My Favorite Pie (Chart)

Markus Ehrenmueller-Jensen

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Improve Your Data Visualization

Markus Ehrenmüller-Jensen

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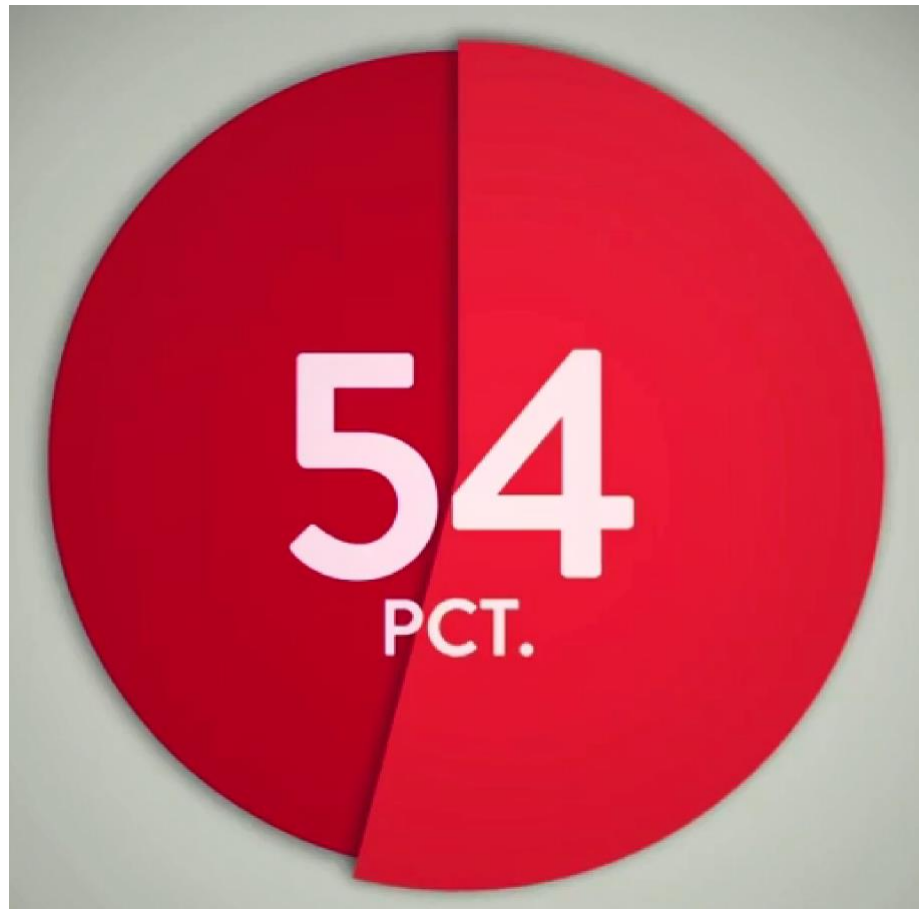
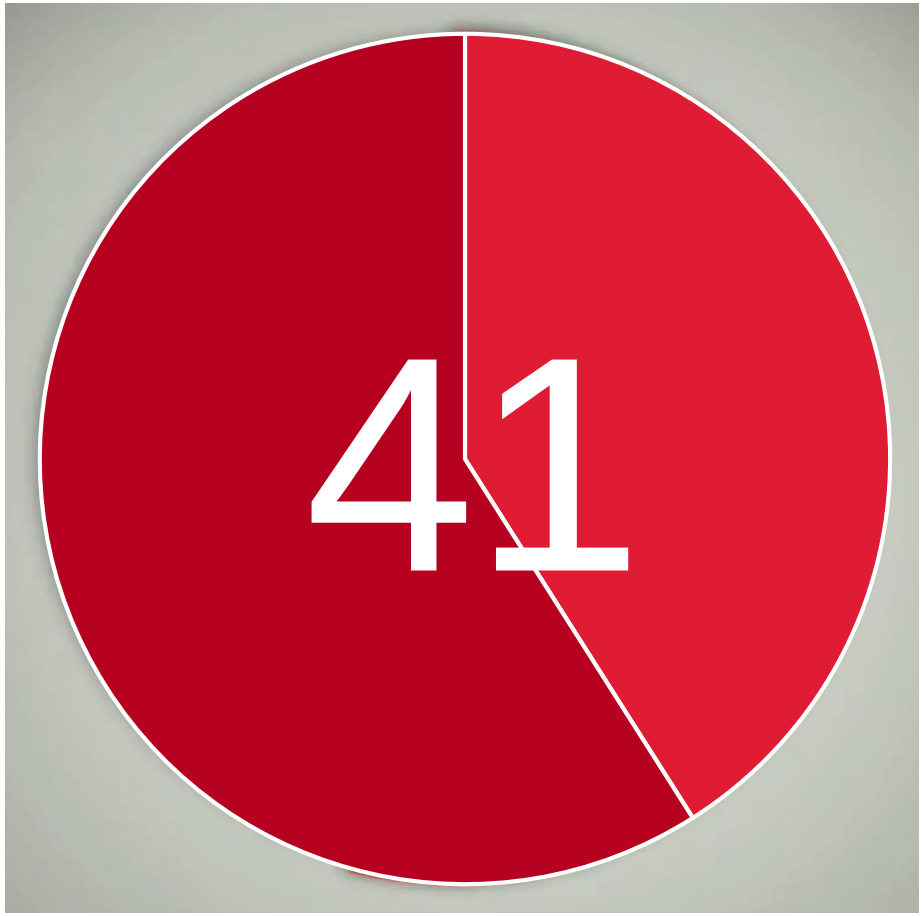

54
PCT.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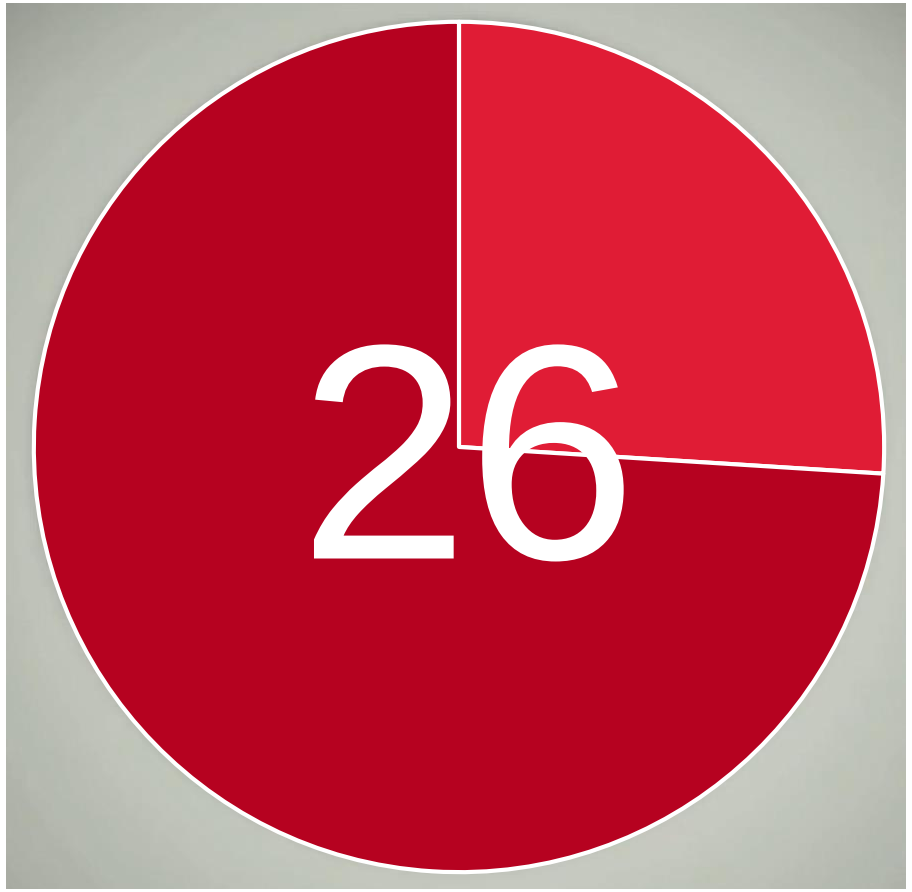

26

Source: https://www.news.com.au/entertainment/tv/cnn-is-very-confused-about-australia-and-austria/new

Agenda

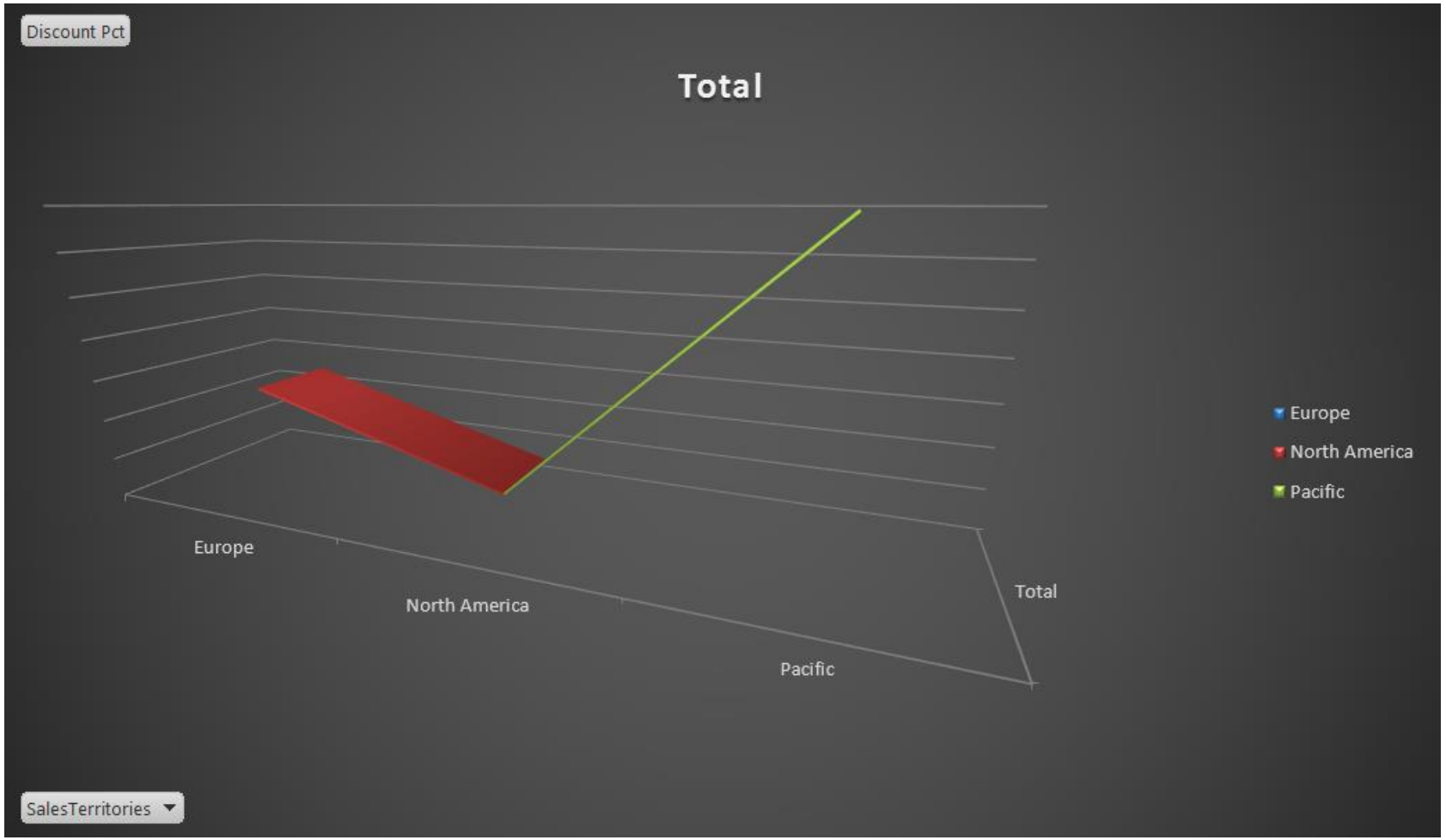
The Good, The Bad and The Pie Chart

Rules

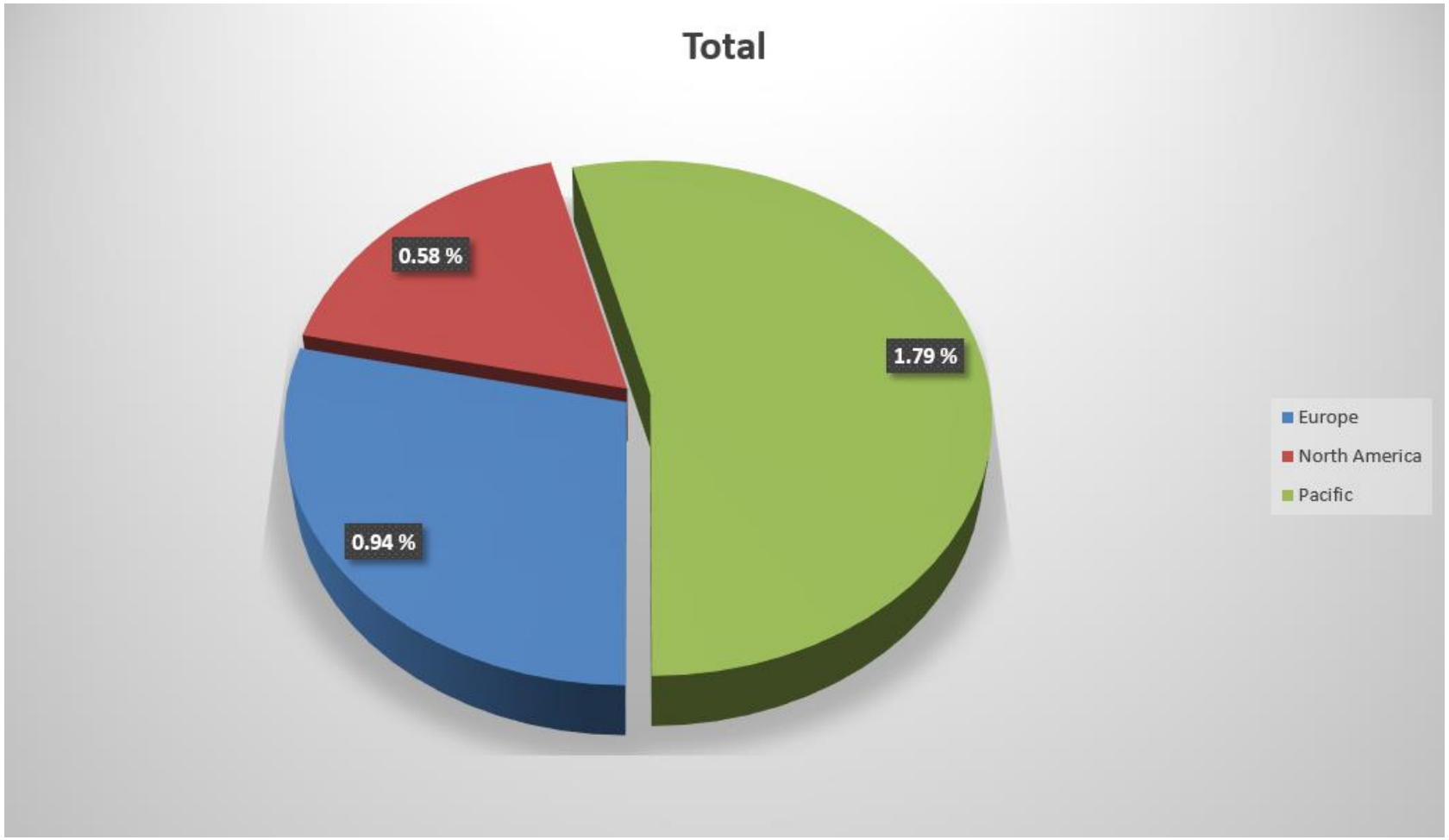
The Good, …

Sales Territory Group	Discount Amount	Discount Pct
North America	396,487	0.58%
Europe	102,487	0.94%
Pacific	28,534	1.79%
Total	**527,508**	**0.66%**

The Bad, …


Discount Pct
Total
Europe
North America
Pacific
Europe
North America
Pacific
Total
SalesTerritories

