Data Storytelling

2) Choose an appropriate visual display

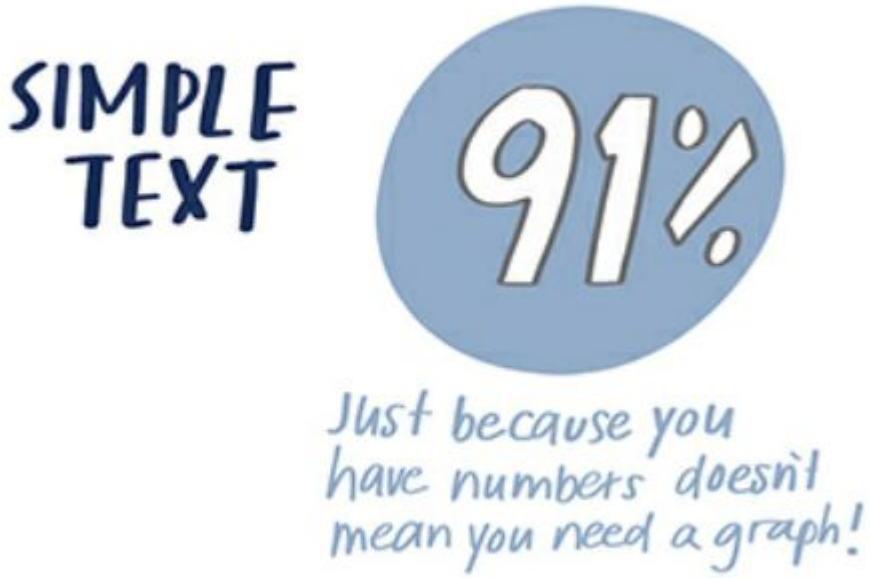
Prof. Dr. Jan Kirenz
HdM Stuttgart

6 Lessons in data storytelling

1. Understand the context
2. **Choose an appropriate visual display**
3. Eliminate clutter
4. Focus attention where you want it
5. Think like a designer
6. Tell a story

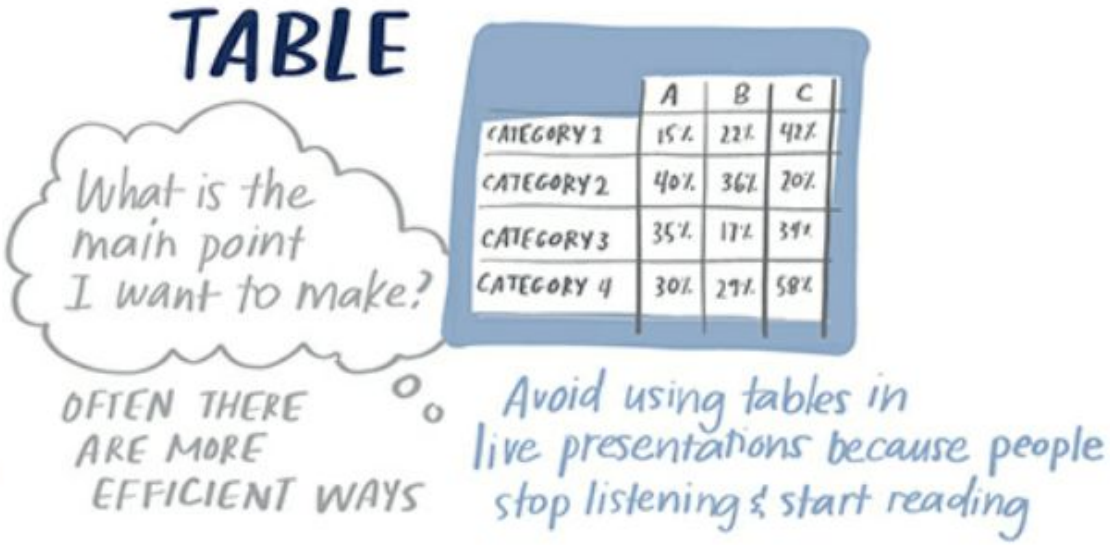
Source: Nussbaumer Knaflic (2015)

Simple text



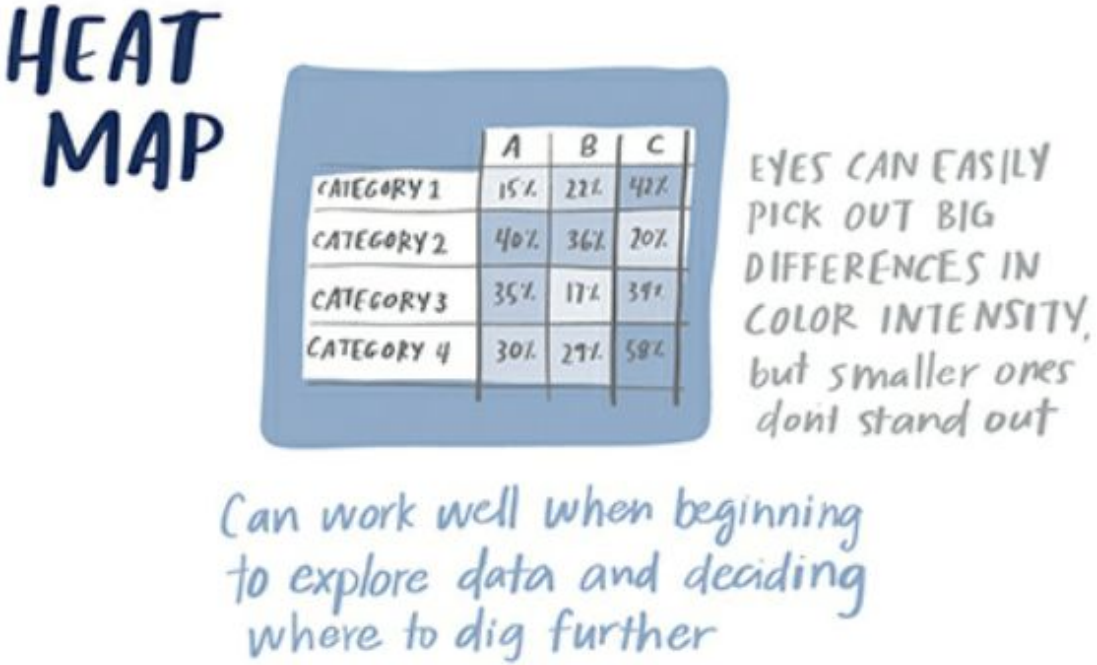
Source: Nussbaumer Knaflic (2020)

Table



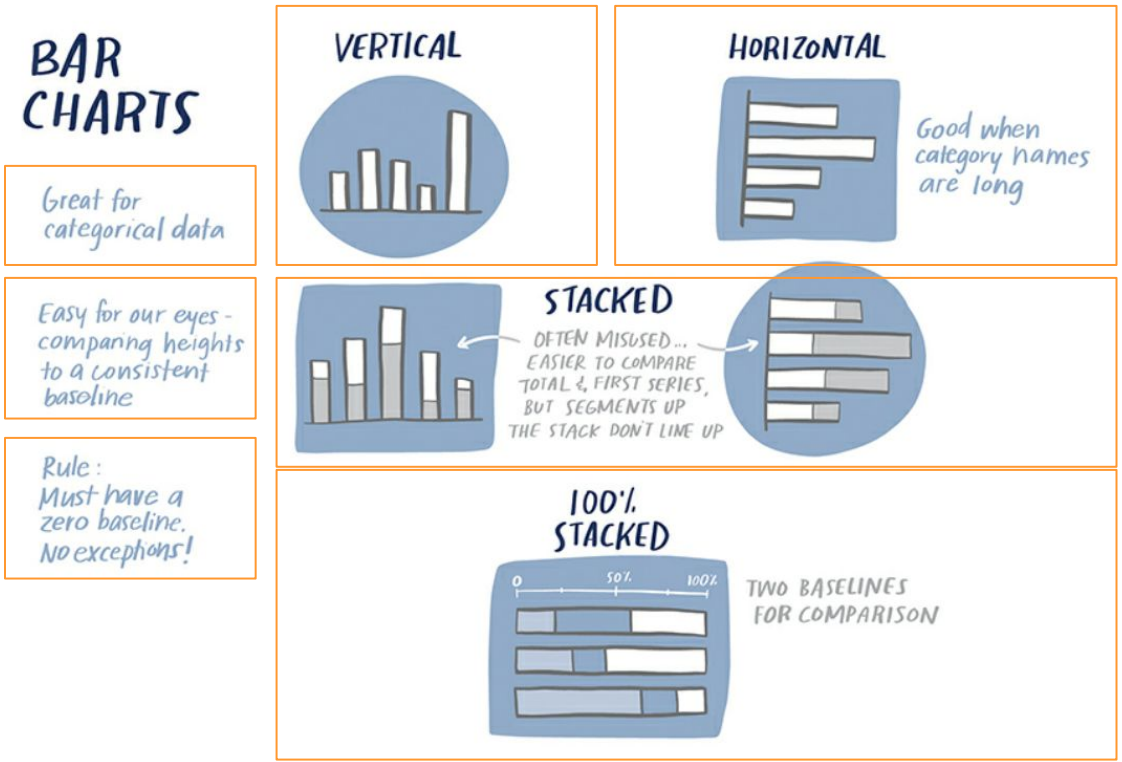
Source: Nussbaumer Knaflic (2020)

Heat map



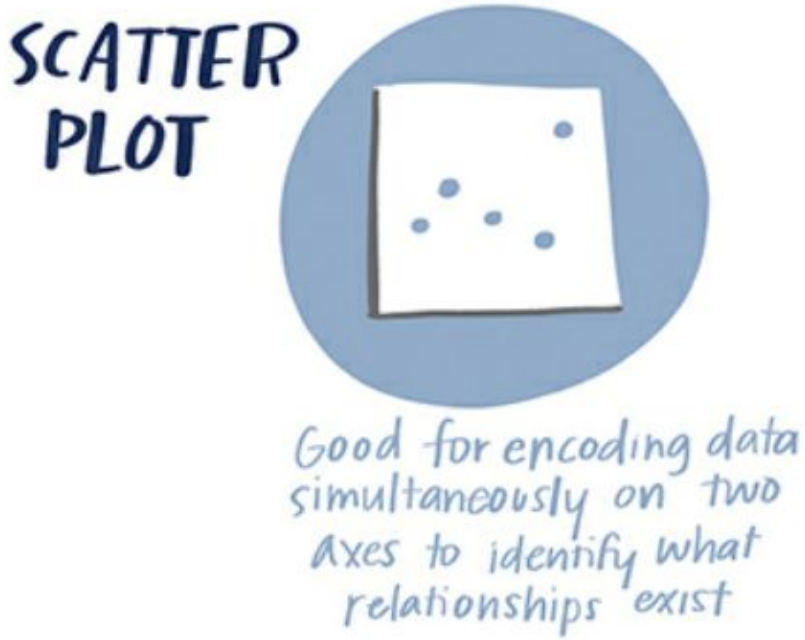
Source: Nussbaumer Knaflic (2020)

Bar charts



Source: Nussbaumer Knaflic (2020)

Scatter plot

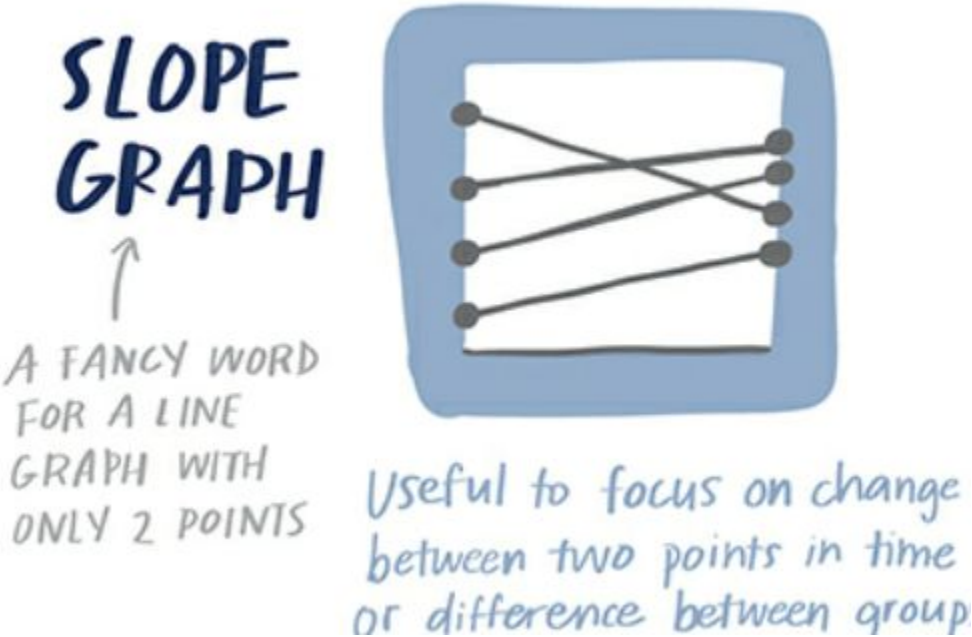


Source: Nussbaumer Knaflic (2020)

