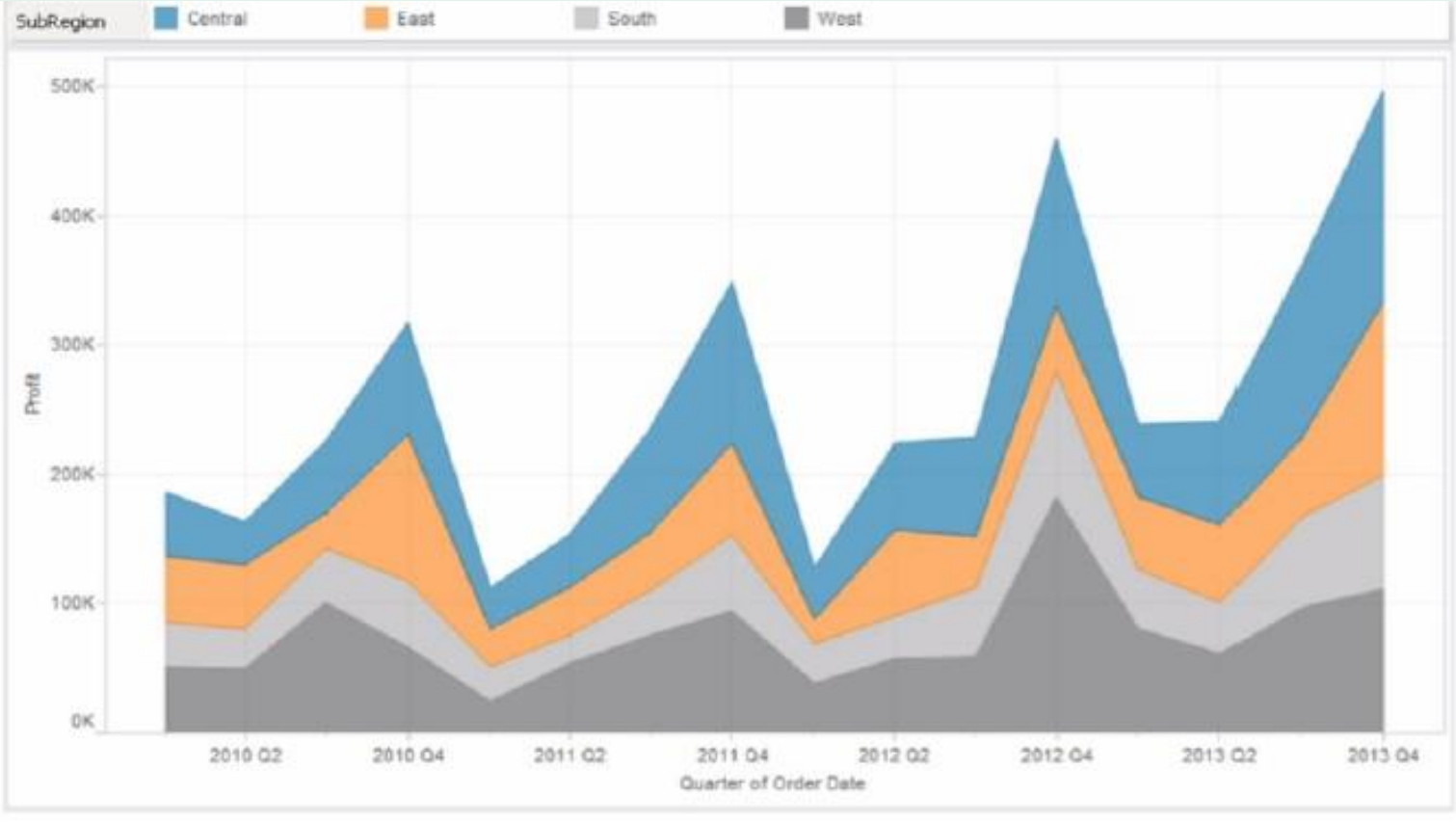
Mapping Data – Scatter Plot



Source: https://www.coursera.org/learn/datavisualization

Mapping Data – Area Chart

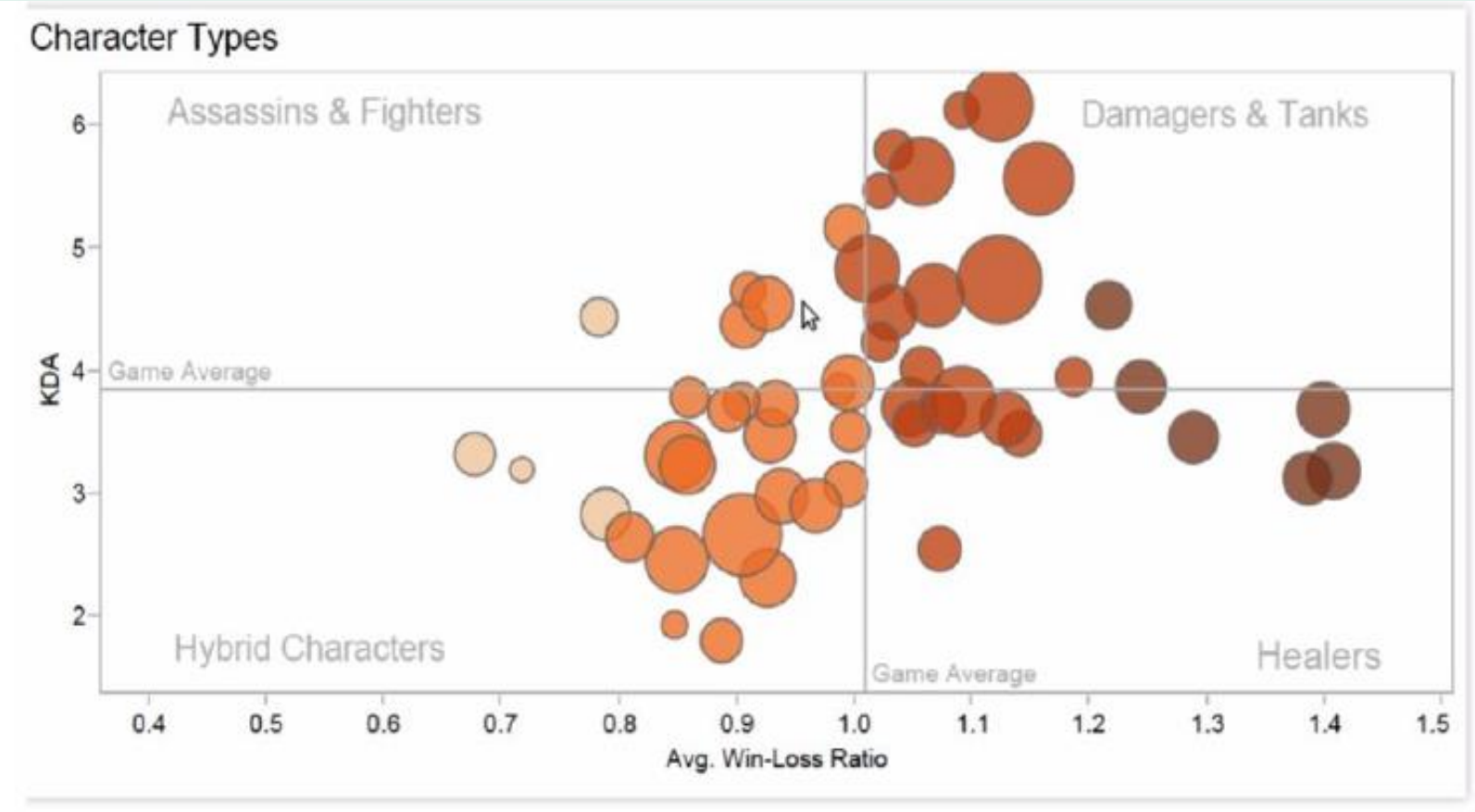
- Combination of a line and a stacked bar chart. The chart shows the total of the fields as well as their relative size to each other.



Source: https://www.interworks.com/fr/blog/ccapitula/2014/11/13/tableau-essentials-chart-types-area-charts-continuous-discrete