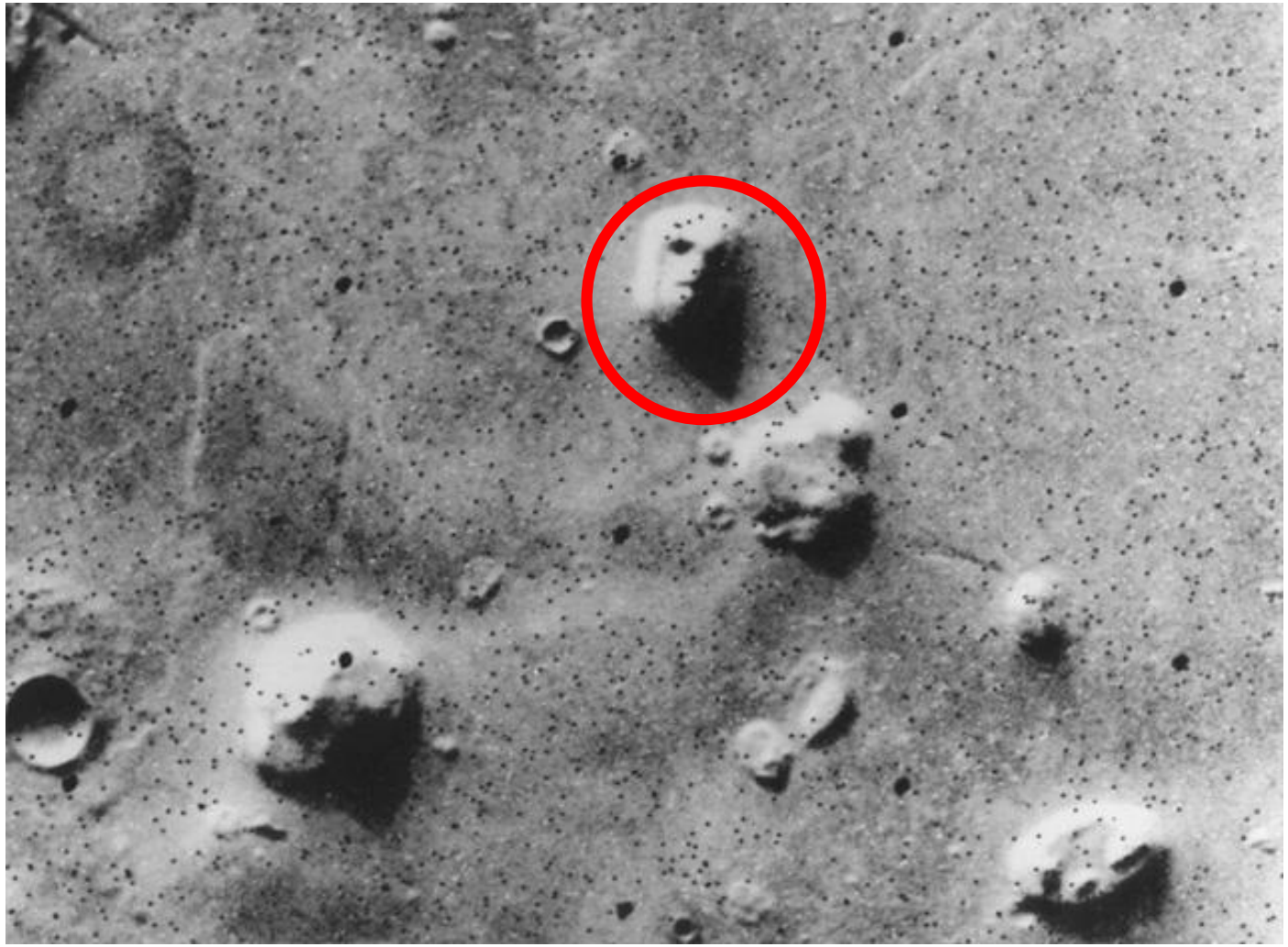
… and The Pie Chart



From Data to Action

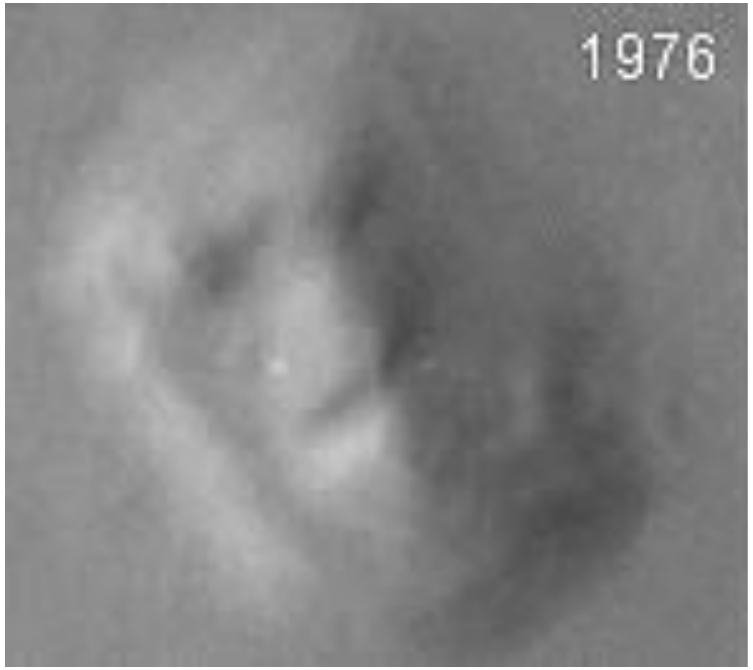
	Data	1,234,567.89
+	Context	Sales in USD
+/-	Pertinence	1.2 Mio
=	Information	
*	Presentation	Line Chart
=	Insight	Declining Sales
→	Action	Increase Marketing

The Face on Mars



Source: http://www.space.com/17191-face-on-mars.html

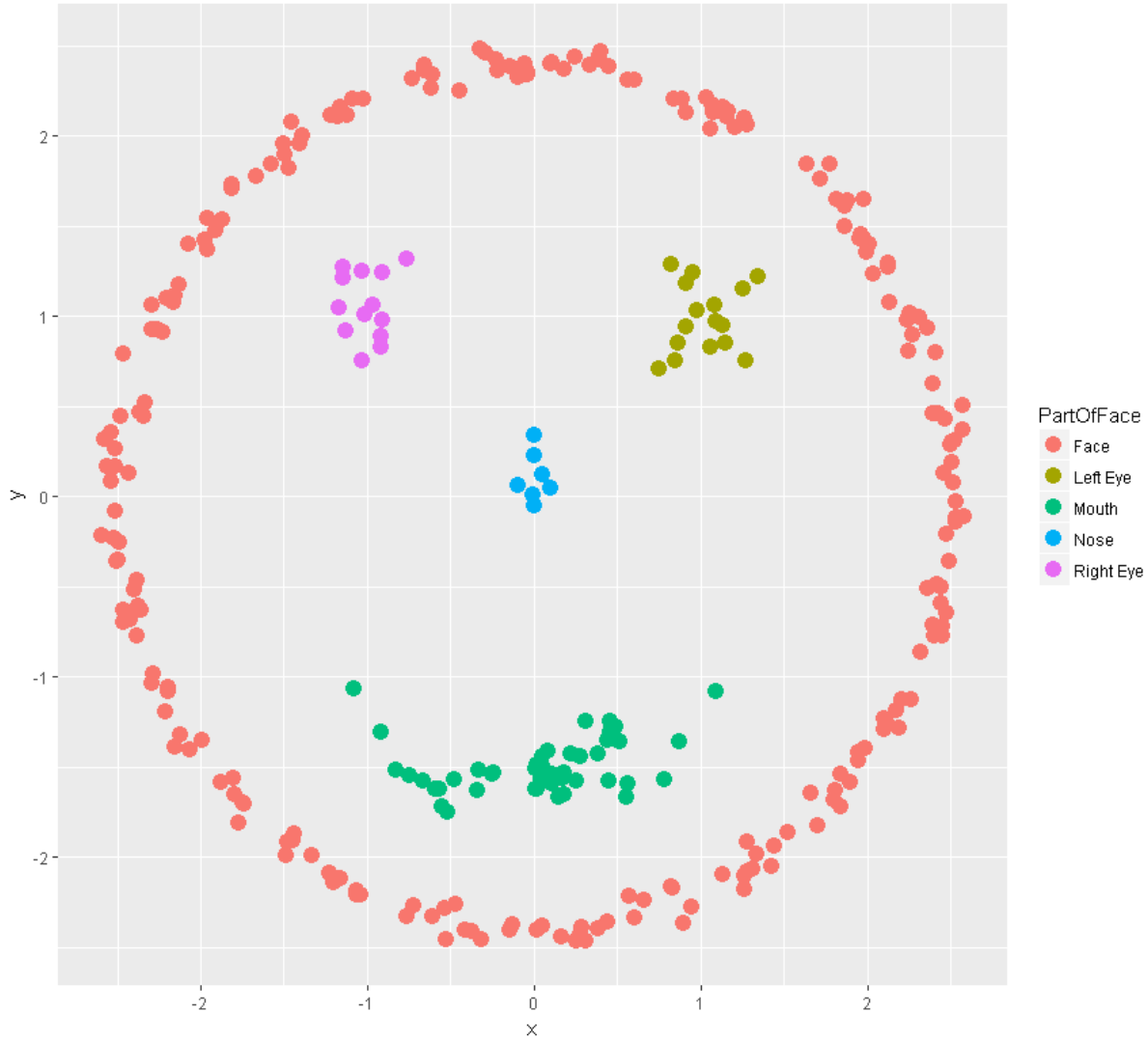
The Face on Mars



Source: http://www.space.com/17191-face-on-mars.html

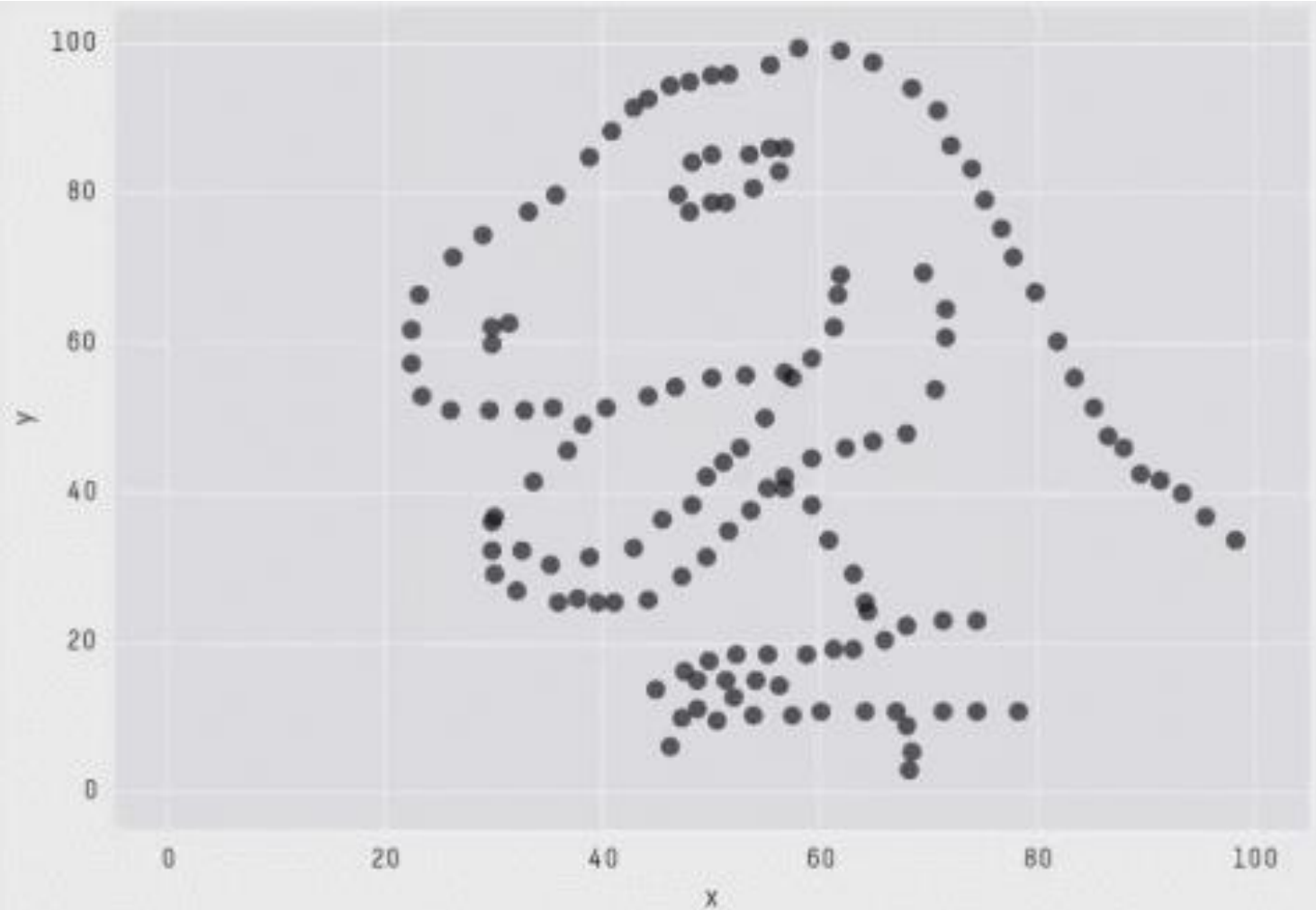
ESA/HUBBLE/NASA
ESA/HUBBLE/NASA 2019-06-19

Pattern Recognition



```
X Mean: 54.26
Y Mean: 47.83
X SD  : 16.76
Y SD  : 26.93
Corr. : -0.06
```

Source: https://www.autodeskresearch.com/publications/samestats



X Mean: 54.2659224
Y Mean: 47.8313999
X SD : 16.7649829
Y SD : 26.9342120
Corr. : -0.0642526

Source: https://www.autodeskresearch.com/publications/samestats

You shall …

1. Use proper chart-type.
2. Display as few information as possible, as much information as necessary.
3. Encode accurately.
4. Highlight important things.
5. Calculate measures.

reducing

enriching

1.Use proper chart-type.

Table

Pie

Bar/Columns

Line

Portfolio / Scatter

Map

Table

Compare individual values
Precise values
Detail and summary
Several scales/units

vs. Chart
- Patterns, Trend, Exceptions
- Relationships

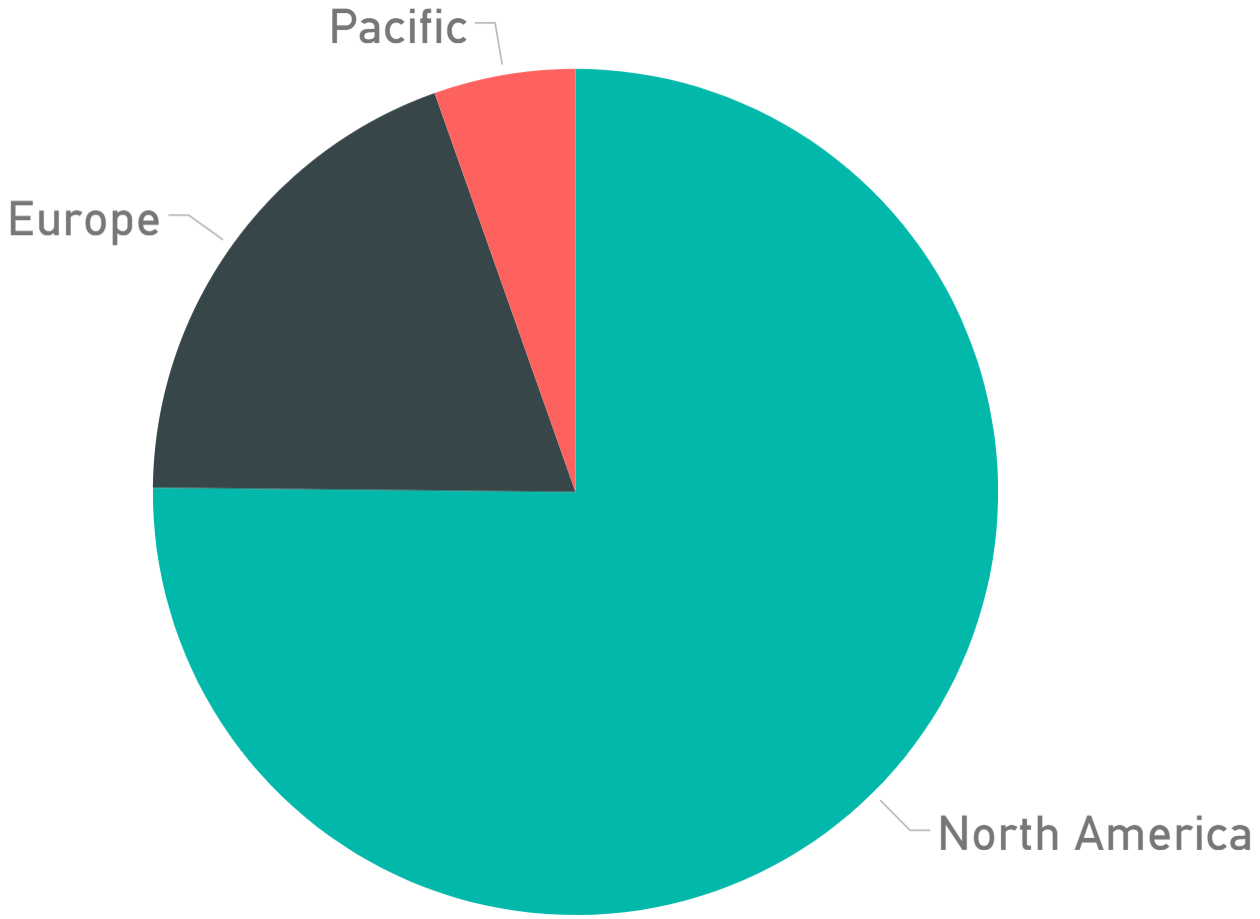
Sales Territory Group	Discount Amount
Europe	102,487
North America	396,487
Pacific	28,534