Line

Source: Nussbaumer Knaflic (2020)

Slope graph

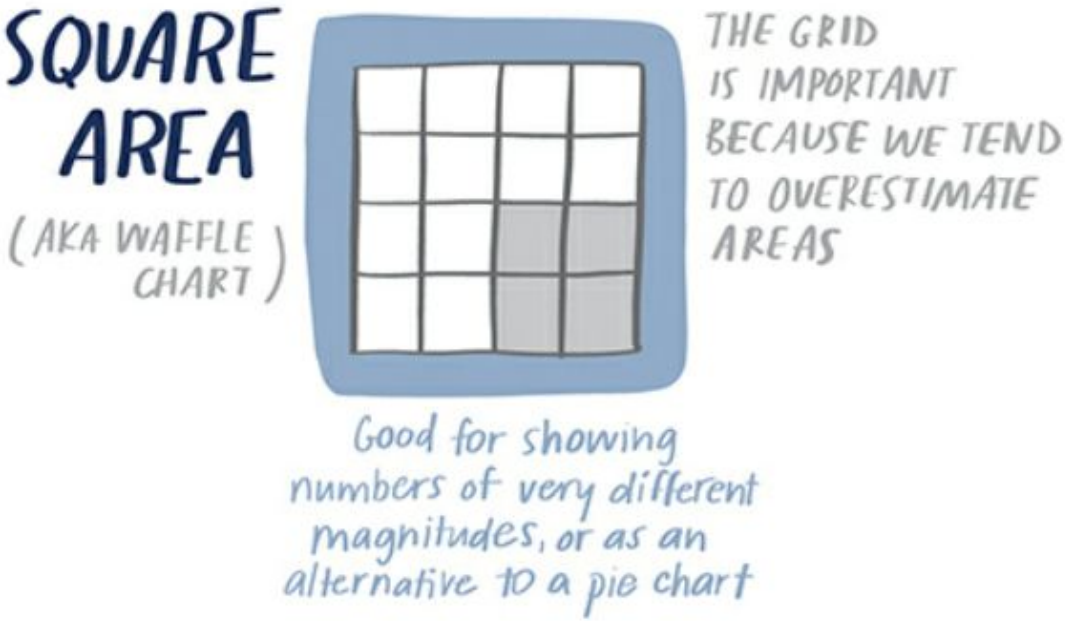


Source: Nussbaumer Knaflic (2020)

Waterfall

Source: Nussbaumer Knaflic (2020)

Square area



Source: Nussbaumer Knaflic (2020)

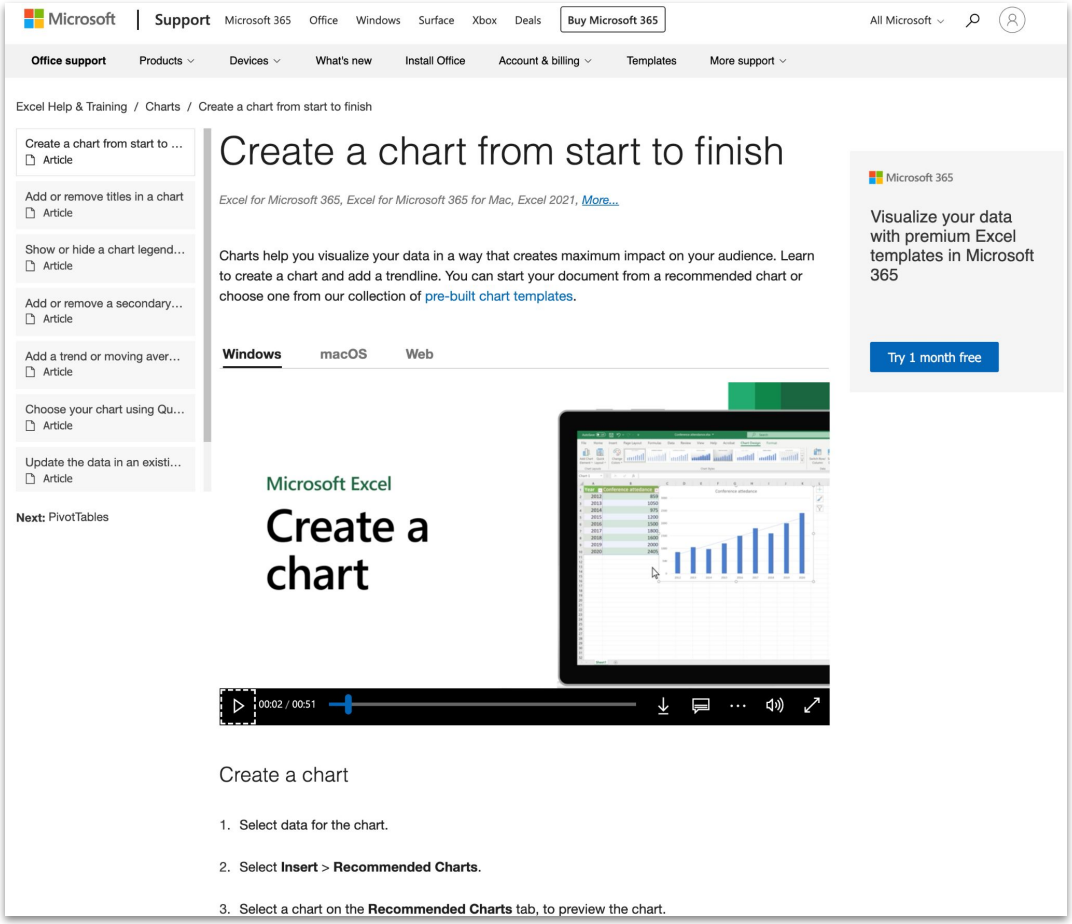
Improving plots (mainly with Excel and Python + Plotly)

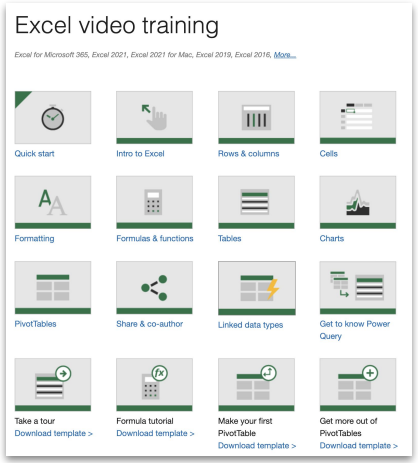
Prof. Dr. Jan Kirenz

Excel

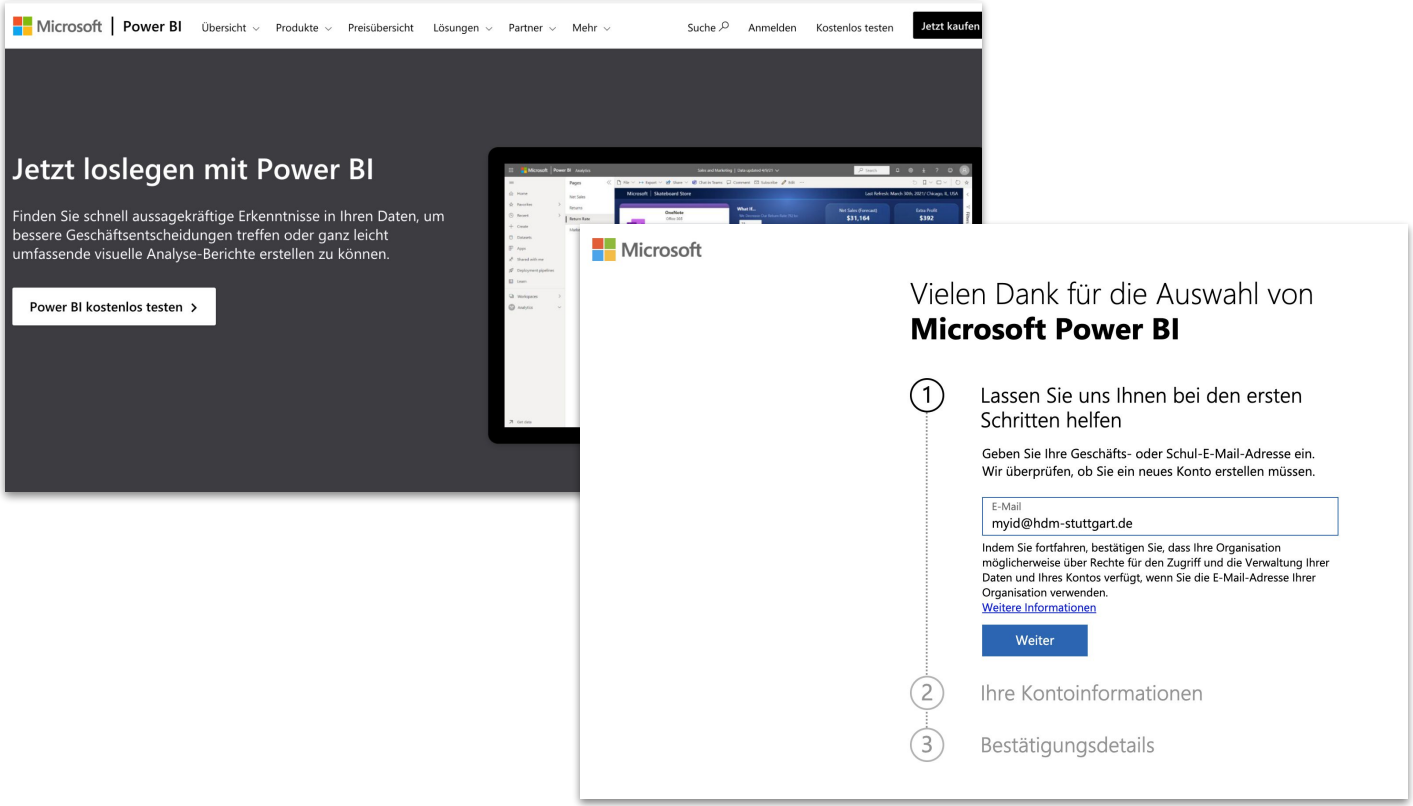
Download

CSV

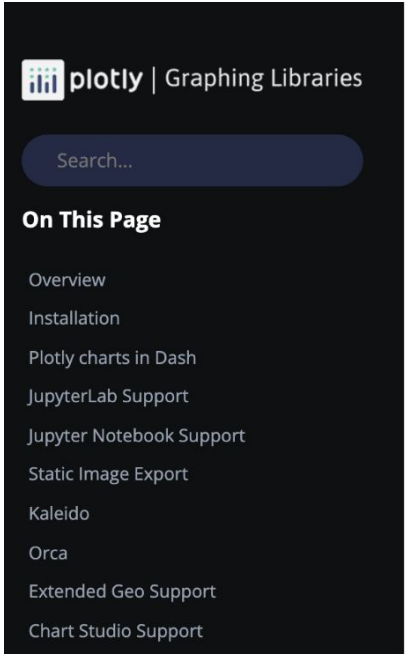




https://support.microsoft.com/en-us/office/excel-video-training-9bc05390-e94c-46af-a5b3-d7c22f6990bb