Mapping Data – Bubble Chart

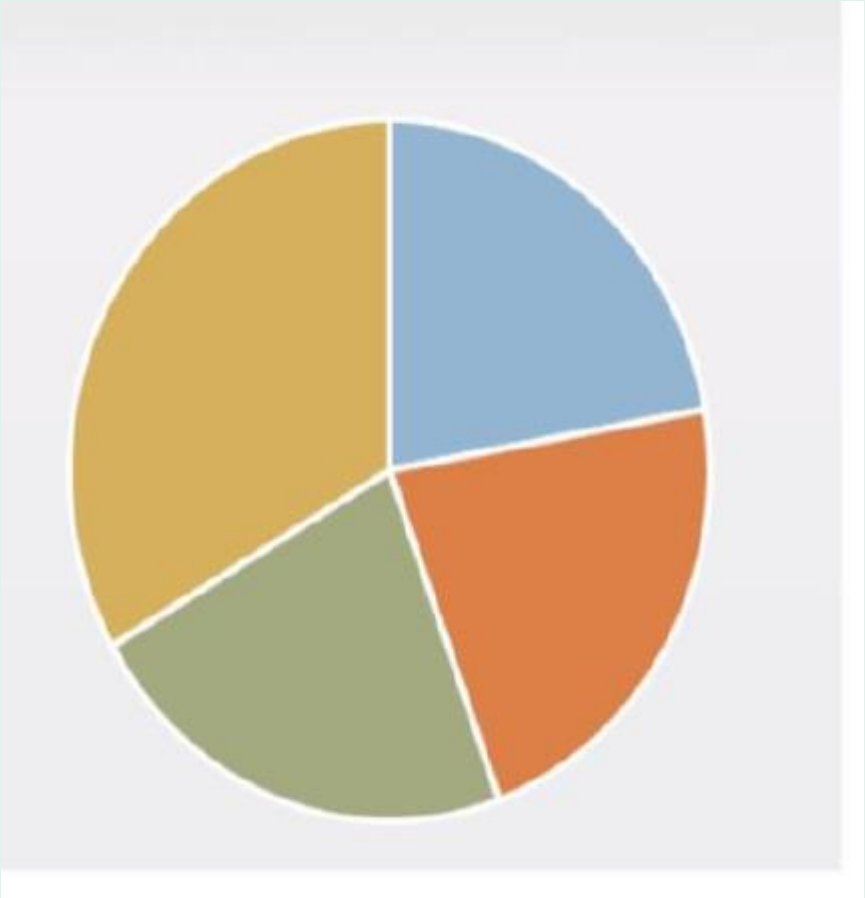
- Plot or technique to accentuate data on scatter plots or maps.



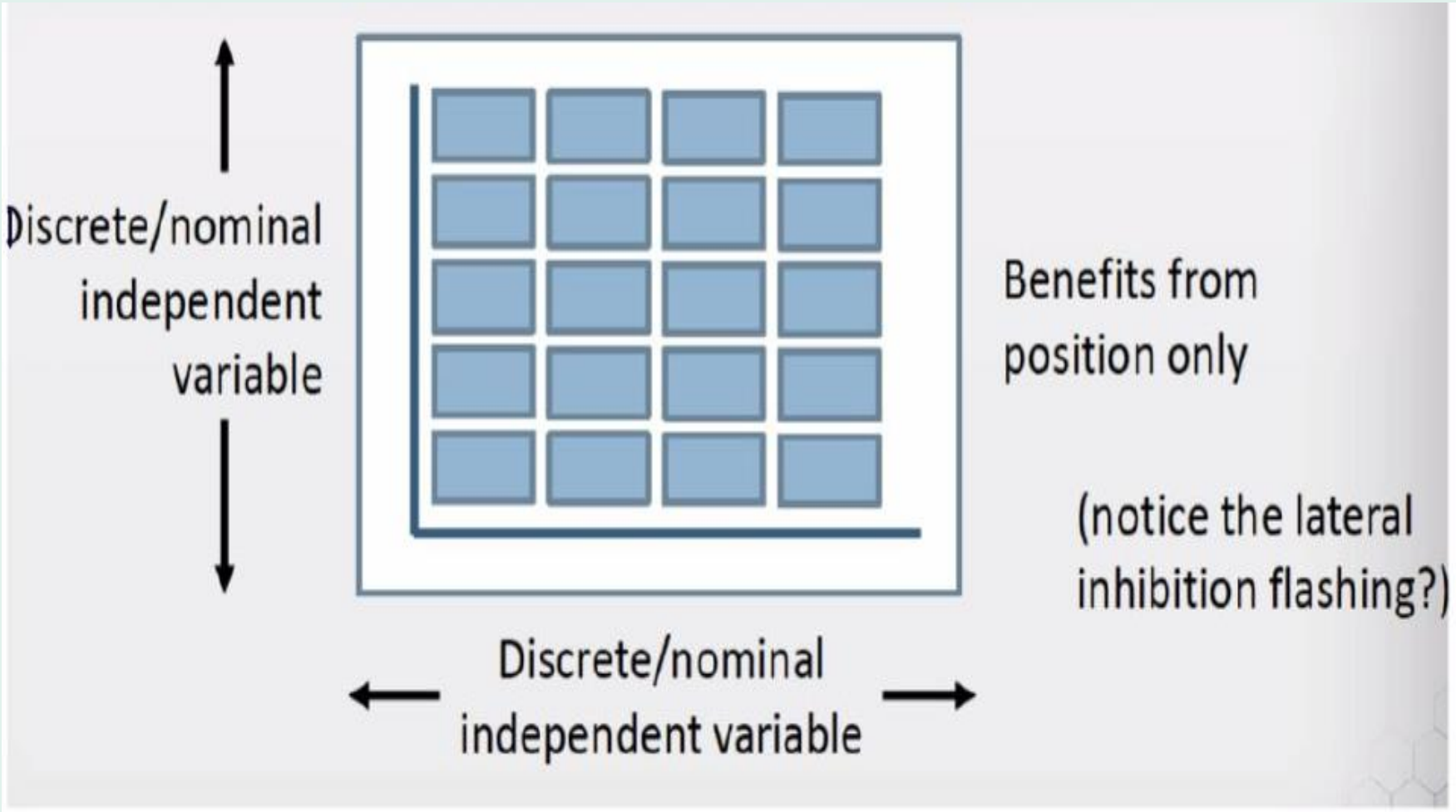
Source: https://www.tableau.com/sites/default/files/media/which_chart_v6_final_0.pdf