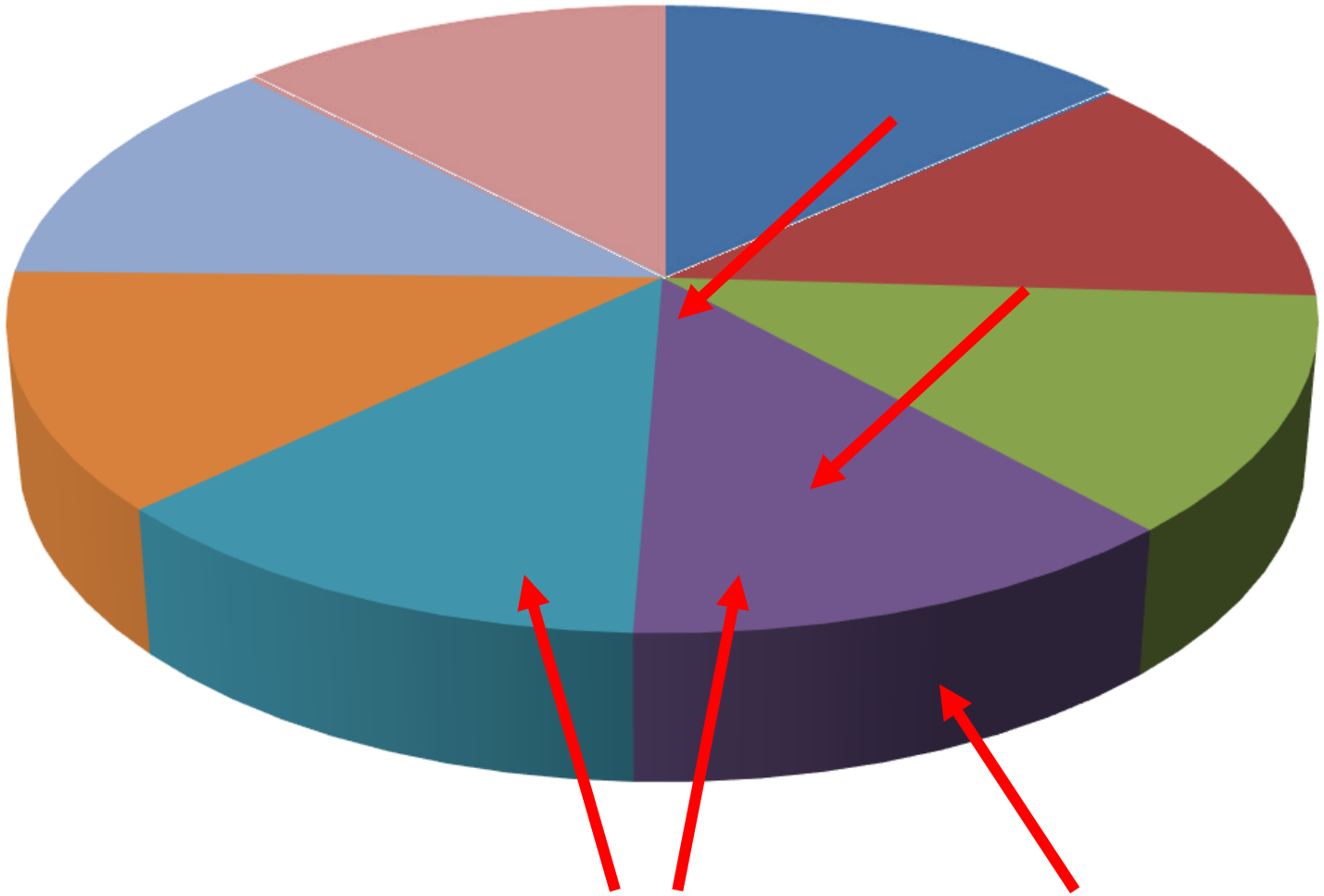
Demo

Table

Pie

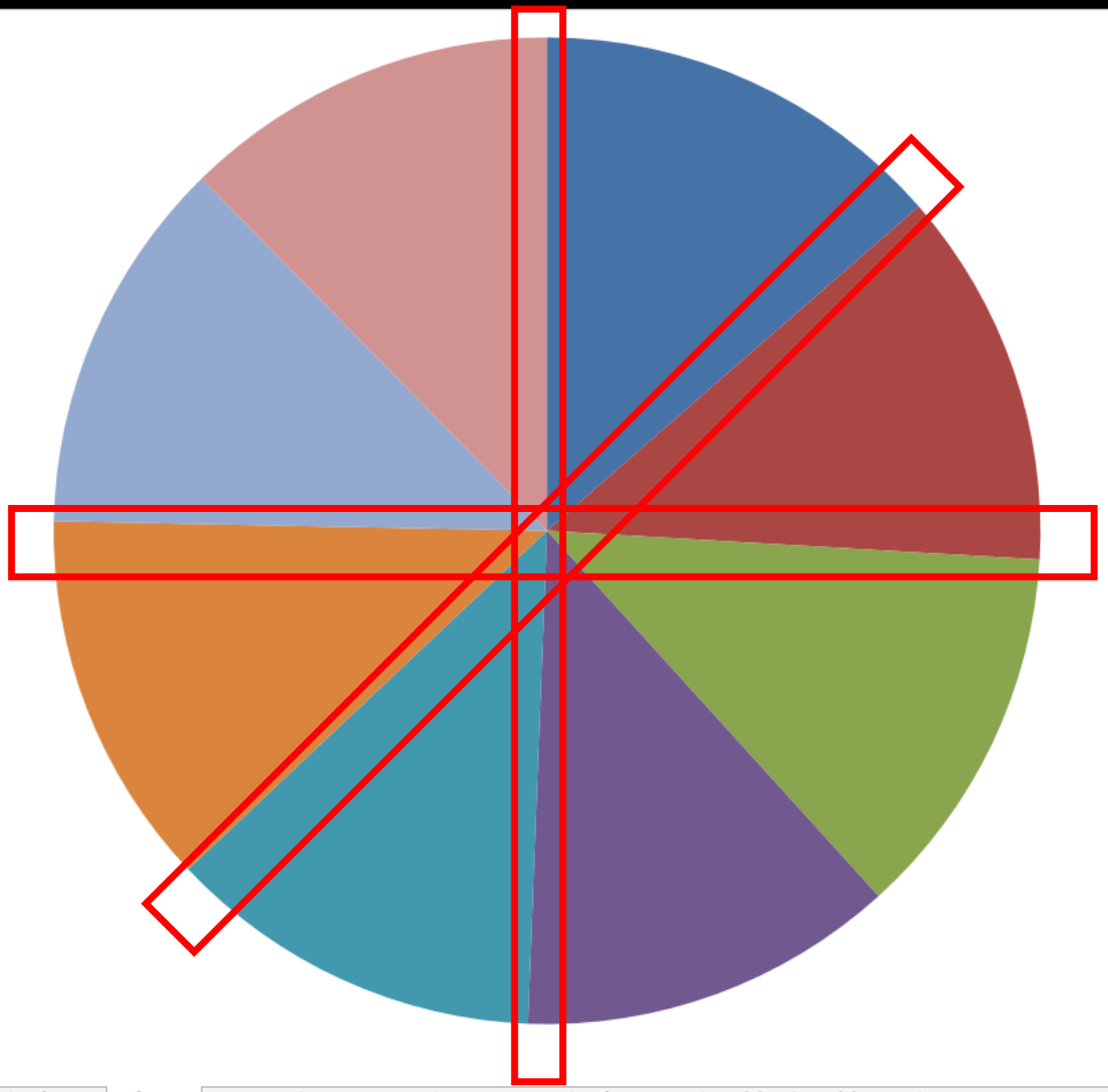
Majority of (two) values





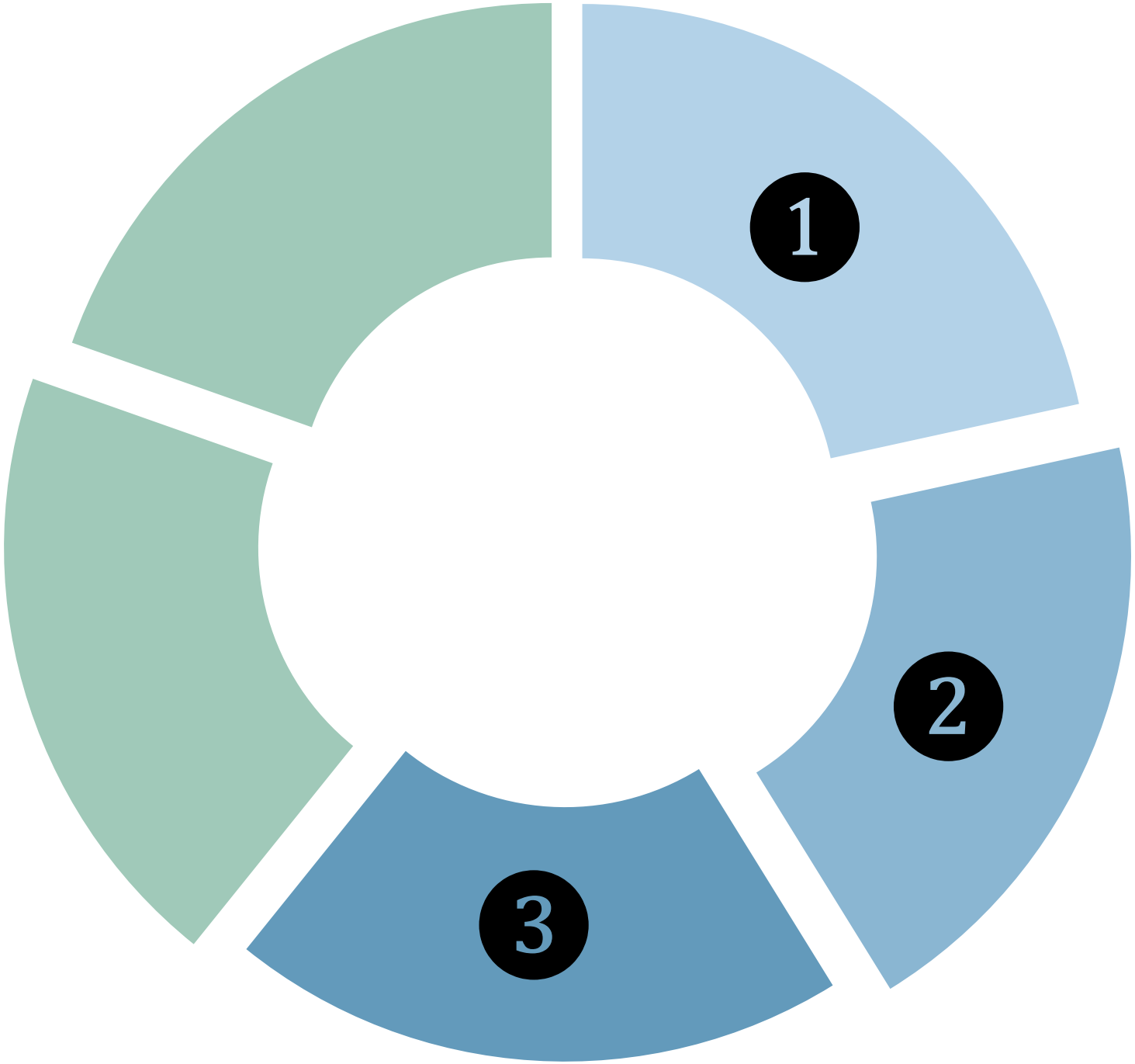
A
B
C
D
E
F
G
H

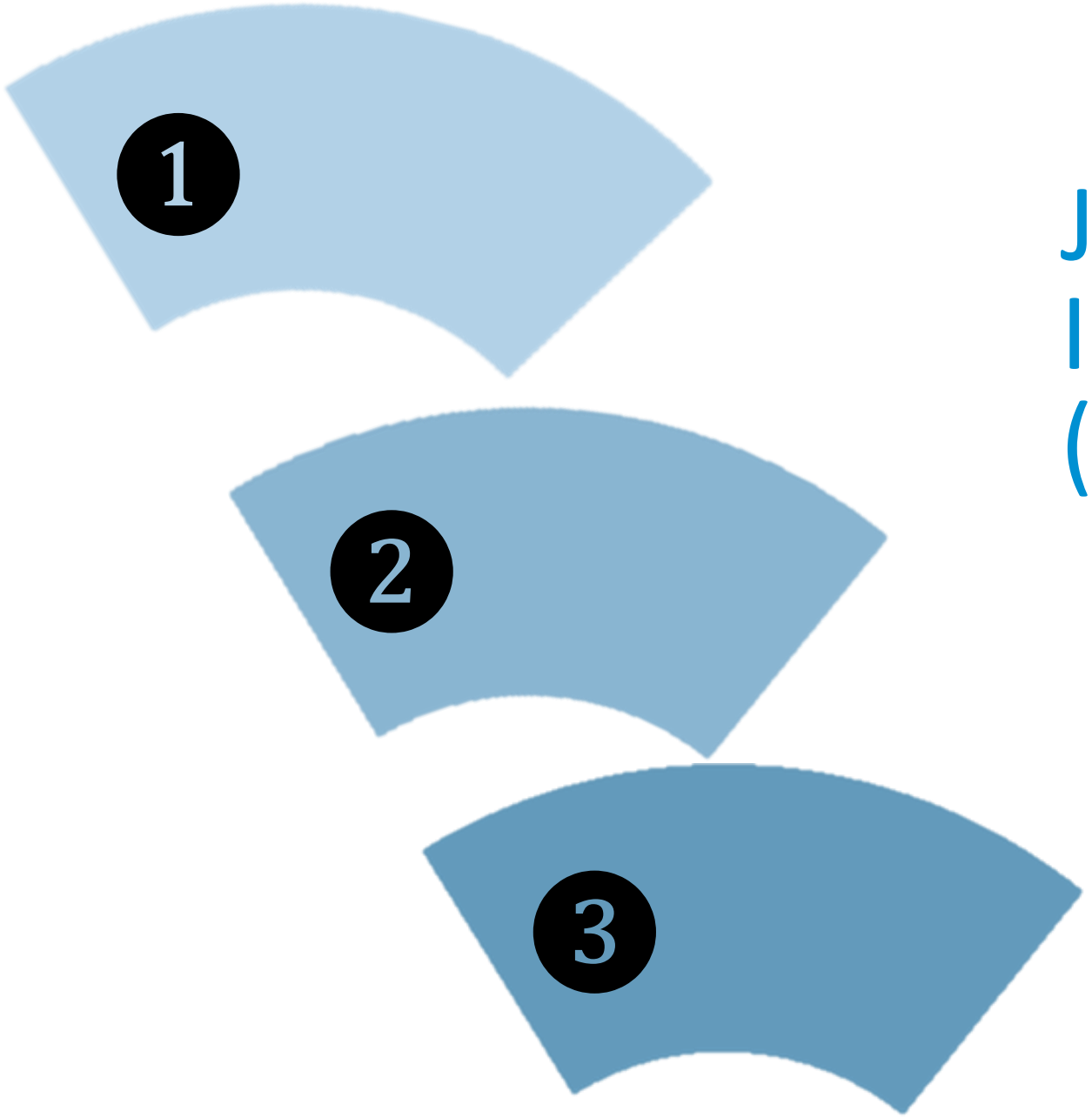
Pie3D | Pie2D | Bar2D | Bar2D (2) | Bar2D (3) | Pie3D (2) | Table | Table (2)