https://powerbi.microsoft.com/de-de/getting-started-with-power-bi/



Python > Getting Started with Plotly

Suggest an edit to this page launch binder

Getting Started with Plotly in Python

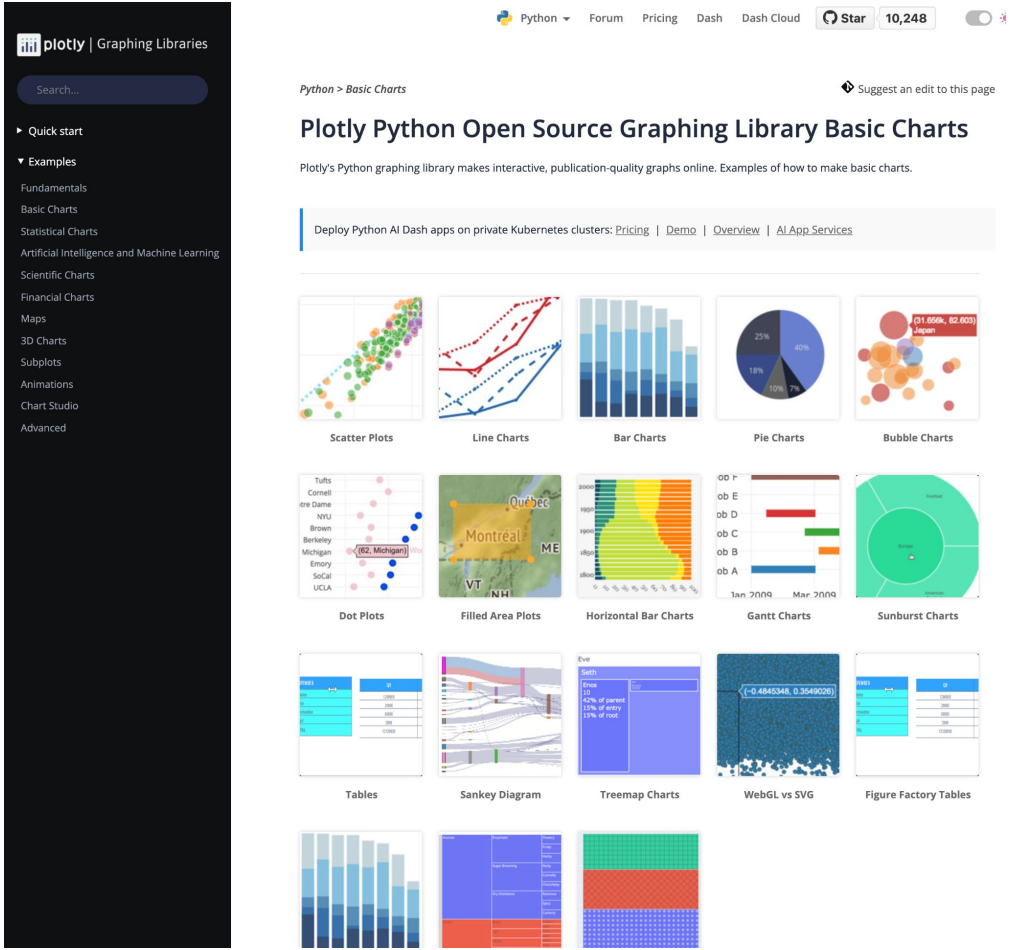
Getting Started with Plotly for Python.

THIS PAGE IN ANOTHER LANGUAGE

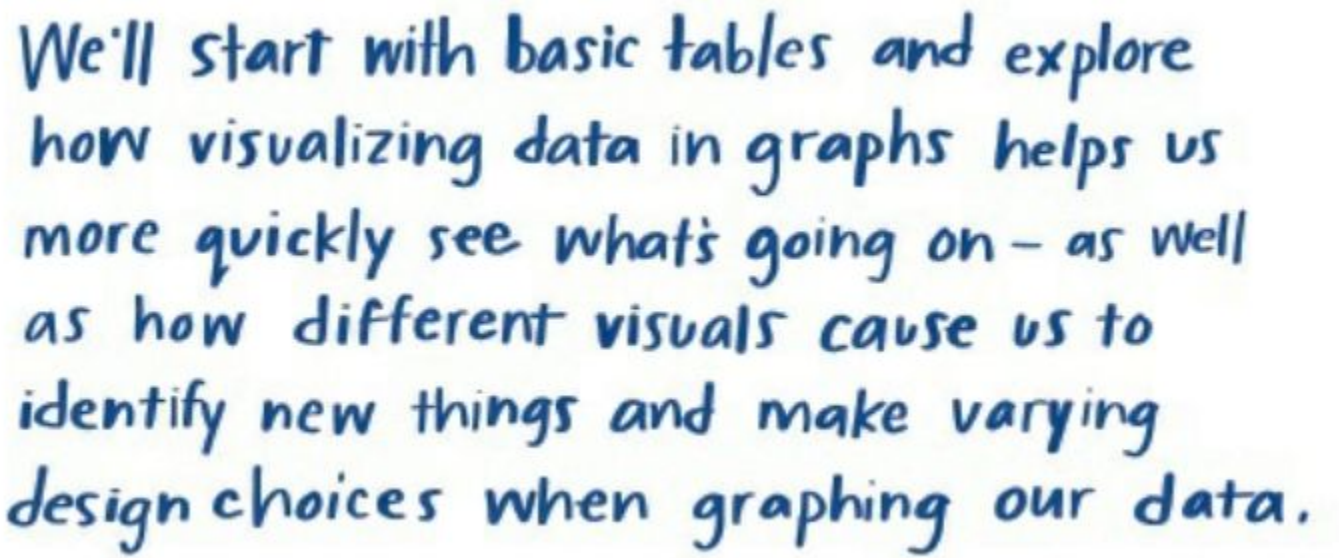
Python R ggplot2 Julia MATLAB®

New to Plotly?

https://plotly.com/python/getting-started/



https://plotly.com/python/basic-charts/



Source: Nussbaumer Knaflic (2020)

All resources (exercises & solutions)

Data and solutions for all exercises

Download

Download

Excel : 

Google : 

CSV : 

Example 2.1

... we start with Excel

Solution 2.1

Download

Excel : 

Breakdown of new clients by tier

New client tier share

Tier	# of Accounts	% Accounts	Revenue ($M)	% Revenue
A	77	7.08%	$4.68	25%
A+	19	1.75%	$3.93	21%
B	338	31.07%	$5.98	32%
C	425	39.06%	$2.81	15%
D	24	2.21%	$0.37	2%

Source: Nussbaumer Knaflic (2020)

Slightly improved table

New client tier share

Tier	# of Accounts	% Accounts	Revenue ($M)	% Revenue
A+	19	2%	$3.9	21%
A	77	7%	$4.7	25%
B	338	31%	$6.0	32%
C	425	39%	$2.8	15%
D	24	2%	$0.4	2%
All other	205	19%	$0.9	5%
TOTAL	1,088	100%	$18.7	100%

Source: Nussbaumer Knaflic (2020)

Table with heatmapping

New client tier share

TIER	ACCOUNTS		REVENUE	
	#	% OF TOT	$M	% OF TOT
A+	19	2%	$3.9	21%
A	77	7%	$4.7	25%
B	338	31%	$6.0	32%
C	425	39%	$2.8	15%
D	24	2%	$0.4	2%
All other	205	19%	$0.9	5%
TOTAL	1,088	100%	$18.7	100%

Source: Nussbaumer Knaflic (2020)

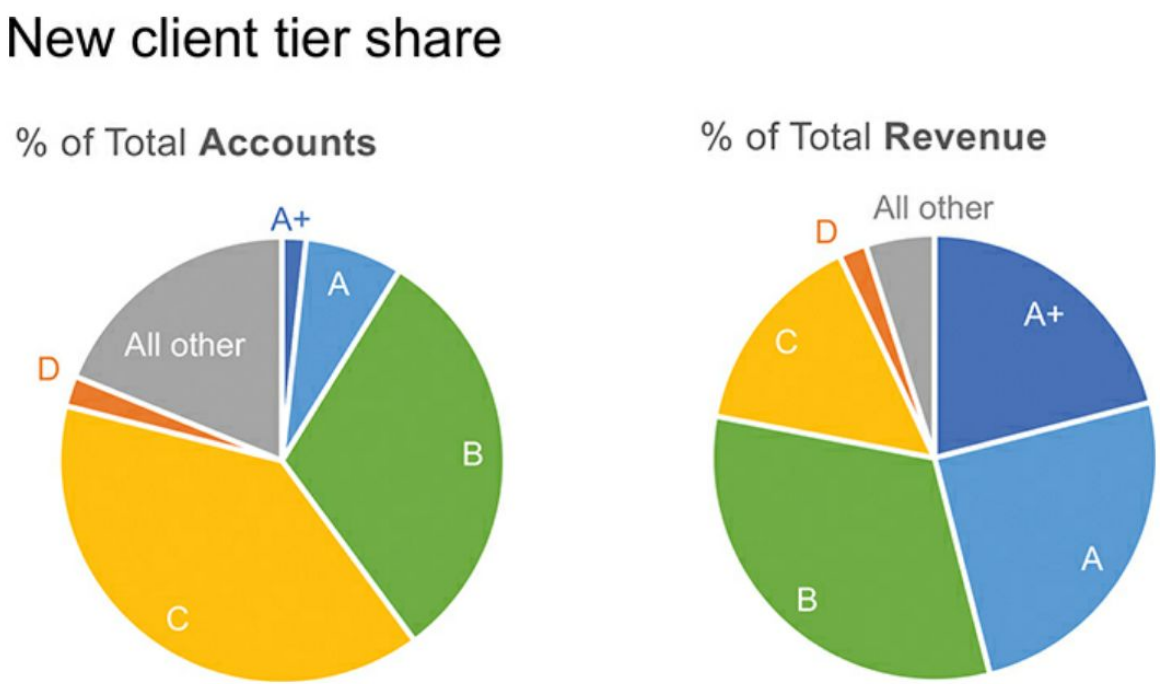
Table with embedded bars

New client tier share

TIER	ACCOUNTS		REVENUE	
	#	% OF TOT	$M	% OF TOT
A+	19		$3.9	
A	77		$4.7	
B	338		$6.0	
C	425		$2.8	
D	24		$0.4	
All other	205		$0.9	
TOTAL	1,088	100%	$18.7	100%

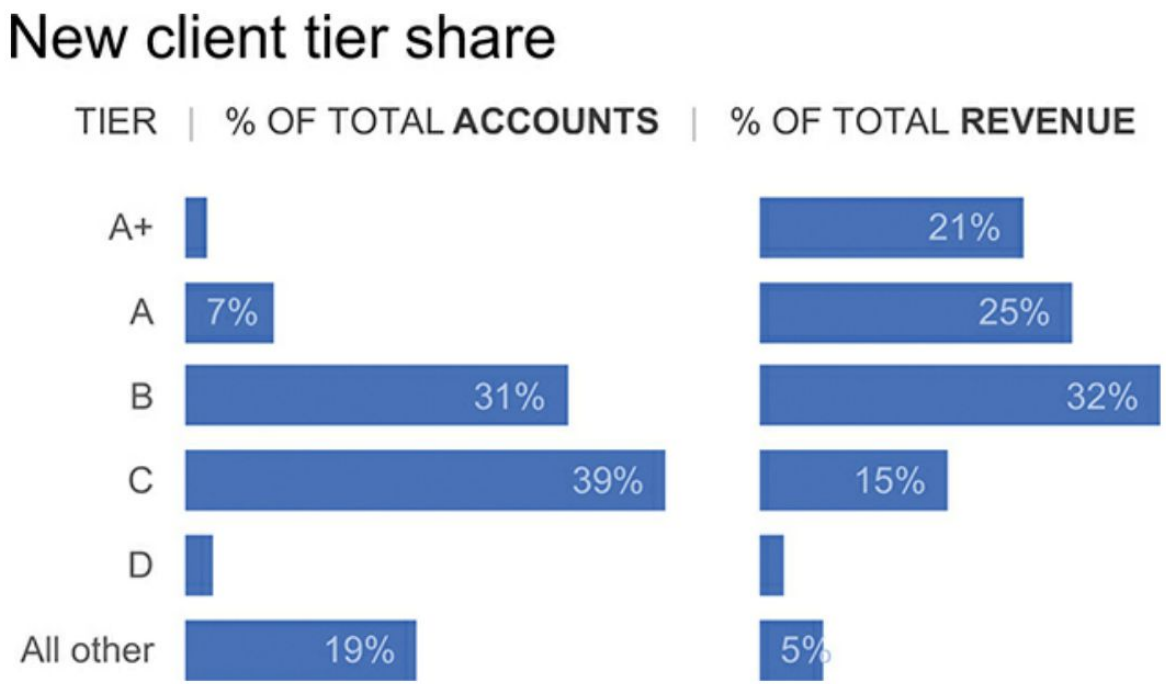
Source: Nussbaumer Knaflic (2020)

Not so easy to read ...