Mapping Data – Pie Chart

- Indicates relative proportion of a quantitative dependent variable
- Maps percentage of total to angle



Mapping Data – Table



Source: https://www.coursera.org/learn/datavisualization

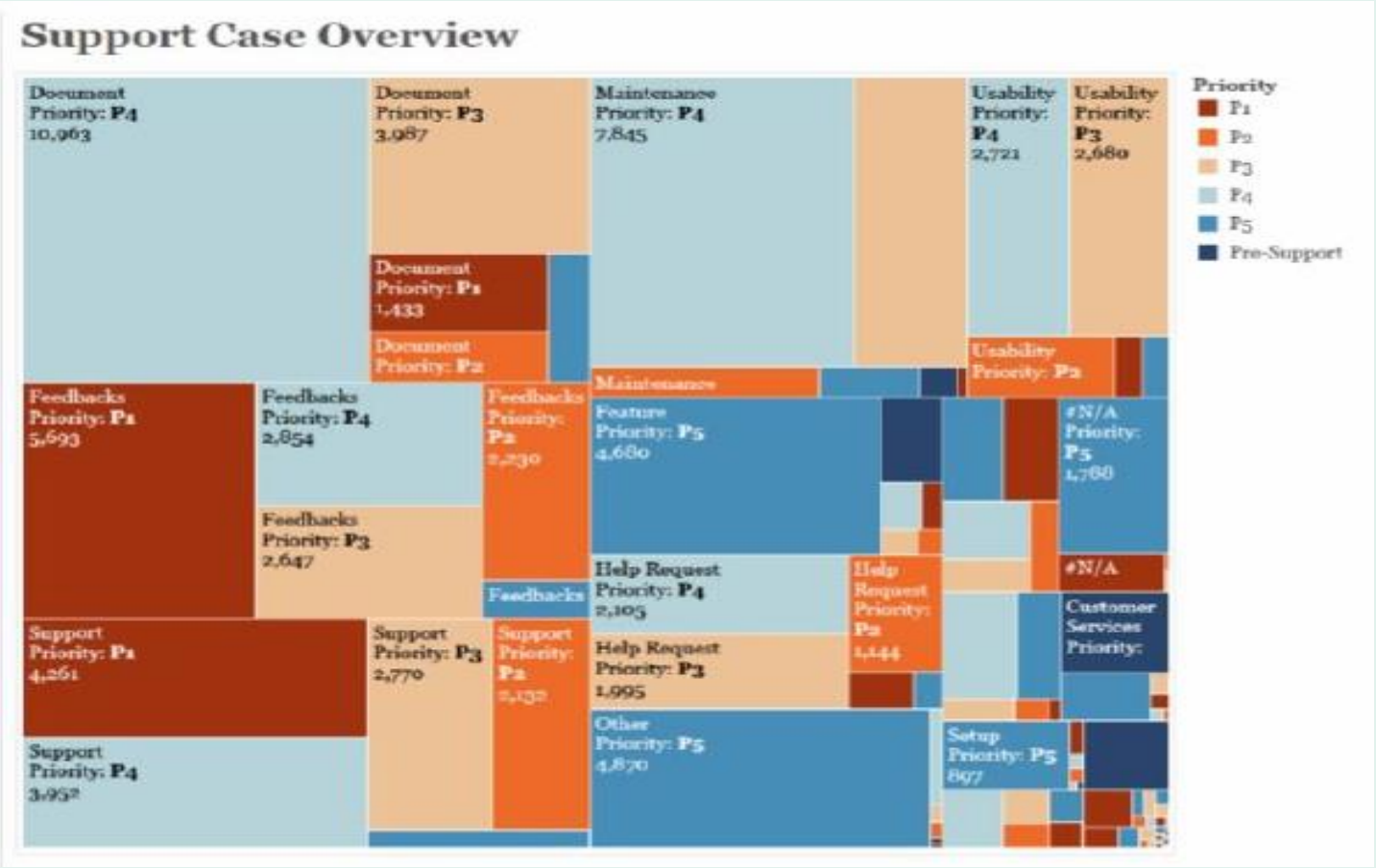
Mapping Data – Heat-map

- Similar to a table with two categories. Color saturation/intensity shows where the intersection is weaker or stronger.

Source: https://www.tableau.com/sites/default/files/media/which_chart_v6_final_0.pdf

Mapping Data – Tree-map (Hierarchical Table)

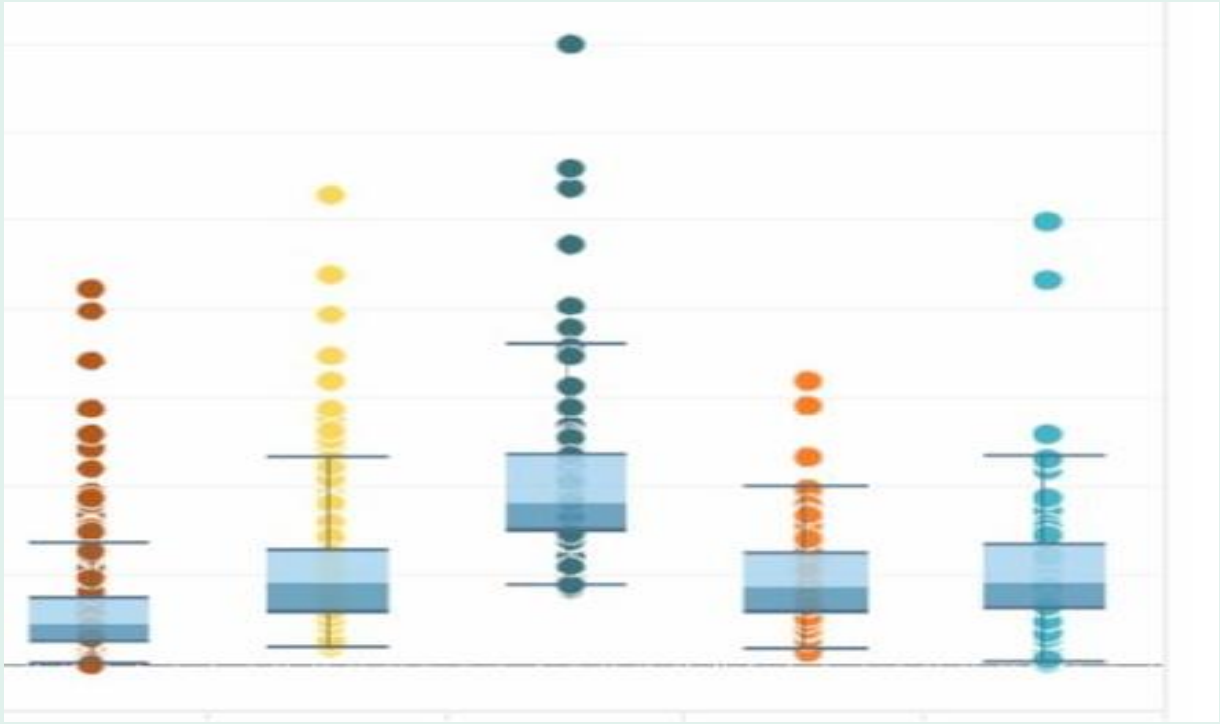
- Shows hierarchical data as a proportion of a whole. This chart uses a series of rectangles, nested within other rectangles.



Source: https://www.tableau.com/sites/default/files/media/which_chart_v6_final_0.pdf

Mapping Data – Box-and-Whisker Plot

- Shows the distribution of a set of a data and how data is skewed towards one end, identifying outliers in your data.
- Box - contains the median of the data along with the 1st and 3rd quartiles
- Whiskers - show maximum and minimum points within the data



Source: https://www.tableau.com/sites/default/files/media/which_chart_v6_final_0.pdf

References

[1] Illuminating the Path: The R&D Agenda for Visual Analytics, Editors: Thomas and Cook

[2] Keim et al, chapter in Information Visualization: Human-Centered Issues and Perspectives, 2008.