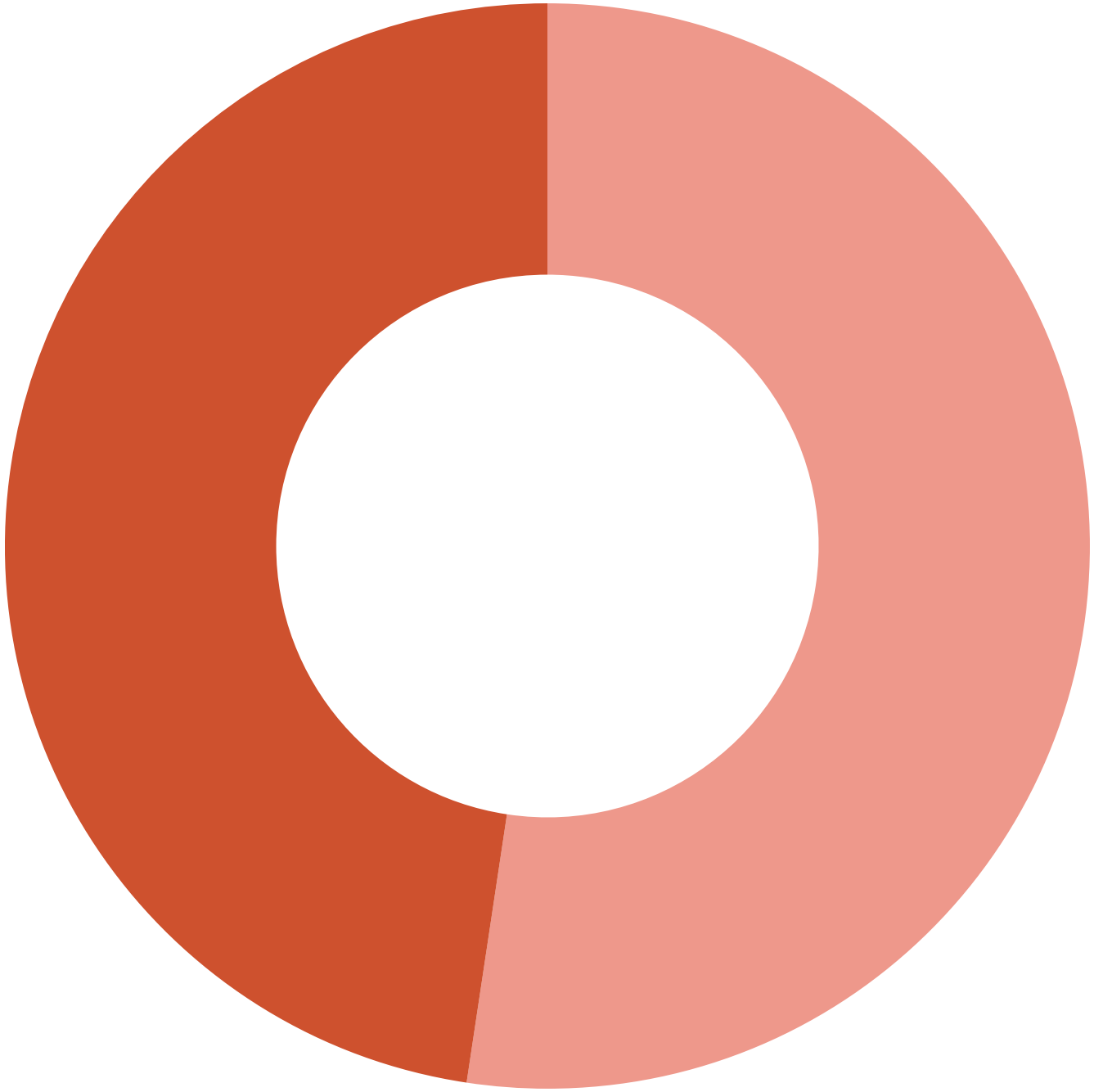
A
B
C
D
E
F
G
H

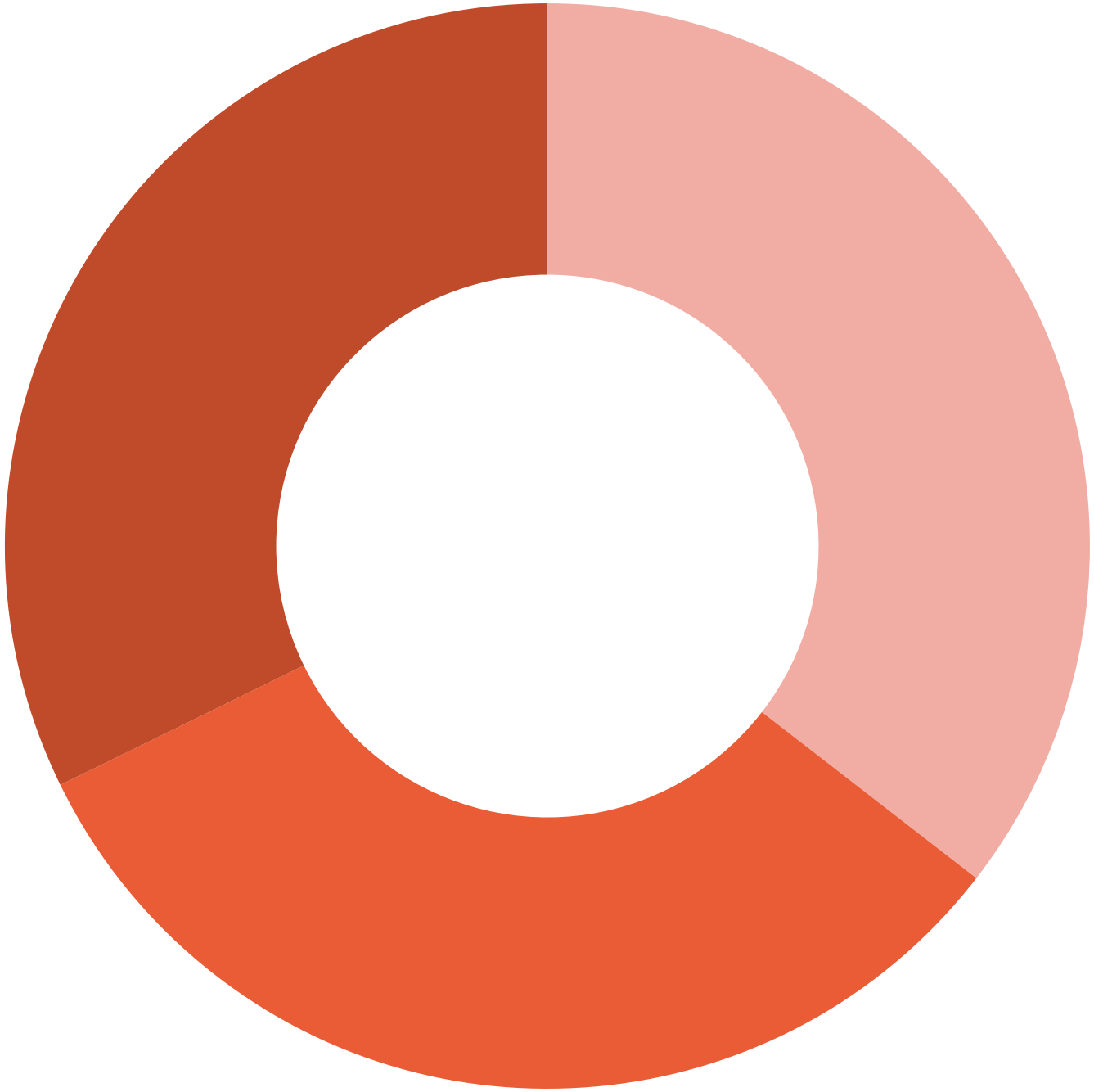
Pie3D | Pie2D | Bar2D | Bar2D (2) | Bar2D (3) | Pie3D (2) | Table | Table (2)