Source: Nussbaumer Knaflic (2020)

Two horizontal bar charts

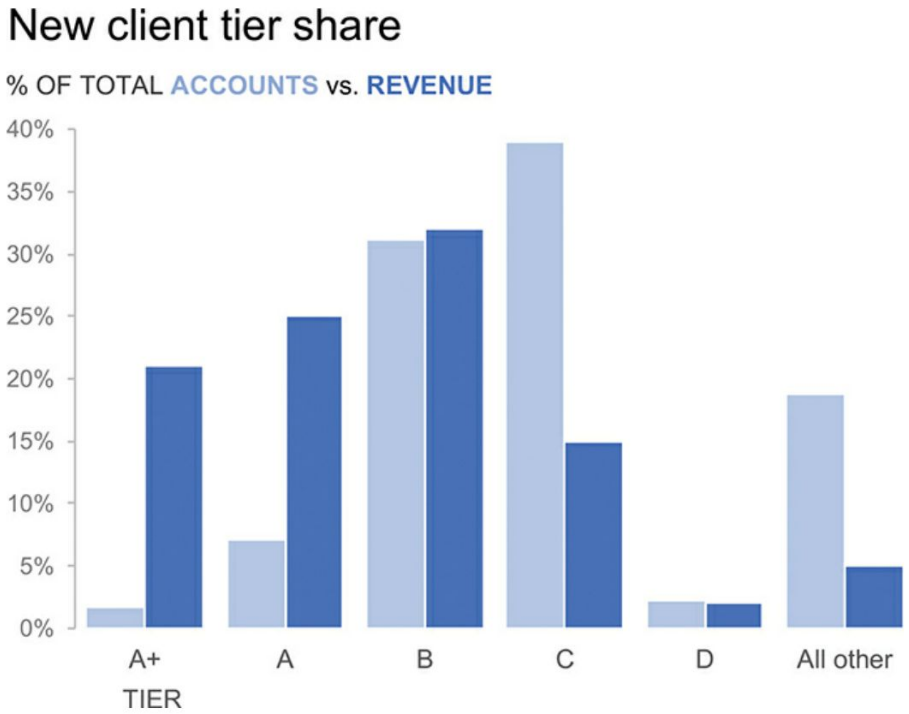


Source: Nussbaumer Knaflic (2020)

Horizontal dual series bar chart

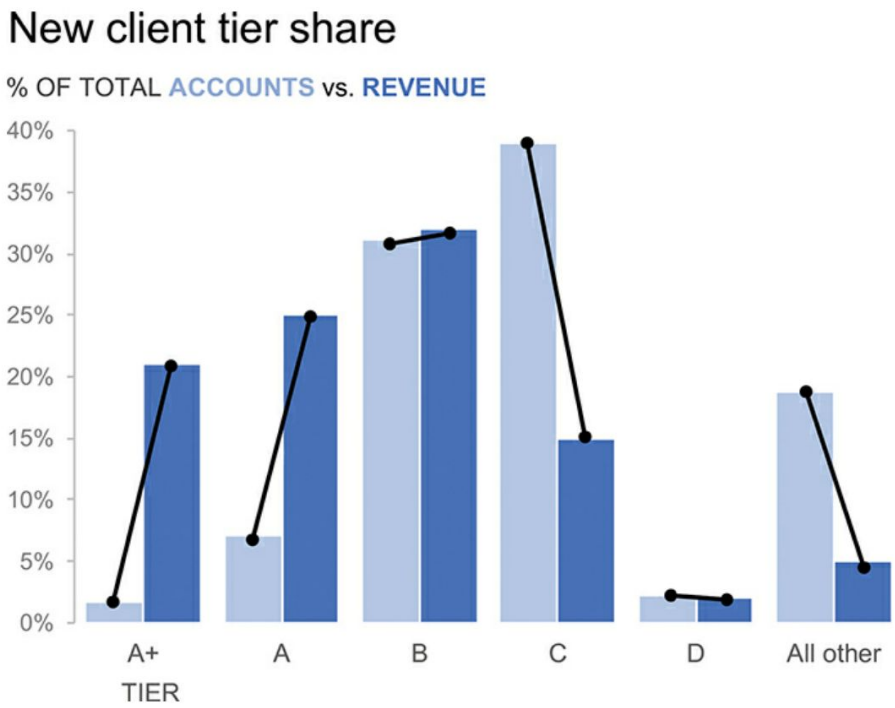
Source: Nussbaumer Knaflic (2020)

Vertical bar chart



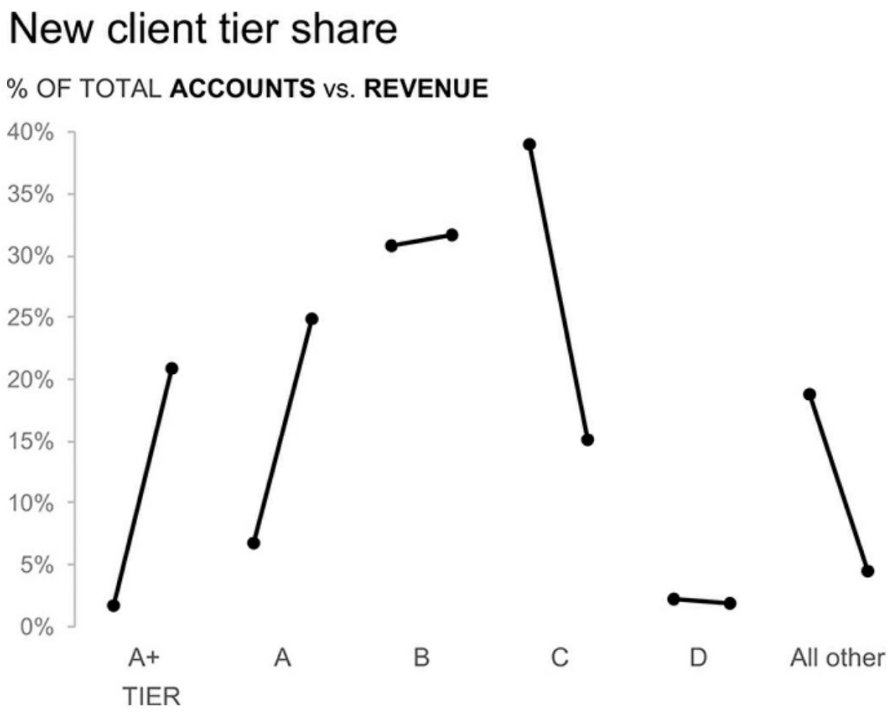
Source: Nussbaumer Knaflic (2020)

With some lines



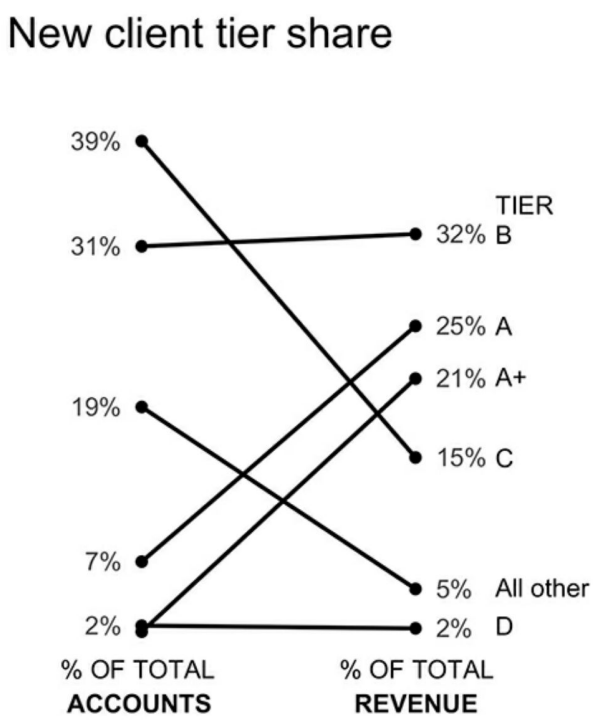
Source: Nussbaumer Knaflic (2020)

Take away the bars



Source: Nussbaumer Knaflic (2020)

A slope graph



Source: Nussbaumer Knaflic (2020)

Download

Excel : 

Google : 

Make CSV : 

Example 2.2

Solution 2.2

Download

Excel : 

Python : 

Simple table

Meals served over time

Campaign Year	Meals Served
2010	40,139
2011	127,020
2012	168,193
2013	153,115
2014	202,102
2015	232,897
2016	277,912
2017	205,350
2018	233,389
2019	232,797

Source: Nussbaumer Knaflic (2020)

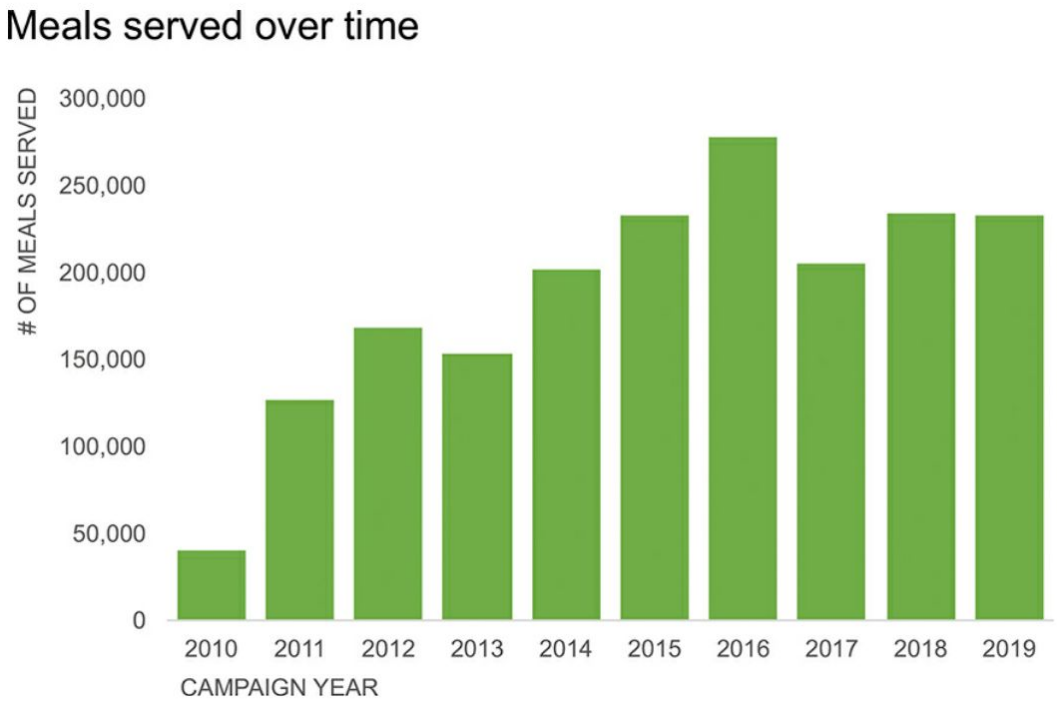
Table with heatmapping

Meals served over time

Campaign Year	Meals Served
2010	40,139
2011	127,020
2012	168,193
2013	153,115
2014	202,102
2015	232,897
2016	277,912
2017	205,350
2018	233,389
2019	232,797

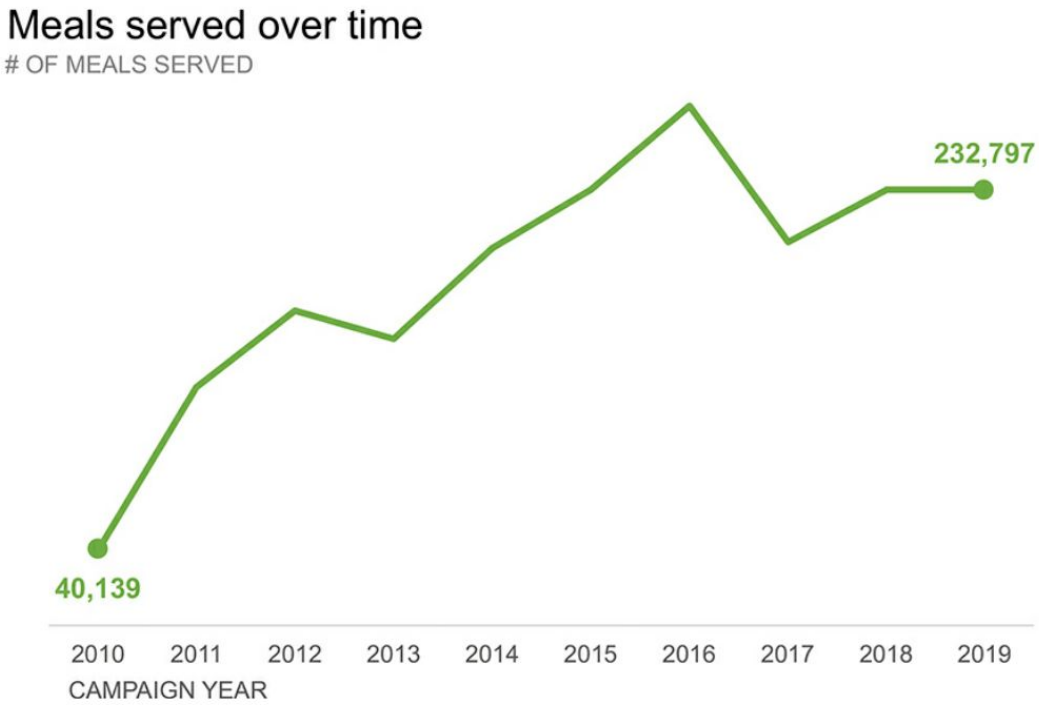
Source: Nussbaumer Knaflic (2020)