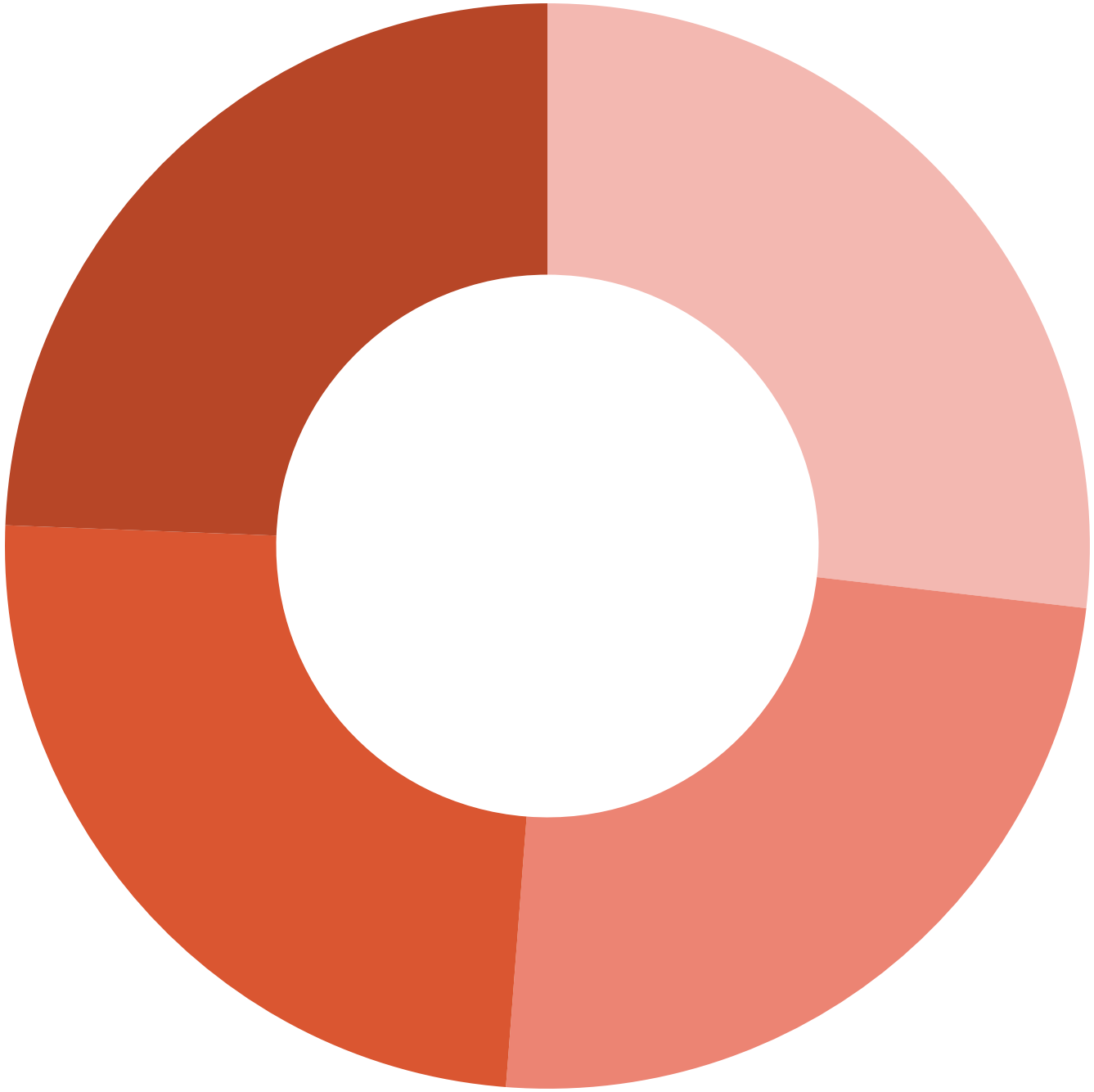

1
2
3

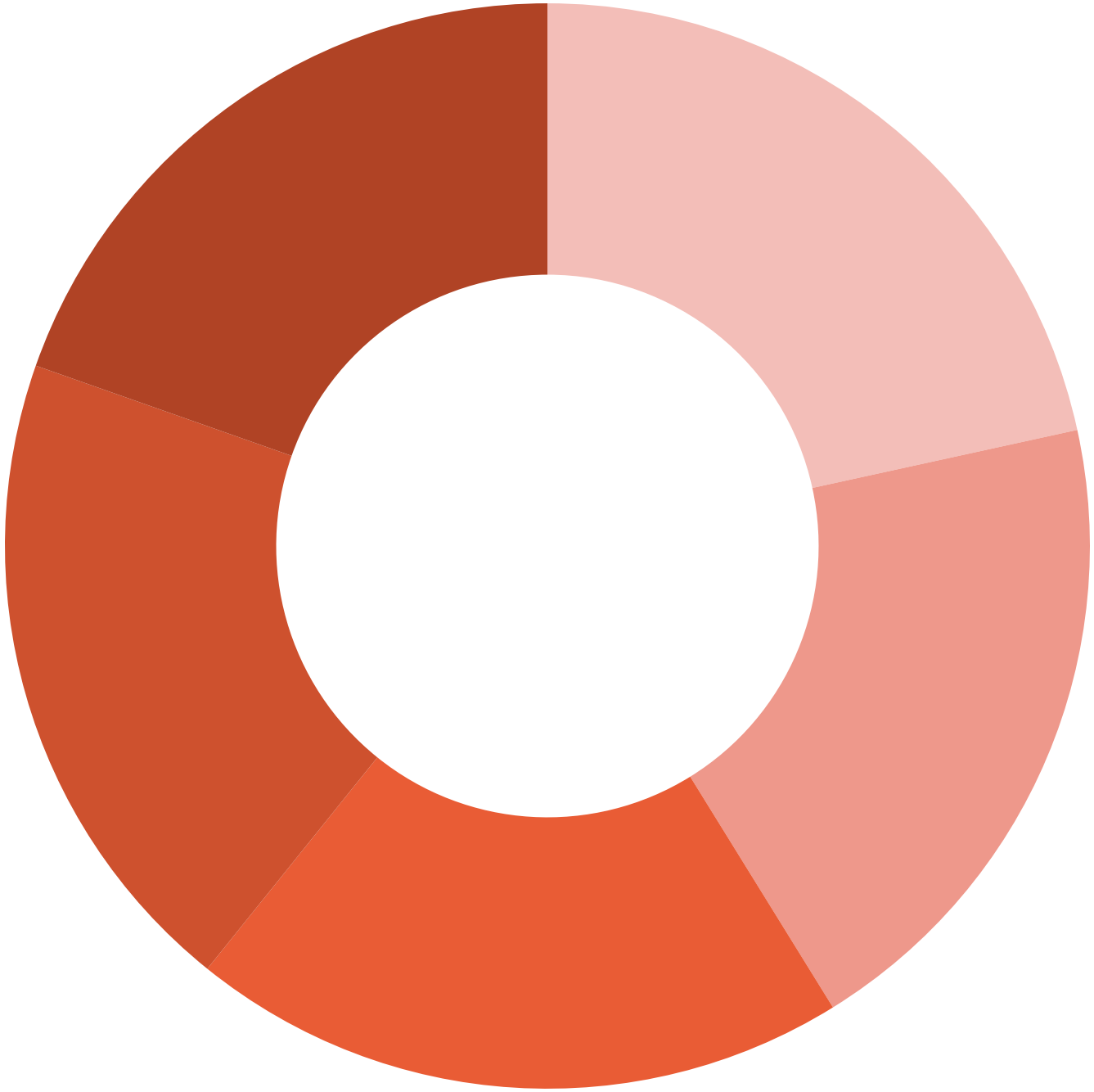


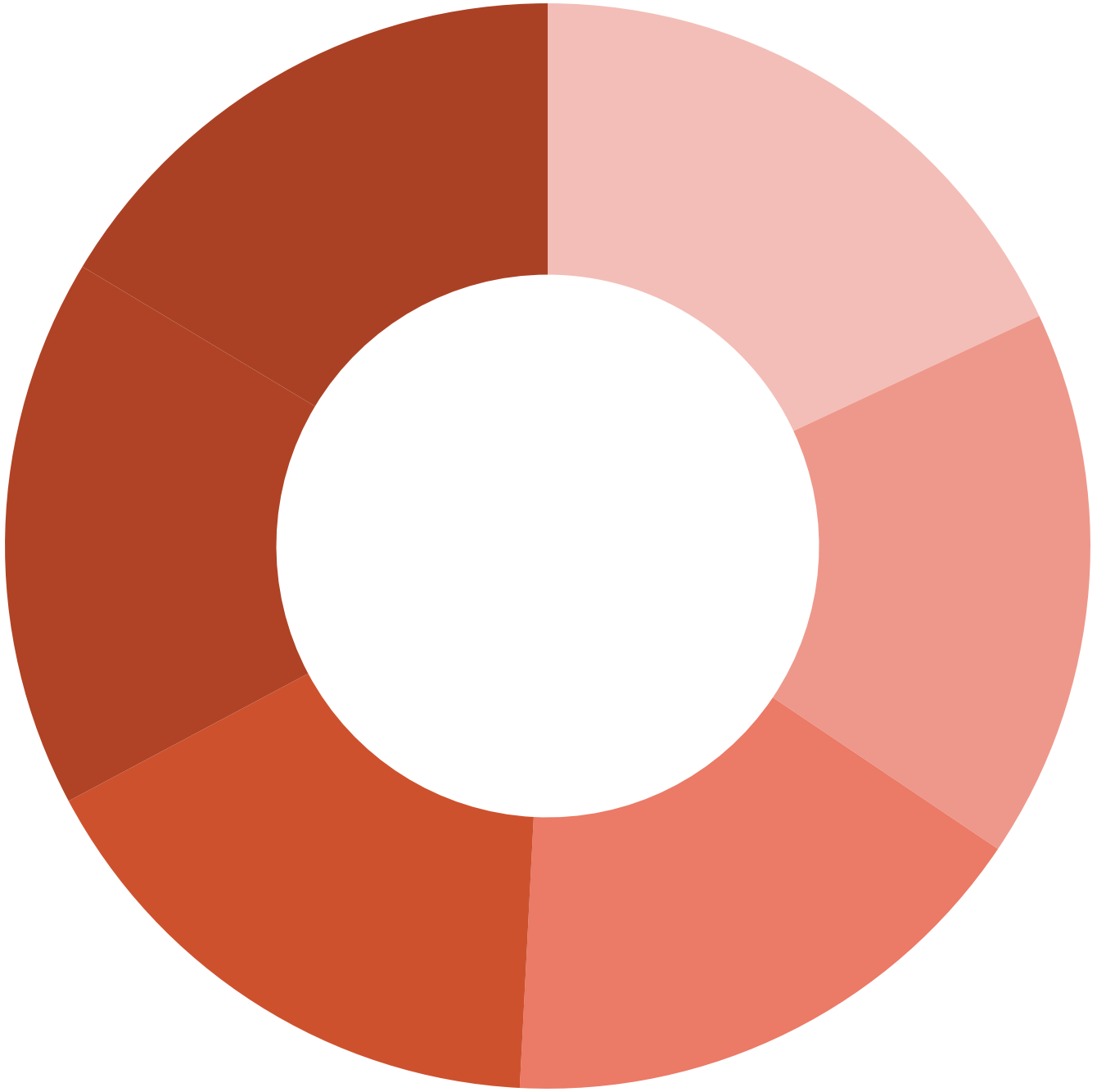
Jastrow Illusion (1892)

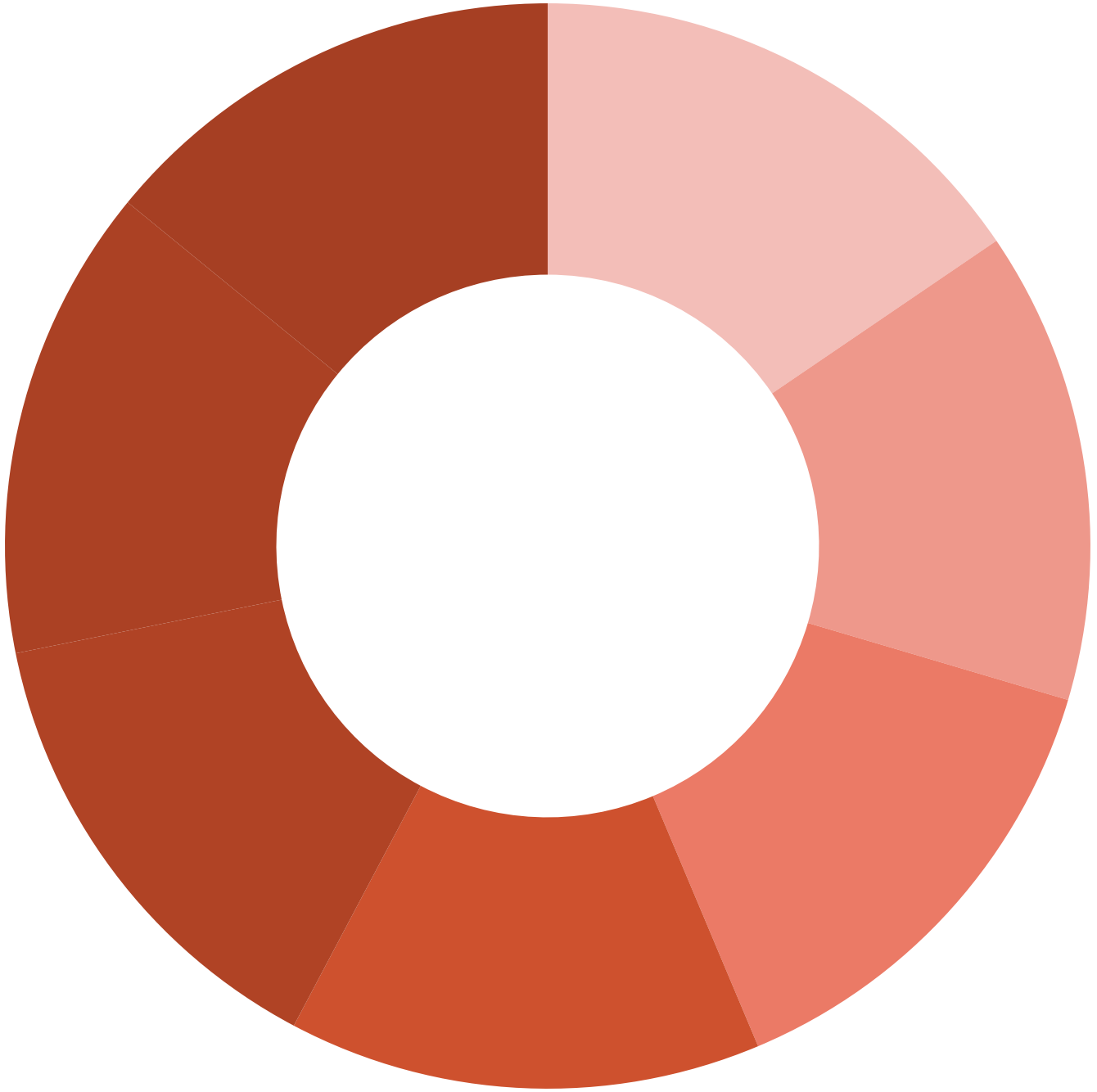


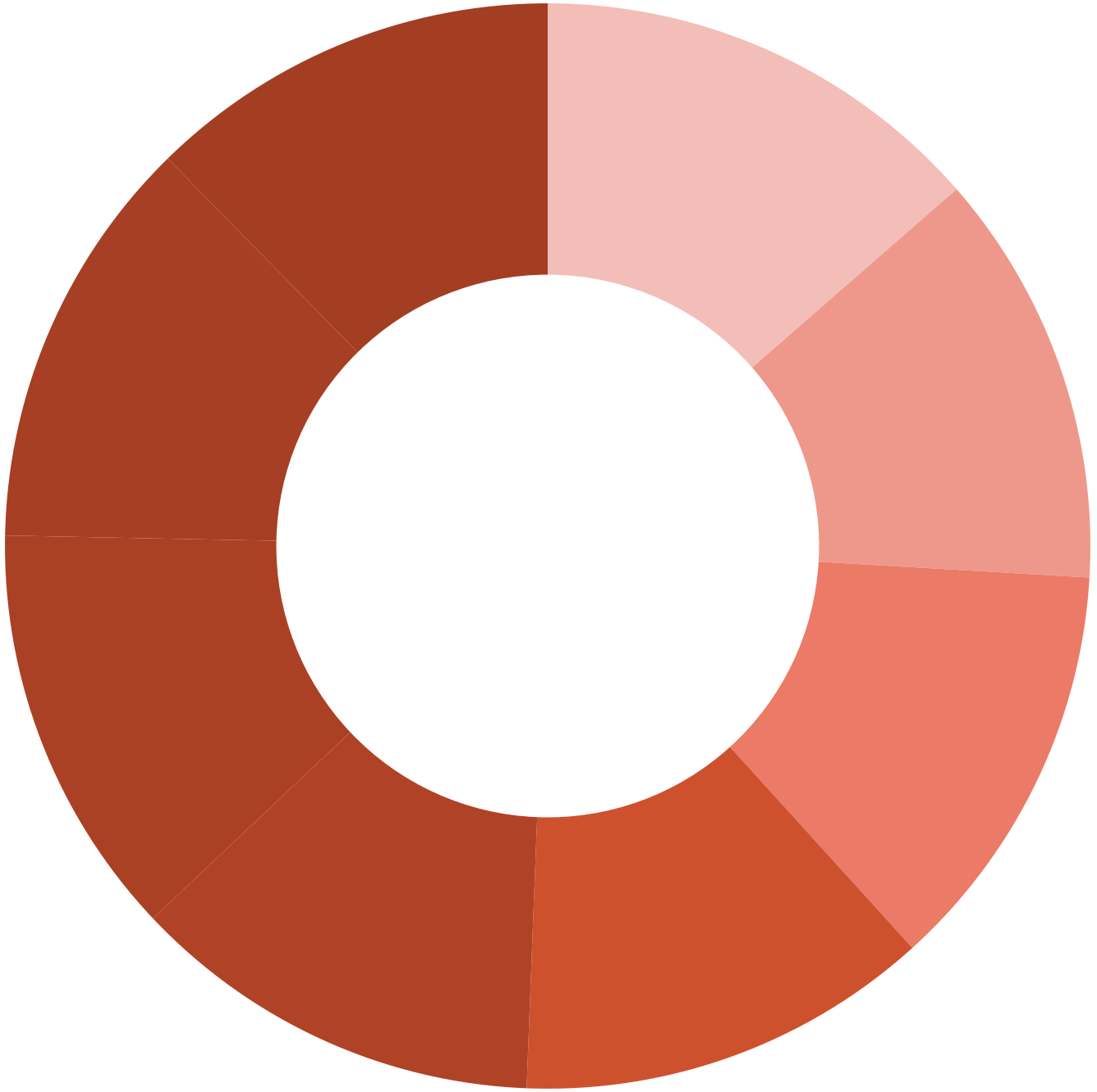


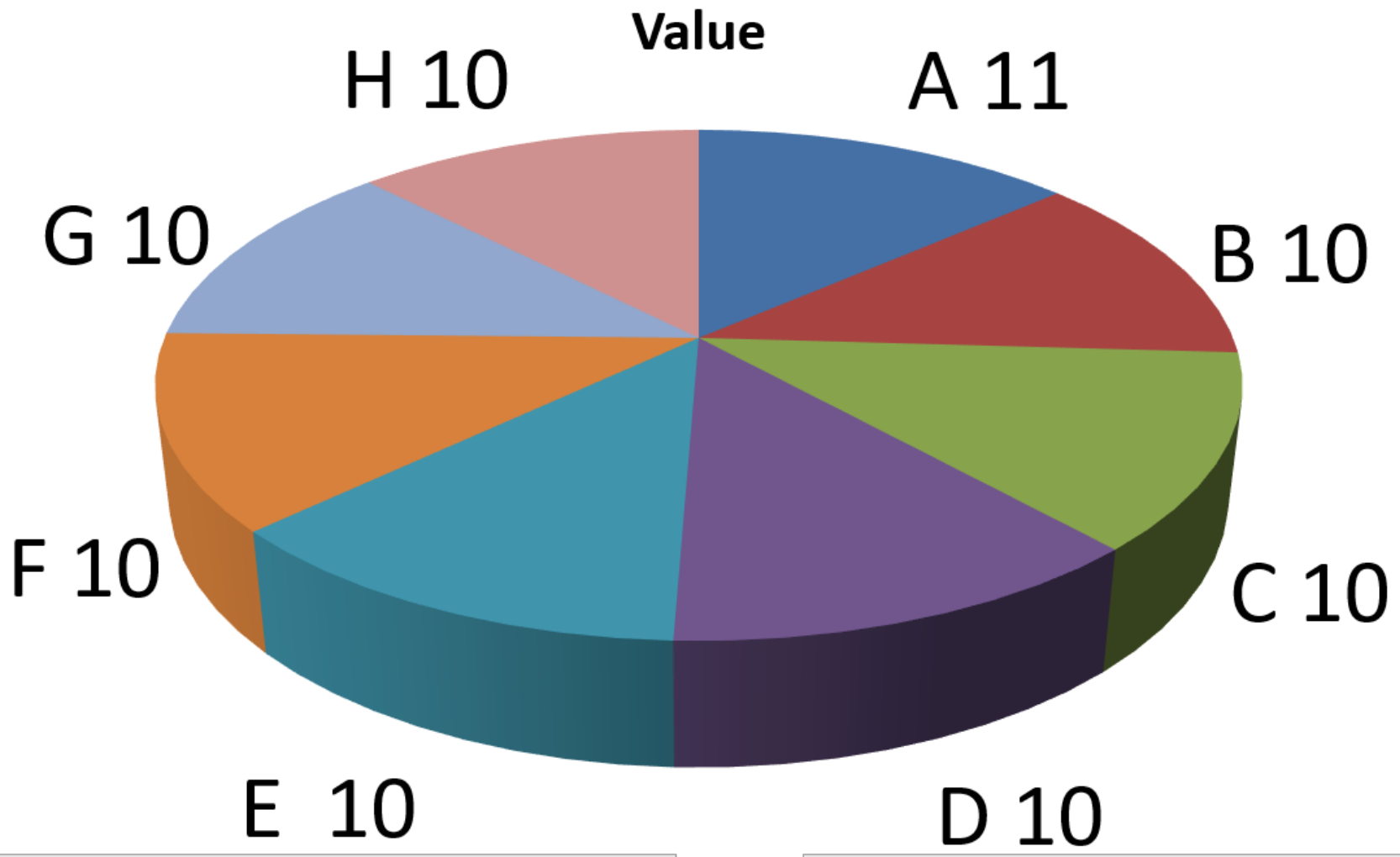











Value
H 10
A 11
G 10
B 10
F 10
C 10
E 10
D 10

Product	Value
A	11
B	10
C	10
D	10
E	10
F	10
G	10
H	10

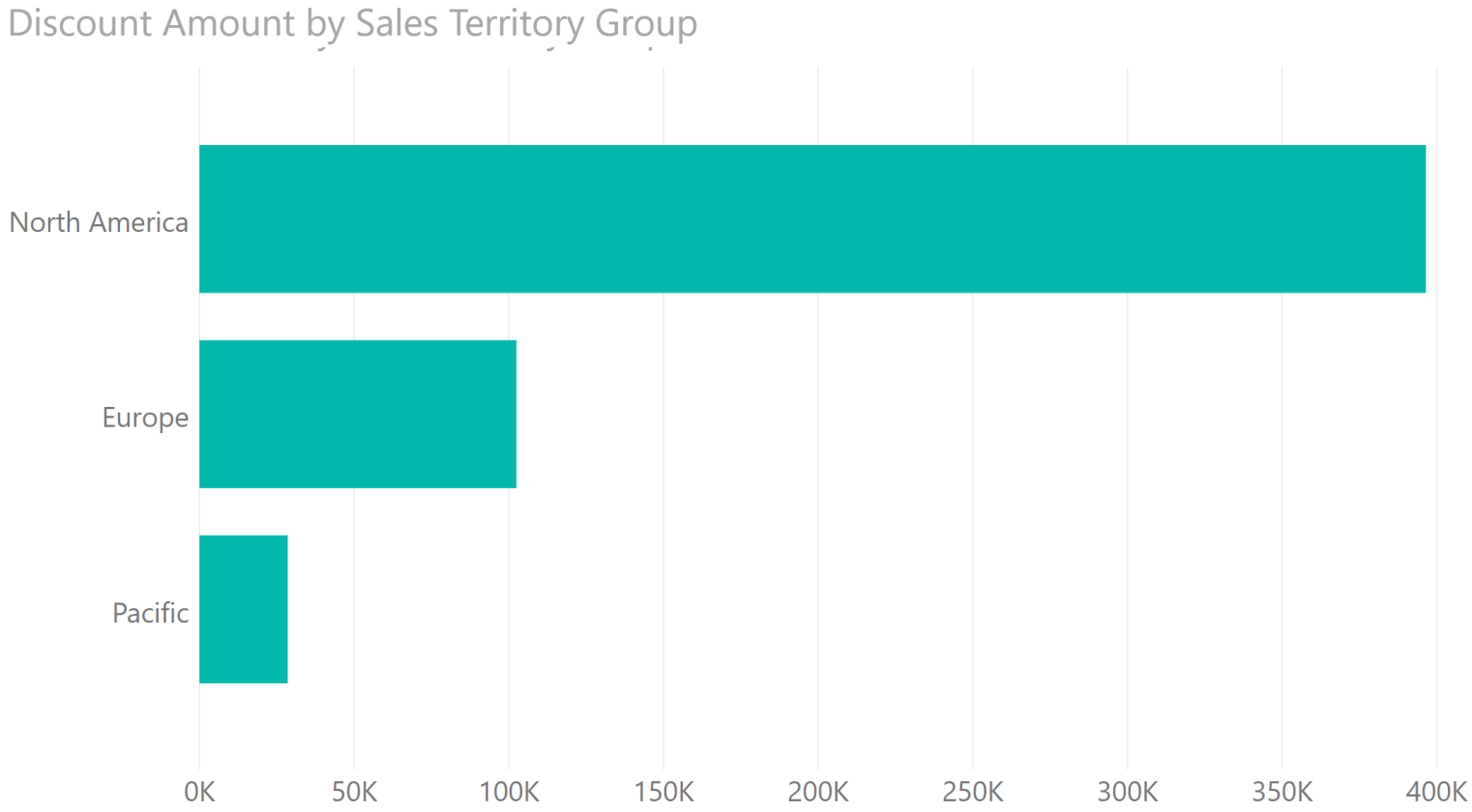
Product	Value
A	11
B	10
C	10
D	10
E	10
F	10
G	10
H	10

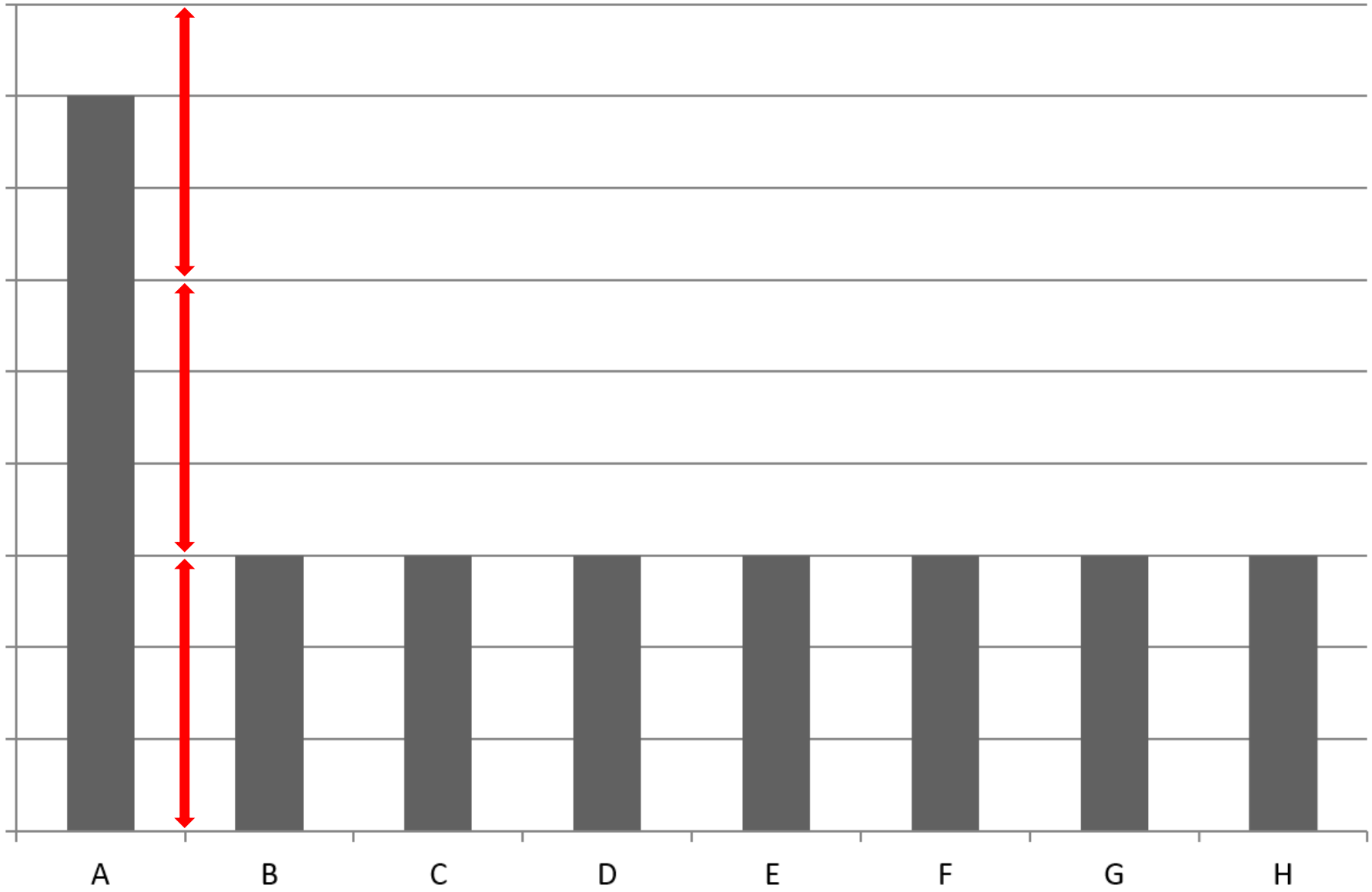
Demo

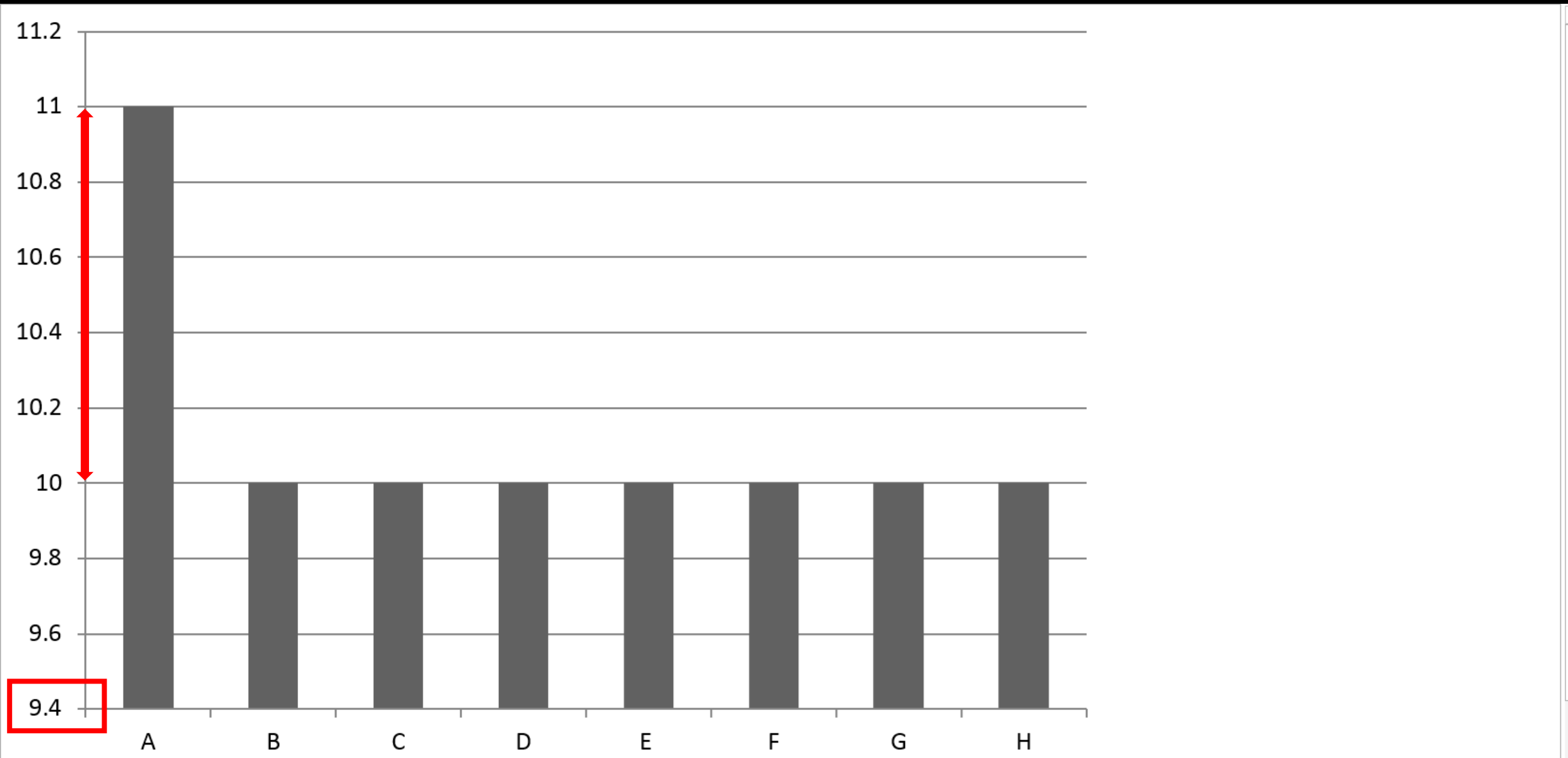
Pie Chart

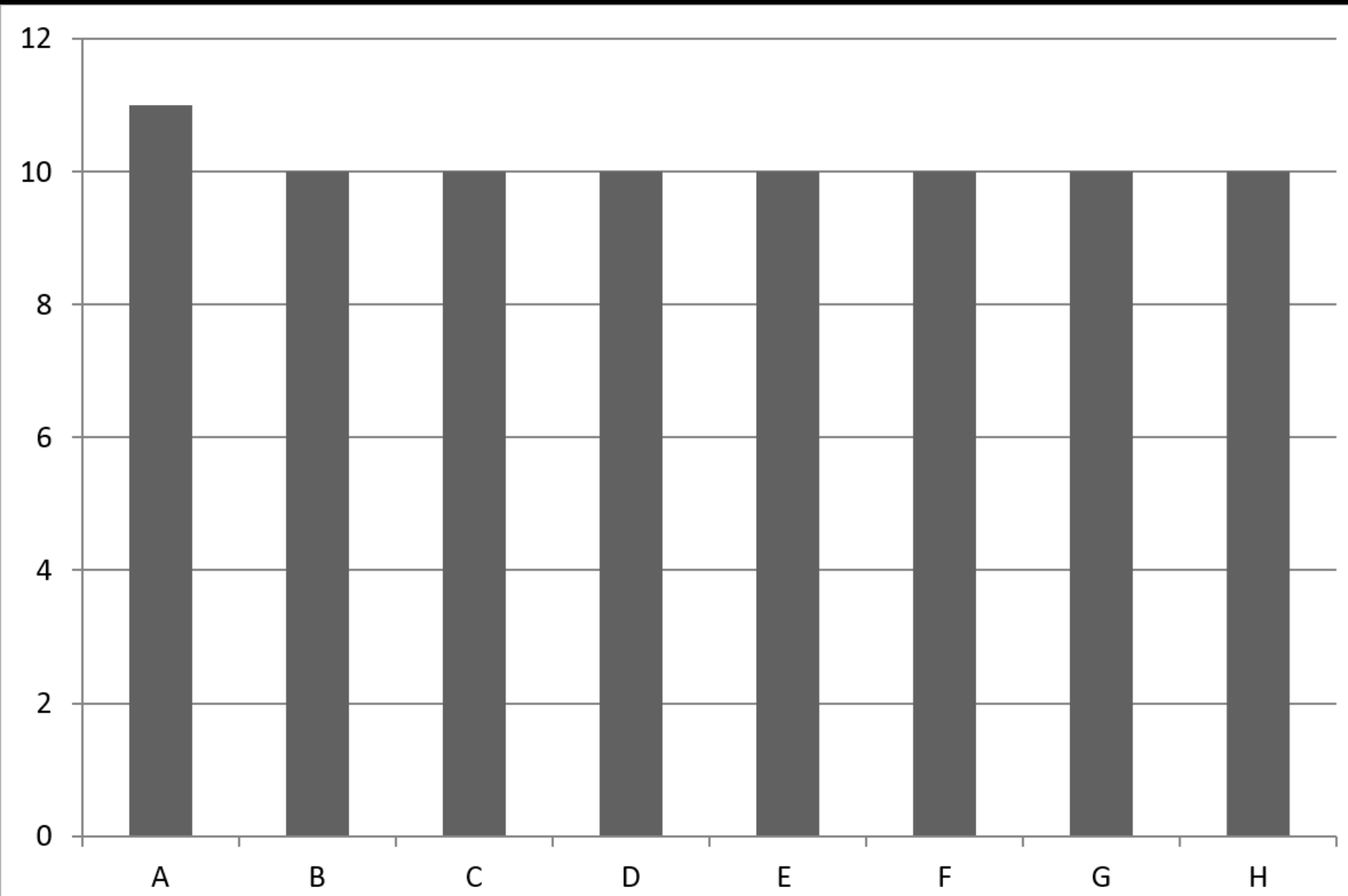
Bar/Column

- Height/width of rectangle
- Compare Values
- Ranking & Histograms
- Part of the whole
- Bar
  - Categorical
- Column
  - Over Time




A
B
C
D
E
F
G
H


11.2
11
10.8
10.6
10.4
10.2
10
9.8
9.6
9.4
A
B
C
D
E
F
G
H


12
10
8
6
4
2
0
A
B
C
D
E
F
G
H

Demo

Bar Chart

Line

Continuous values

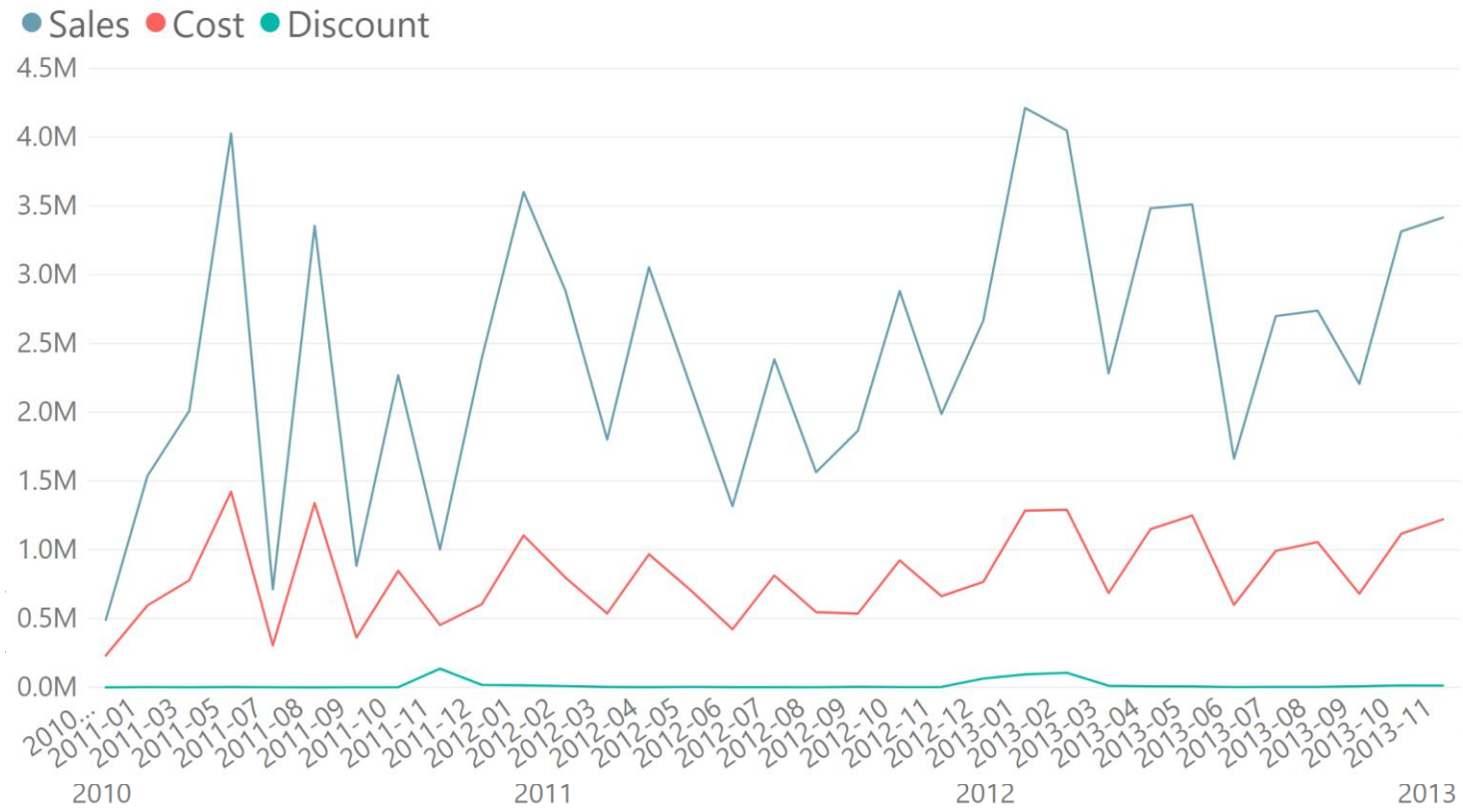
Over time

Deviation

Correlation

Do not use for

- Nominales (North, East, …
- Ordinales (1, 2, 3, …)
- (use Bar/Column instead)