Bar chart



Source: Nussbaumer Knaflic (2020)

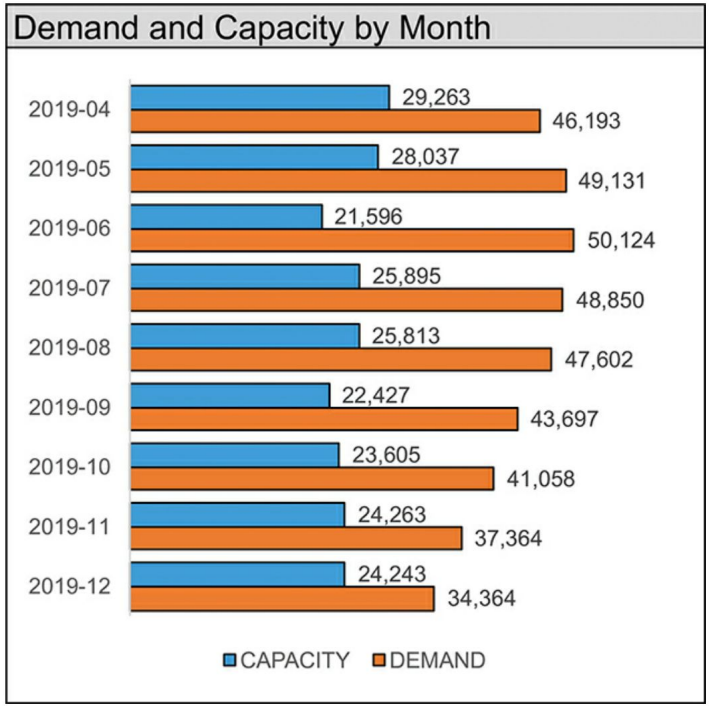
Line graph



Source: Nussbaumer Knaflic (2020)

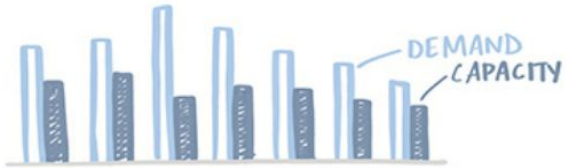
Example 2.3, 2.4

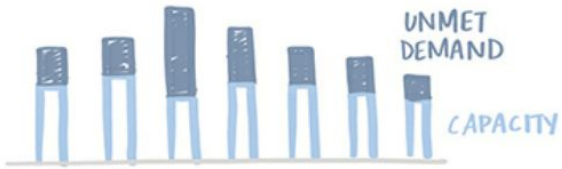
Let’s draw this data



Source: Nussbaumer Knaflic (2020)

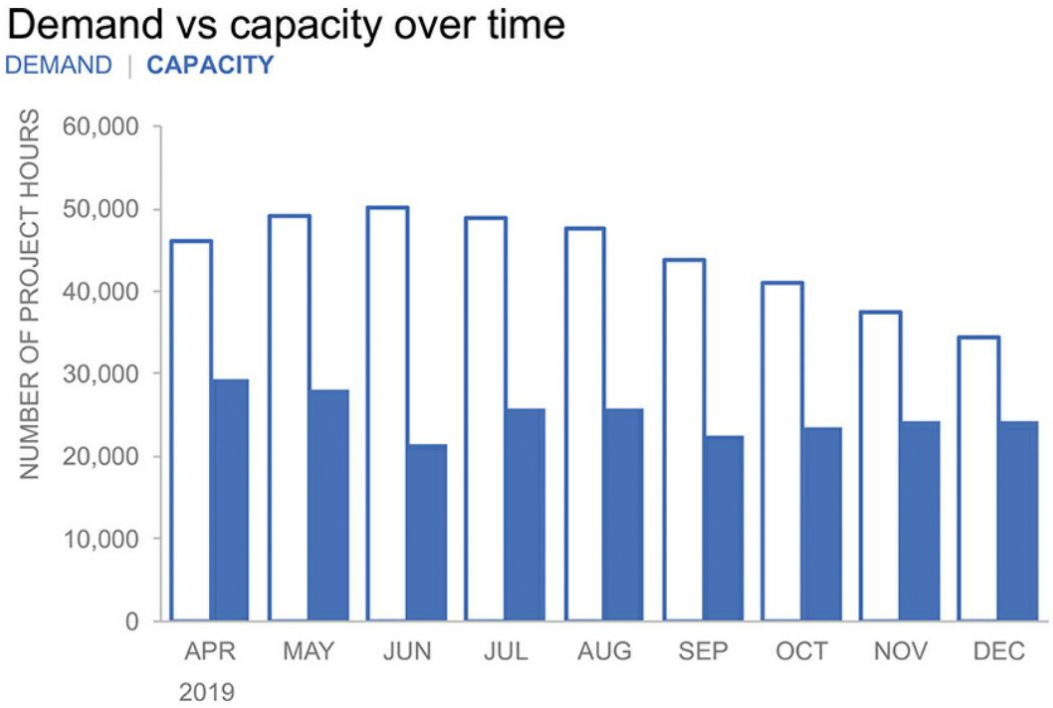
Some options





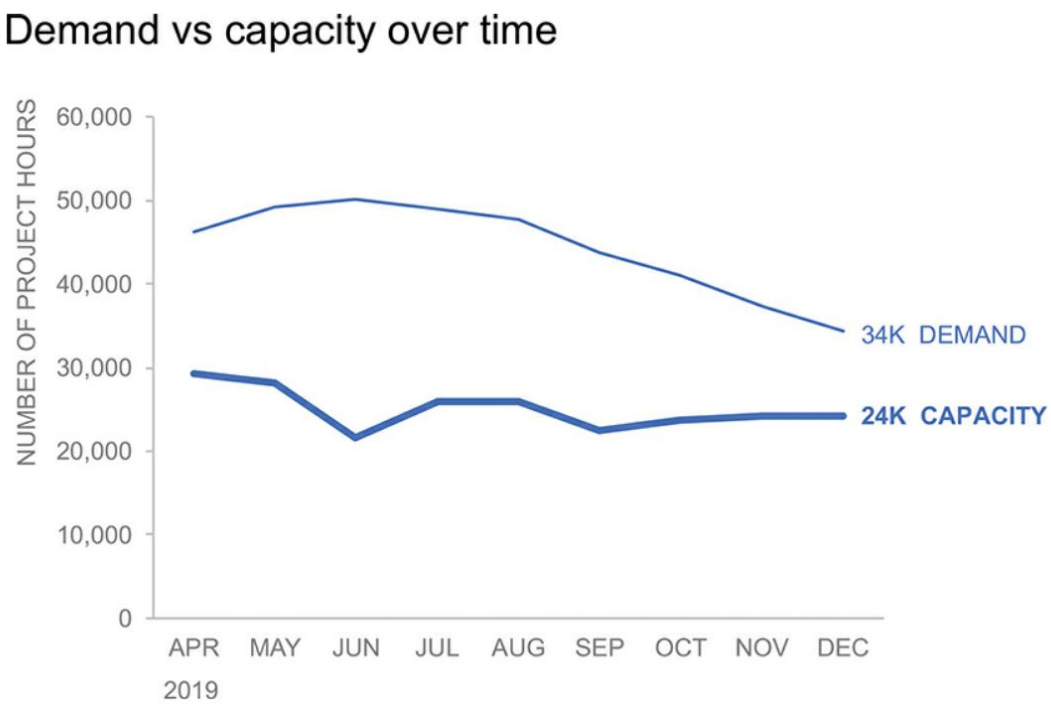
Source: Nussbaumer Knaflic (2020)

Basic bars



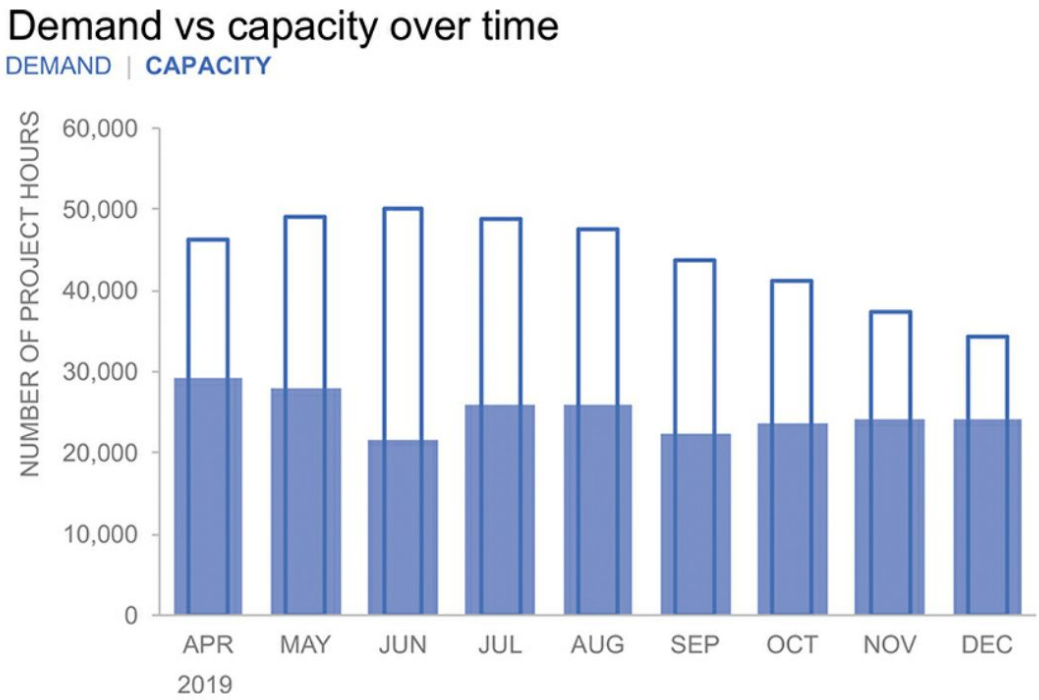
Source: Nussbaumer Knaflic (2020)

Line graph



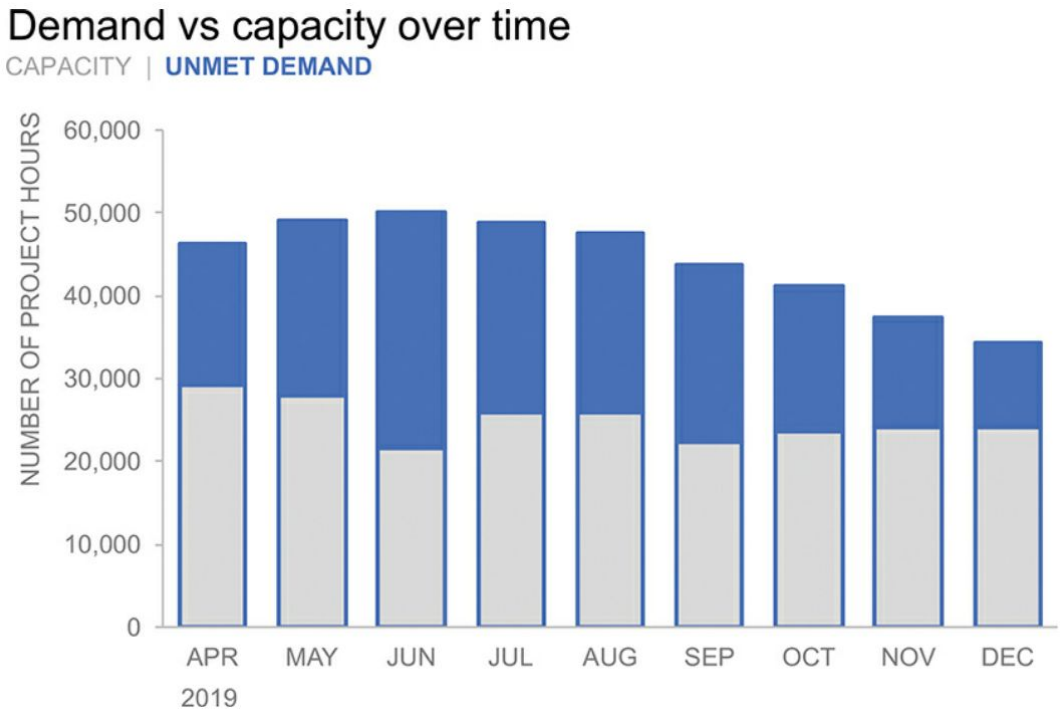
Source: Nussbaumer Knaflic (2020)

Overlapping bars



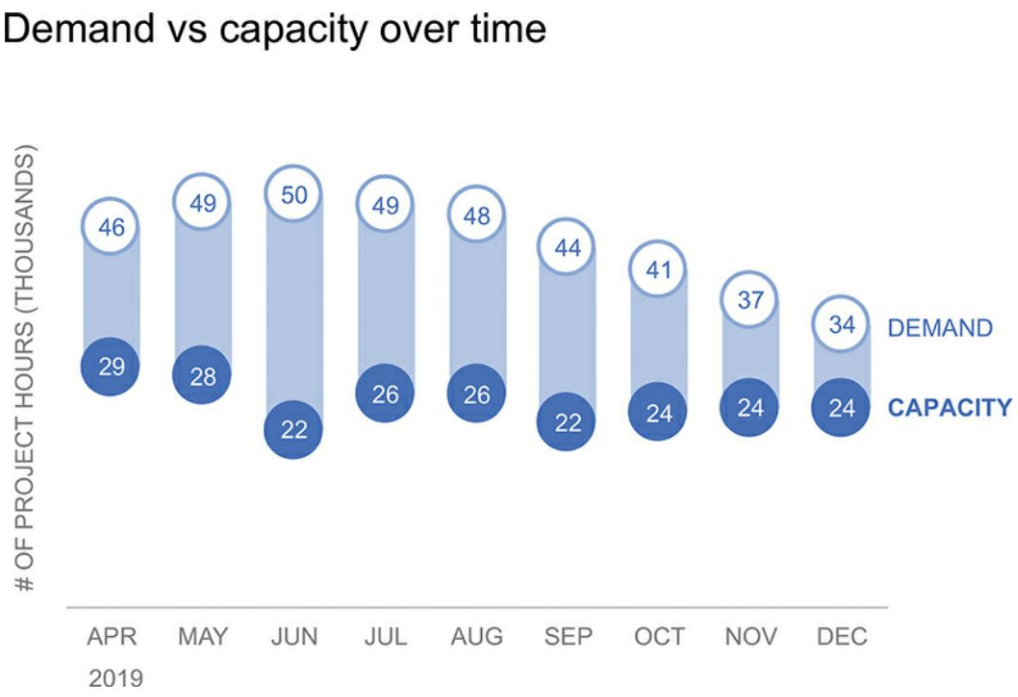
Source: Nussbaumer Knaflic (2020)

Stacked bar charts



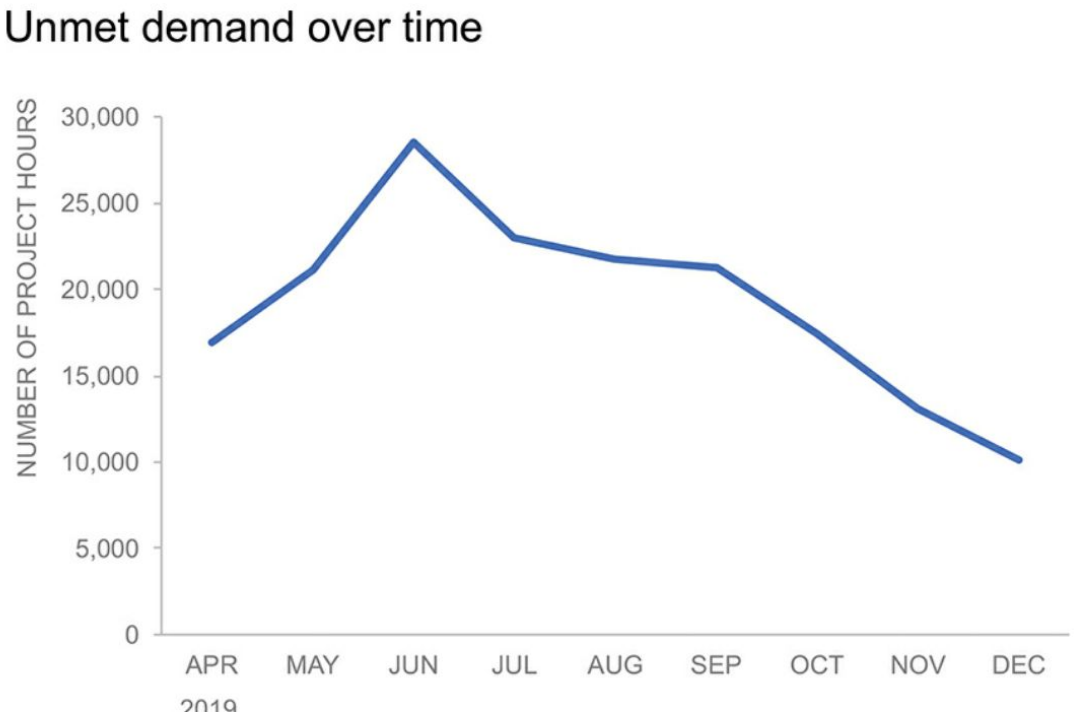
Source: Nussbaumer Knaflic (2020)

Dot plot



Source: Nussbaumer Knaflic (2020)

Graph the difference



Source: Nussbaumer Knaflic (2020)

Example 2.5

Attrition over time

Year	Attrition Rate
2019	9.1%
2018	8.2%
2017	4.5%
2016	12.3%
2015	5.6%
2014	15.1%
2013	7.0%
2012	1.0%
2011	2.0%
2010	9.7%
AVG	7.5%

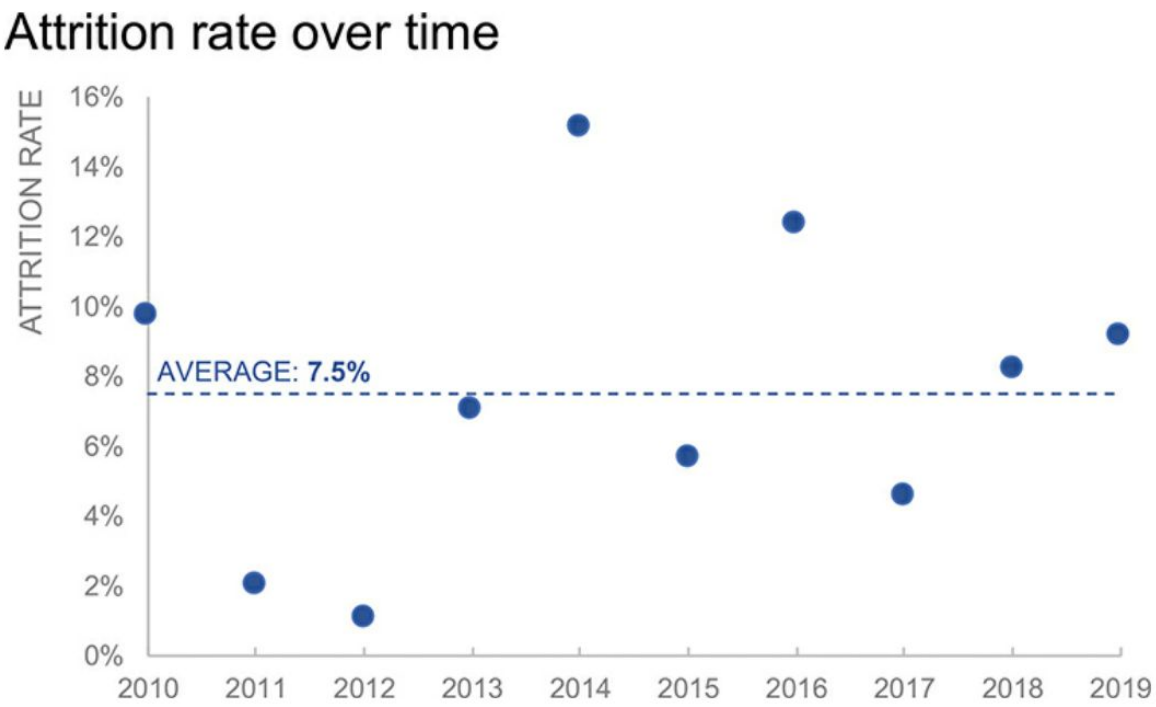
QUESTION 1:
How many **different ways** can you come up with to show this data? Draw or create in the tool of your choice.

QUESTION 2:
How would you **show** the **average** in the various views you've created?

QUESTION 3:
Which of the visuals you've created do you **like best** and why?

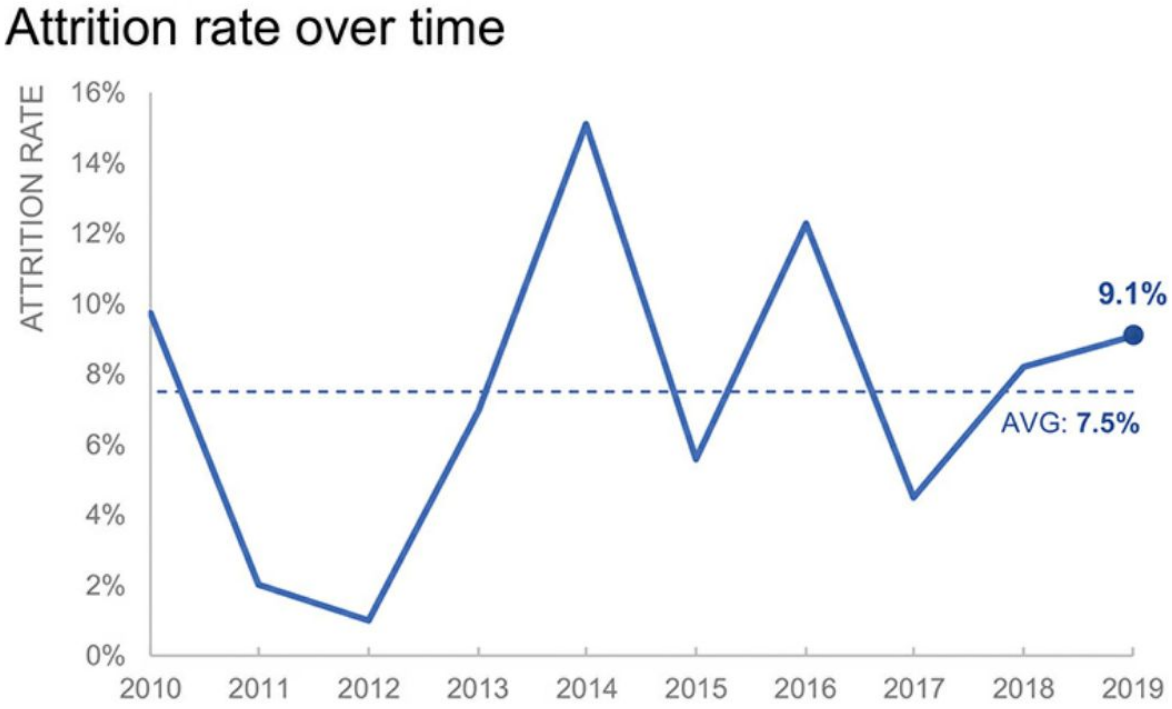
Source: Nussbaumer Knaflic (2020)