Demo

Line Chart

Portfolio/Scatter

Many values

Two or three measures simultaneously

Spikes

Demo

Scatter chart

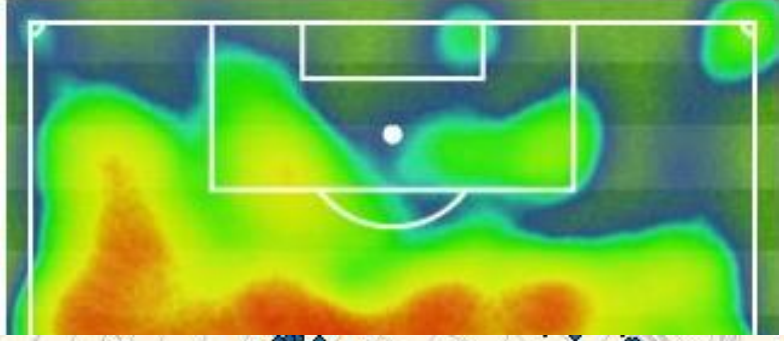
Map

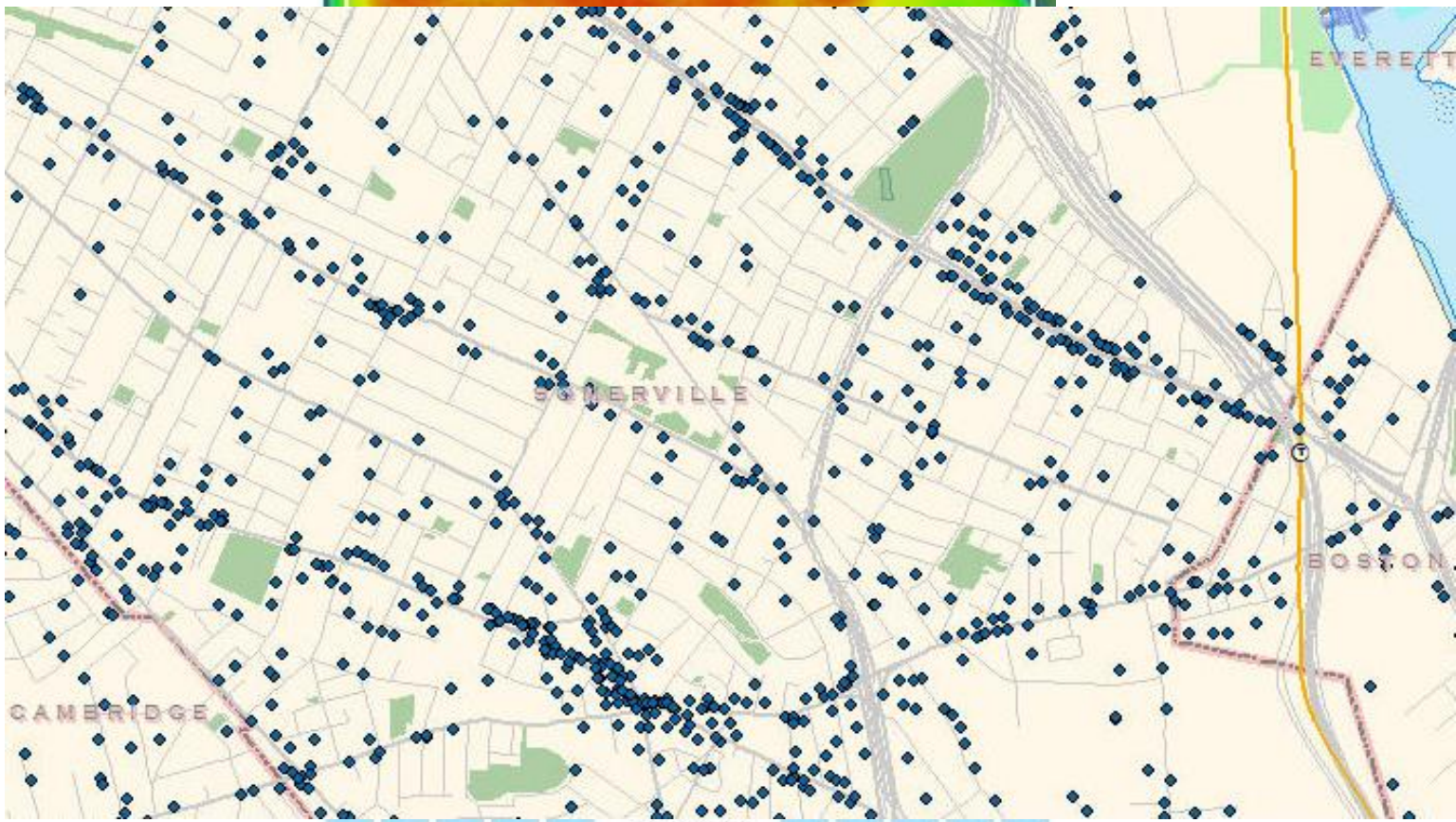
Heatmap

Mass of data points

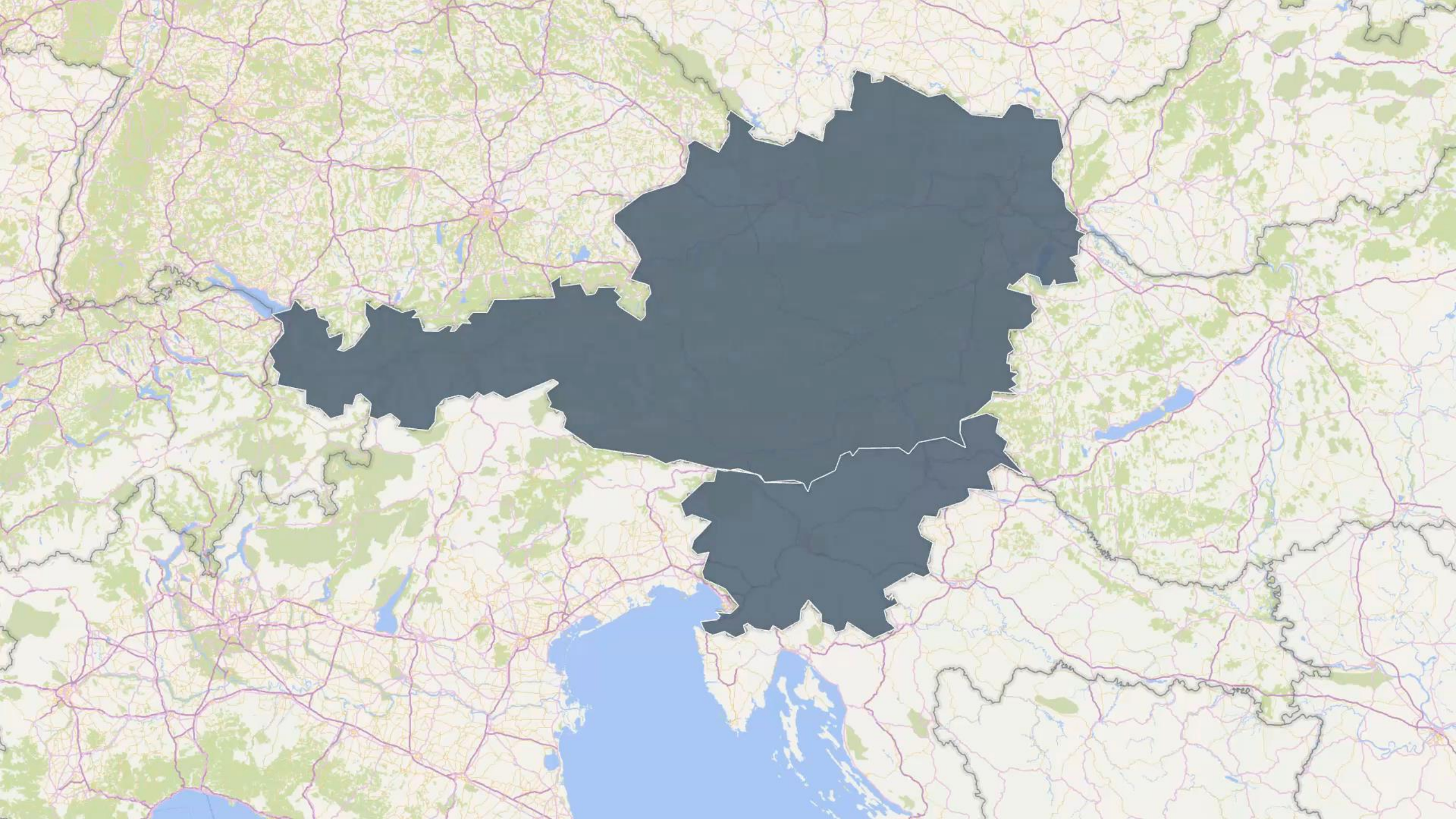
Do not show

- Simple data





Source: http://www.salzburg24.at/2014/10/2014-10-06-13_37_45-11_Rundwerbs-vs_WRN-Heatmap.jpg



2. Display as few information as possible, as much information as necessary.

Reduce “Chartjunk”[1]

- Information only
- No useless decoration

Use proper scaling

- Precision, mio, time, …

[1] coined by Edward Tufte

3.Encode accurately.

Sorting order

Zero-based Charts

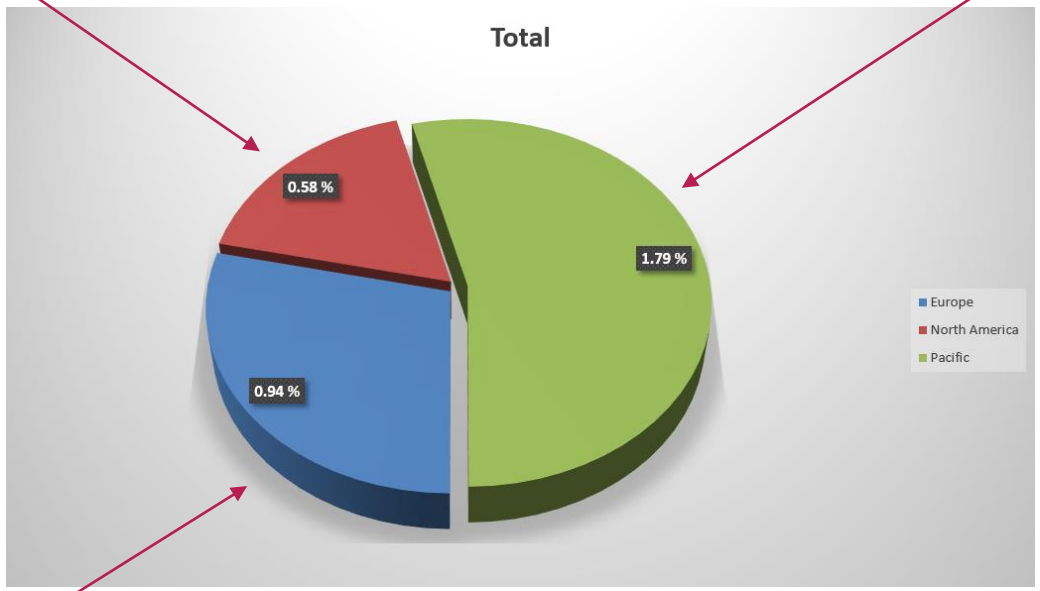
Reduce Colors

- Meaningful
- Shades of grey
- Colorblindness (eg. color-blindness.com)
- www.colorbrewer.org