Dot plot



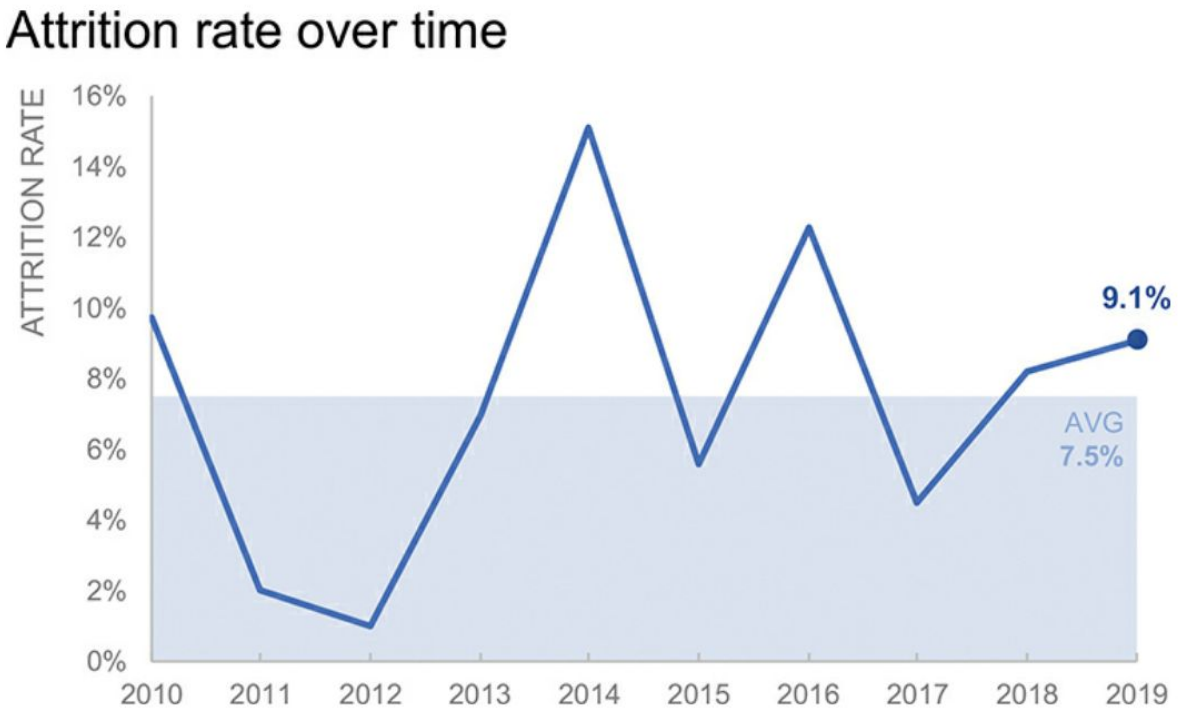
Source: Nussbaumer Knaflic (2020)

Line graph



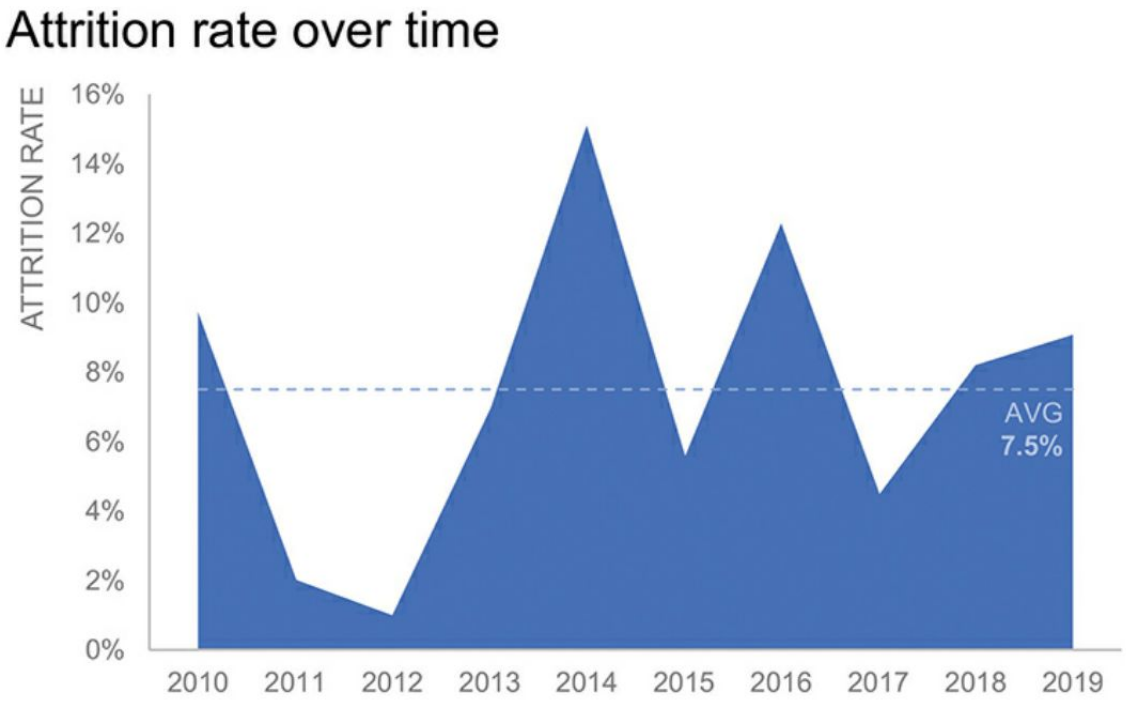
Source: Nussbaumer Knaflic (2020)

Line graph with shaded area depicting average



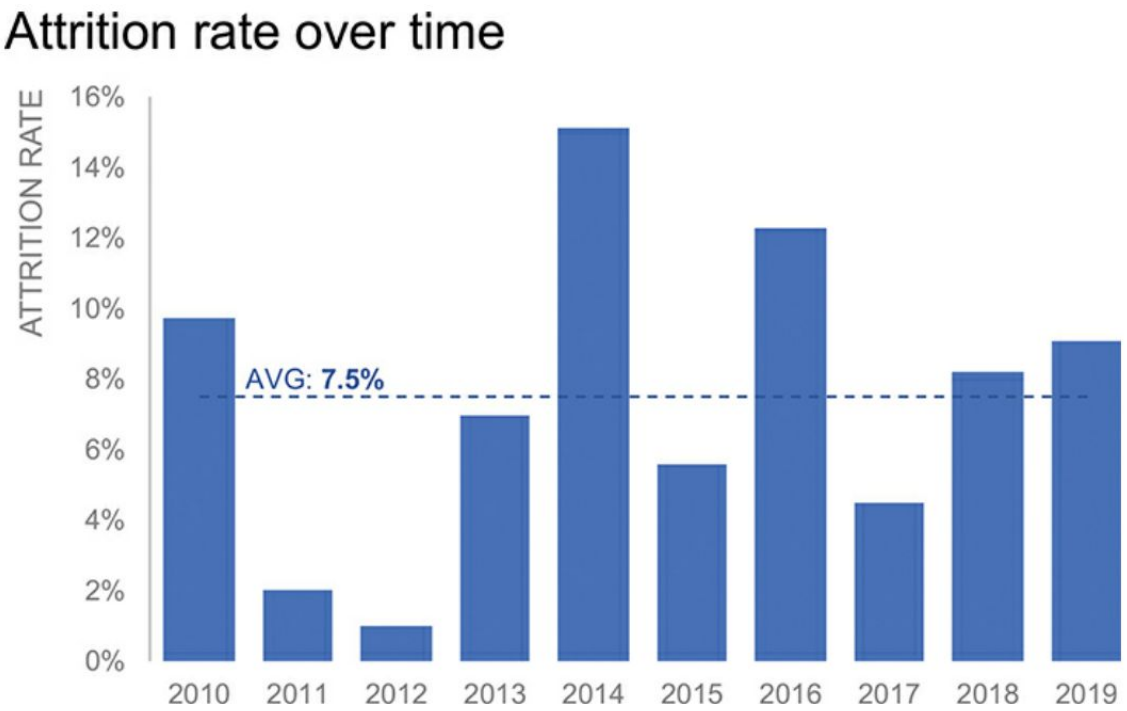
Source: Nussbaumer Knaflic (2020)

Area graph



Source: Nussbaumer Knaflic (2020)

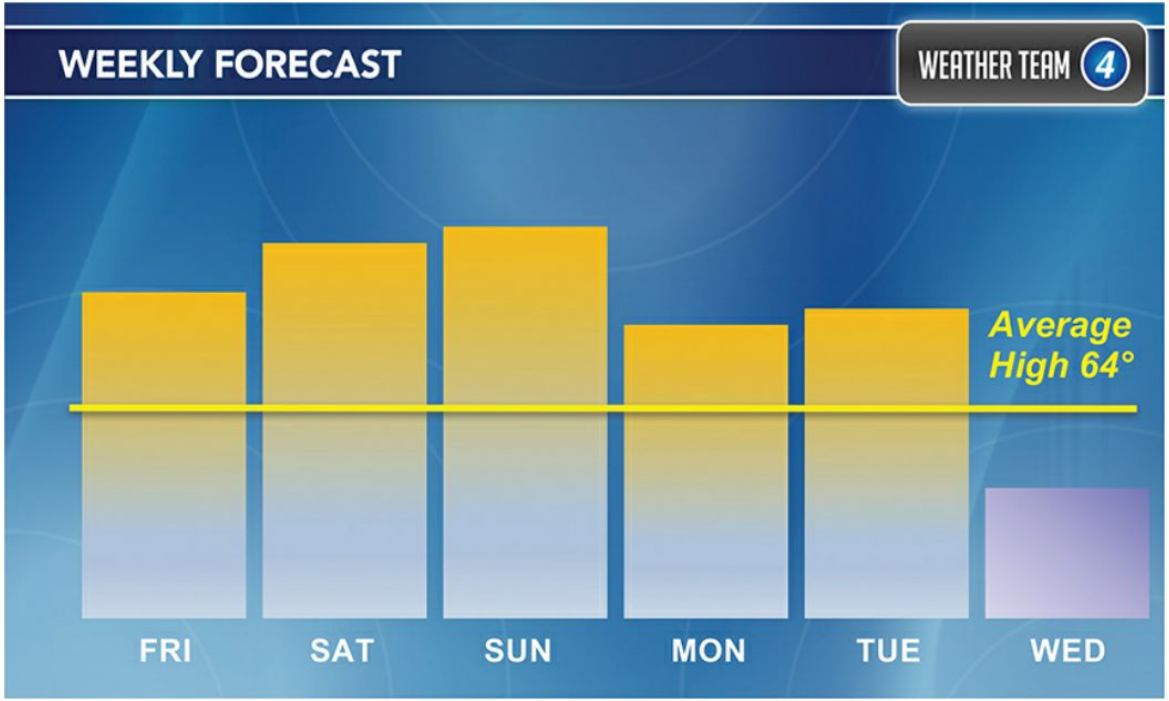
Area graph



Source: Nussbaumer Knaflic (2020)

Example 2.6

Weather forecast



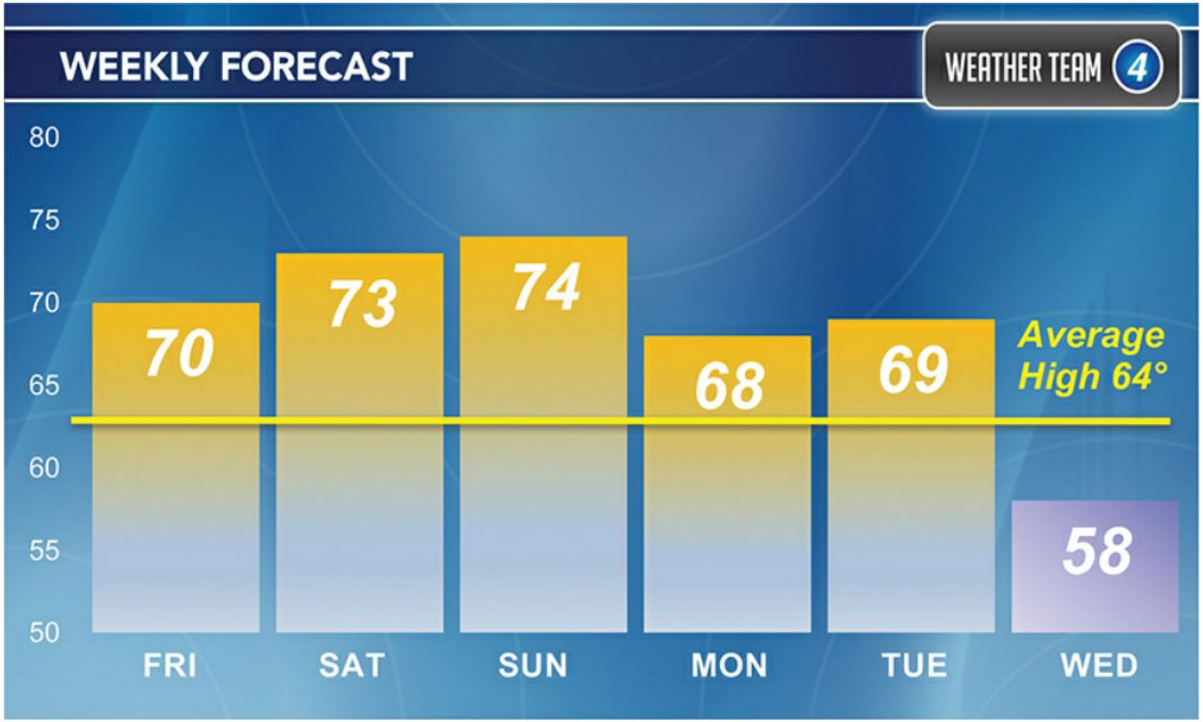
QUESTION 1:
What temperature would you estimate: **Sunday**?

QUESTION 2:
What temperature might you estimate: **Wednesday**?

QUESTION 3:
What other observations can you make from this data?

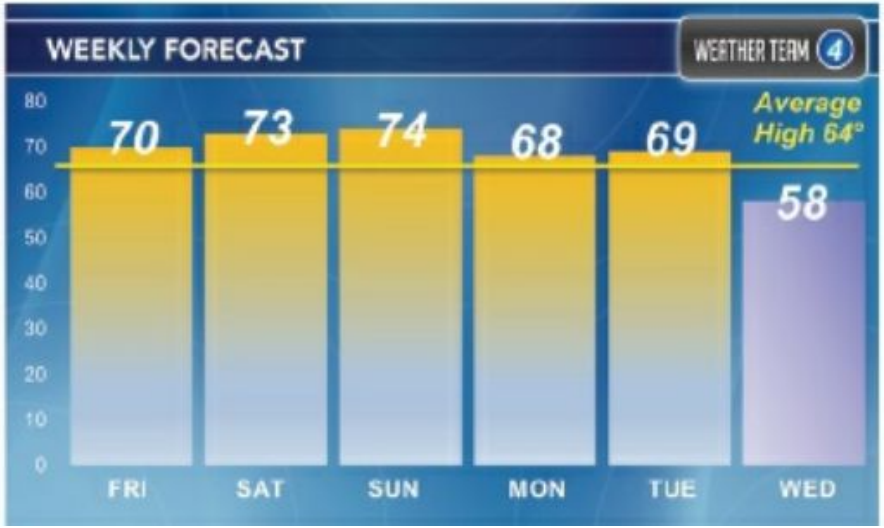
Source: Nussbaumer Knaflic (2020)

Take a closer look the baseline



Source: Nussbaumer Knaflic (2020)

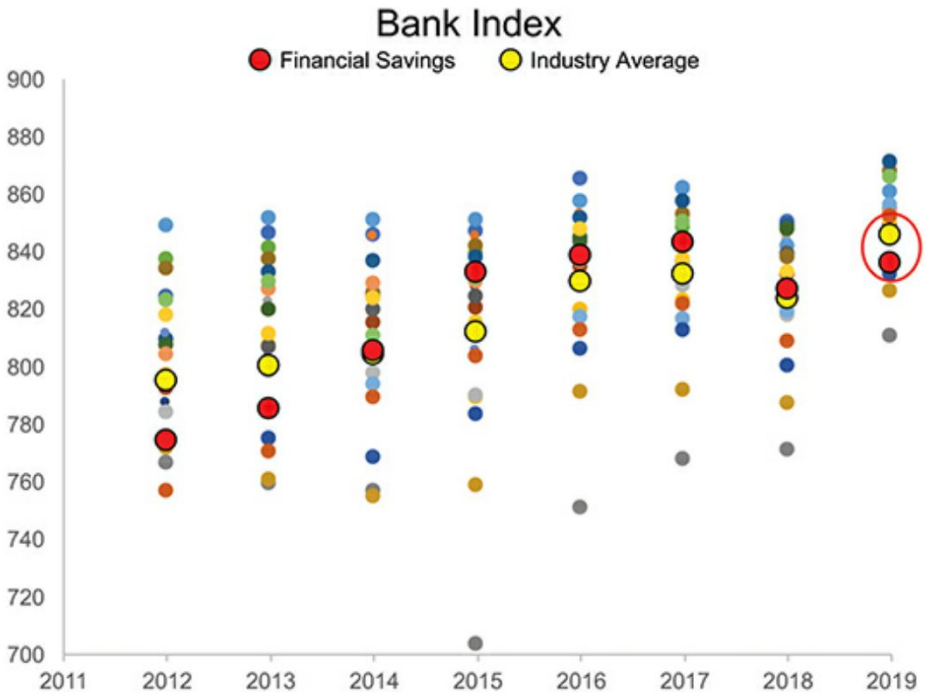
Compare the two graphs. Bar charts must have a zero baseline!



Source: Nussbaumer Knaflic (2020)

Example 2.7

Bank index



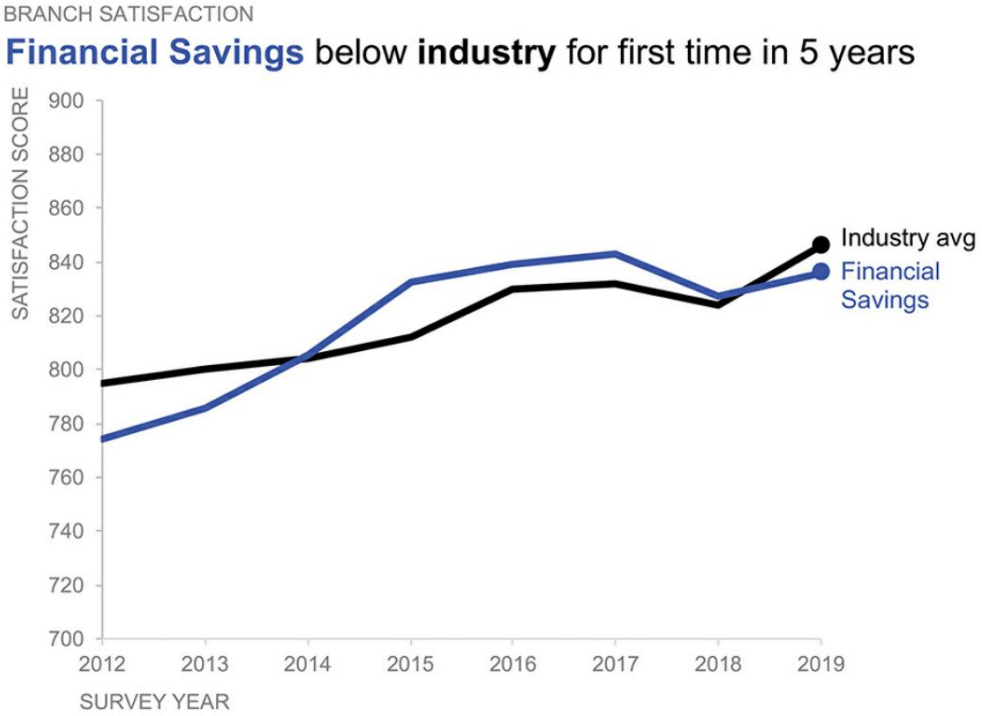
QUESTION 1:
What **questions** do you have about this data?

QUESTION 2:
If you were designing the graph, what **changes** would you make?

How would you **visualize** this data?

Source: Nussbaumer Knaflic (2020)

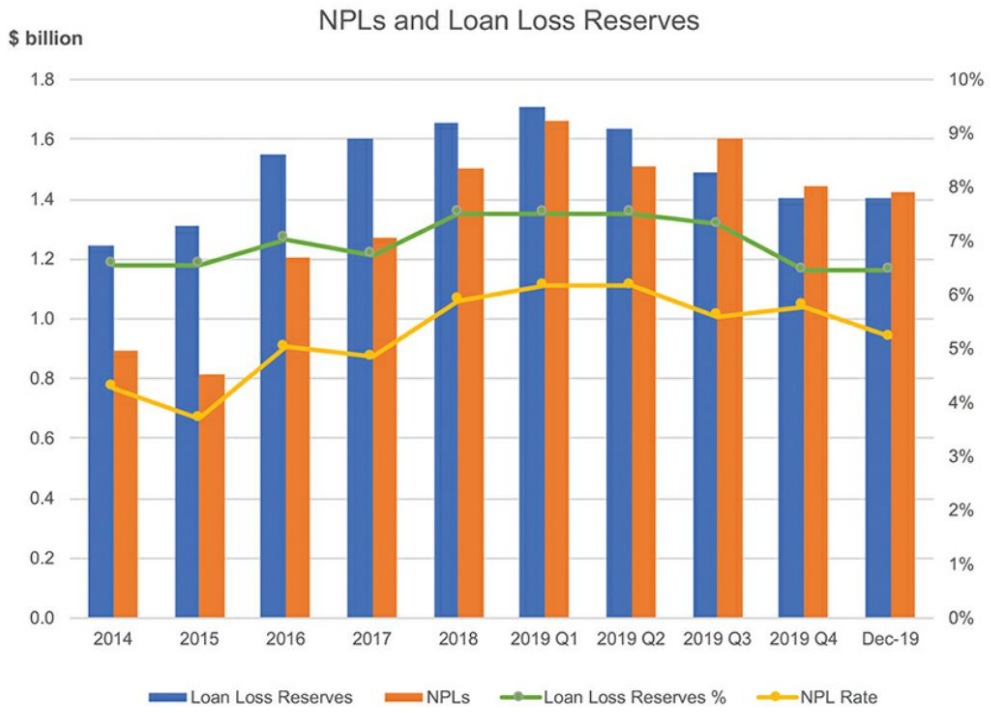
Optimized graph



Source: Nussbaumer Knaflic (2020)

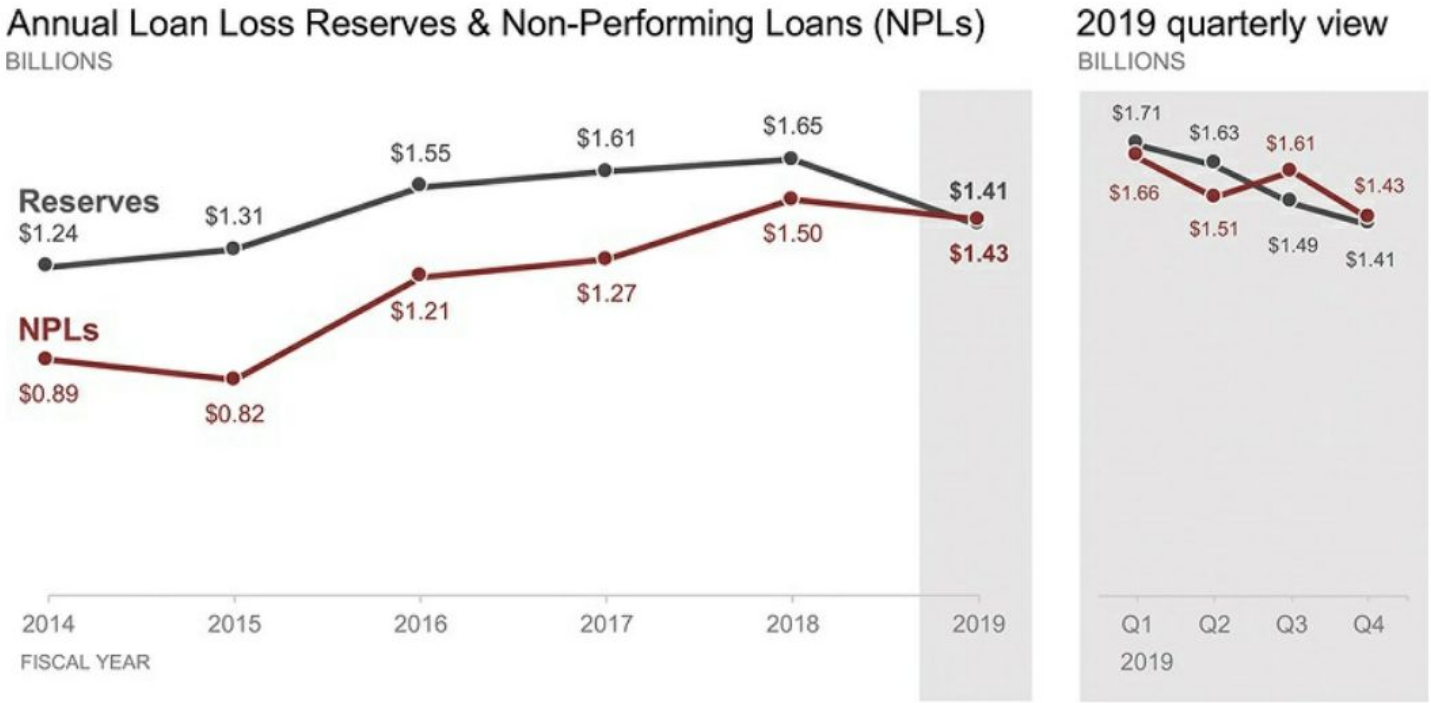
Example 2.8

What's confusing in this graph?



Source: Nussbaumer Knaflic (2020)

Alternative view



Source: Nussbaumer Knaflic (2020)

All resources (exercises & solutions)

Data and solutions for all exercises

Download