The Pie Chart - Original

red

green

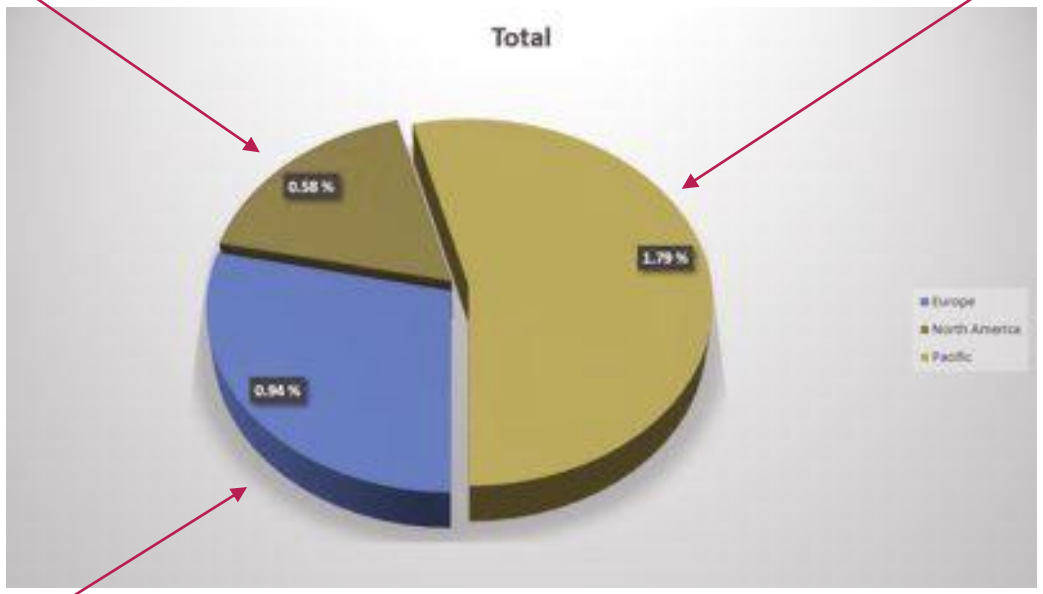


blue

The Pie Chart - Deuteranopia

red

green

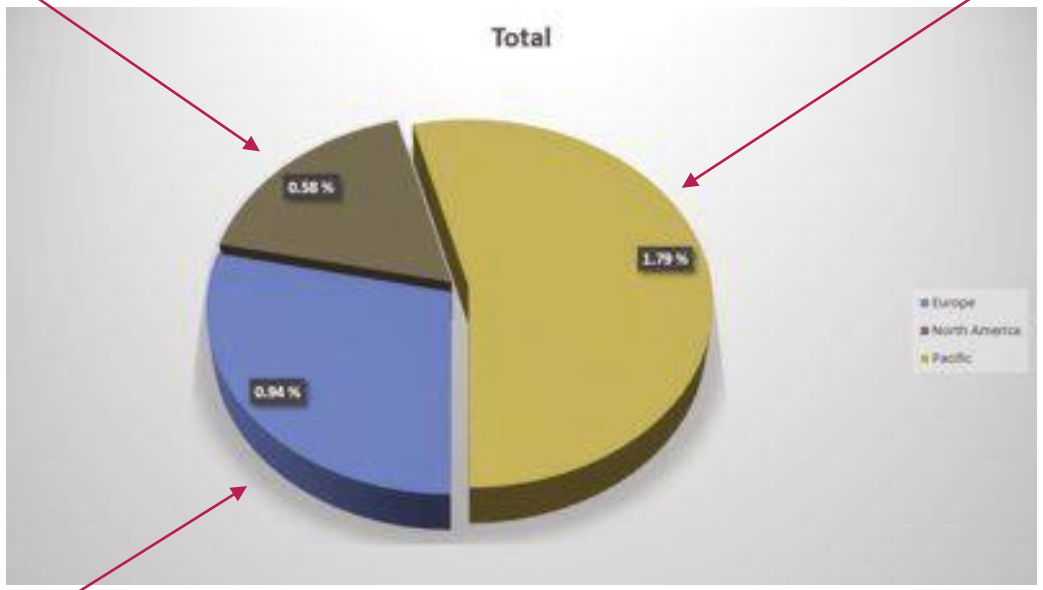


blue

The Pie Chart - Protanopia

red

green

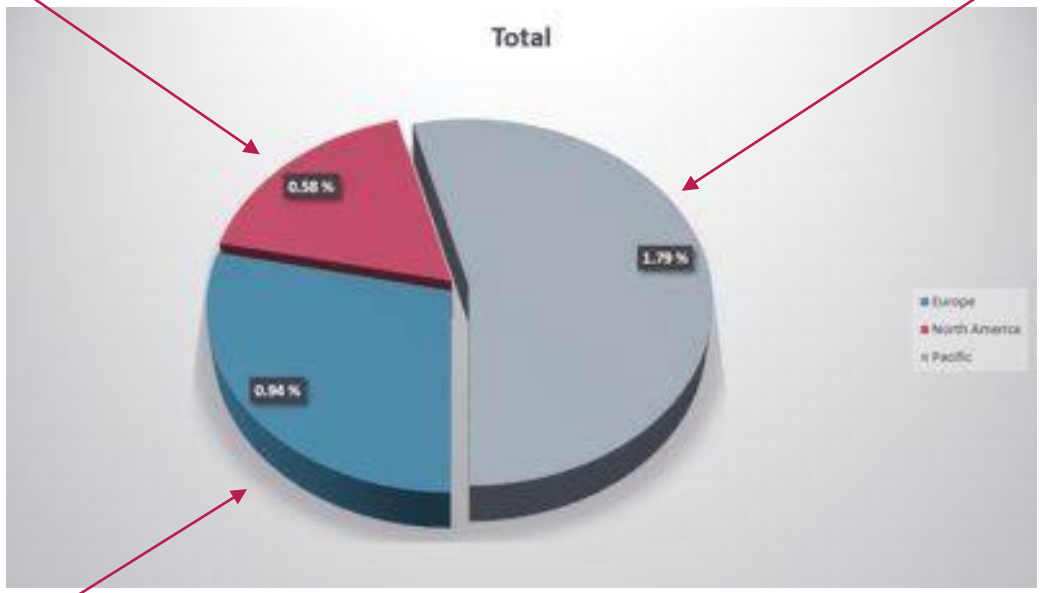


blue

The Pie Chart - Tritanopia

red

green



blue

4.Highlight important things.

Text

Color

Symbol

- Icon-Set
- Spot
- Data Bar

Demo

Data bar

5.Calculate measures.

Display calculated values

Year	Discount Amount	Discount Pct
2010	0	0.00%
2011	158,491	0.87%
2012	103,865	0.37%
2013	265,152	0.79%
2014		
Total	**527,508**	**0.66%**

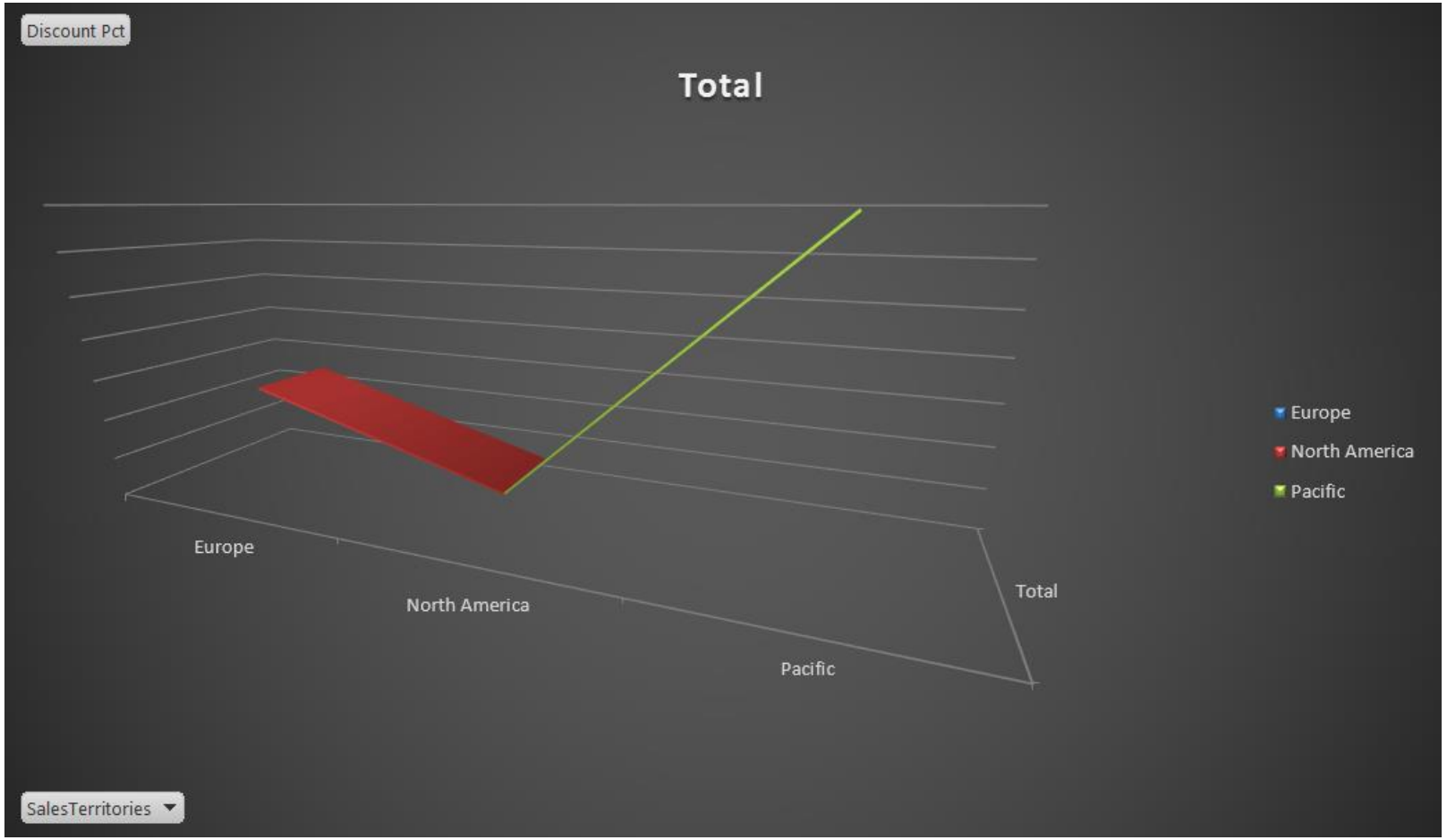
Demo

Calculation

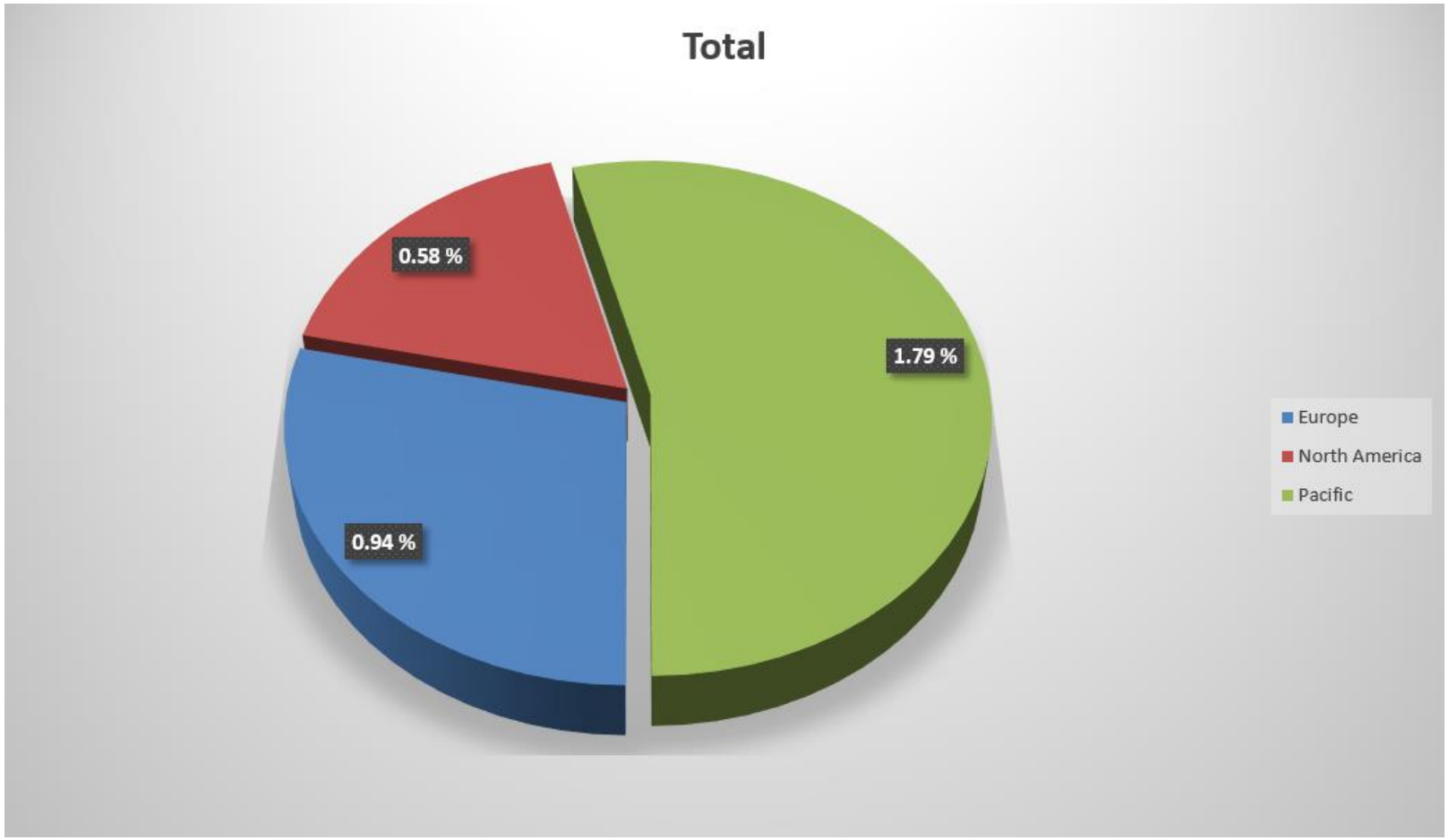
The Good, …

Sales Territory Group	Discount Amount	Discount Pct
North America	396,487	0.58%
Europe	102,487	0.94%
Pacific	28,534	1.79%
Total	**527,508**	**0.66%**

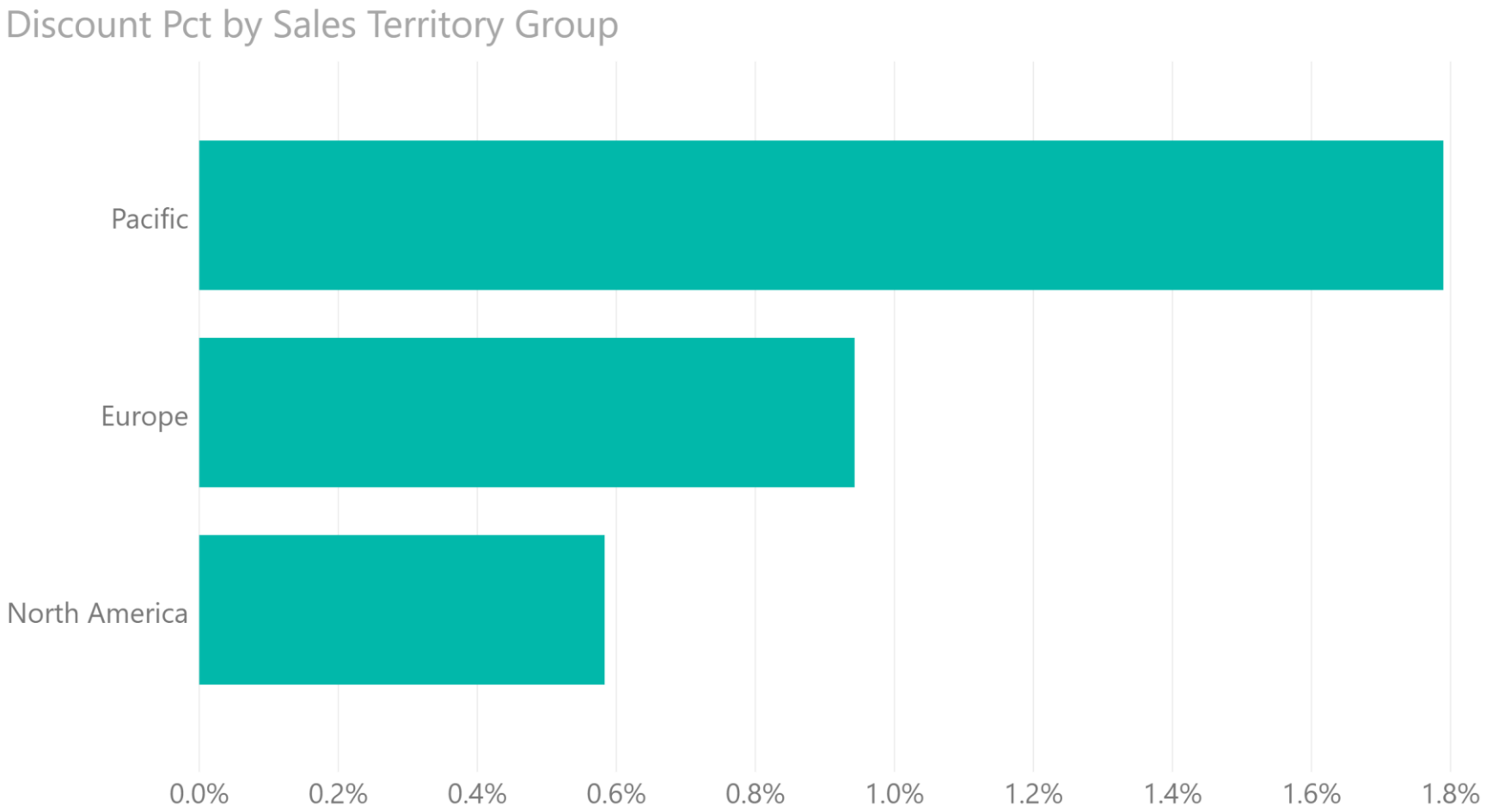
The Bad, …


Discount Pct
Total
Europe
North America
Pacific
Europe
North America
Pacific
Total
SalesTerritories

… and The Pie Chart



Solution


Discount Pct by Sales Territory Group
Pacific
Europe
North America
0.0%
0.2%
0.4%
0.6%
0.8%
1.0%
1.2%
1.4%
1.6%
1.8%

Call To Action

Check used chart types

Reduce your reports

Enrich your reports

You shall …

1. Use proper chart-type.
2. Display as few information as possible, as much information as necessary.
3. Encode accurately.
4. Highlight important things.
5. Calculate measures.

reducing

enriching

Where are the instructions?

New platform for all technical documentation

docs.microsoft.com

All content

open source, hosted on GitHub, community-enabled & in your own language

Help the community of users worldwide

https://aka.ms/intldocs & https://aka.ms/msossloc

Questions?

Markus Ehrenmüller-Jensen

Founder & BI Architect

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@MEhrenmueller

/markus-ehrenmueller

www.savorydata.com

Microsoft CERTIFIED Solutions Expert

Business Intelligence

Data Platform

Microsoft CERTIFIED Trainer

Microsoft Data Platform

BI Developer

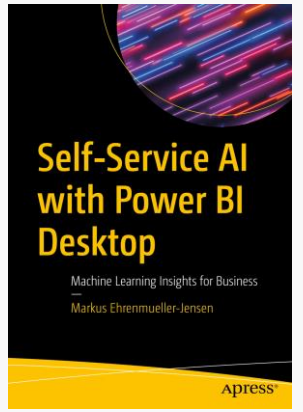
Database Developer

Database Admin

Microsoft MCT

MVP Microsoft® Most Valuable Professional

PowerBIUG POWER BI USER GROUP

PASS AUSTRIA

PASS SQLSATURDAY VIENNA