



# Data Visualization

## About (breaking the) rules



# Sophie Ferrlein

Product Data Analyst @ Finanzguru



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Why Data  
Visualization?

2

But Is It That  
Hard?

3

How to Do It  
Better

4

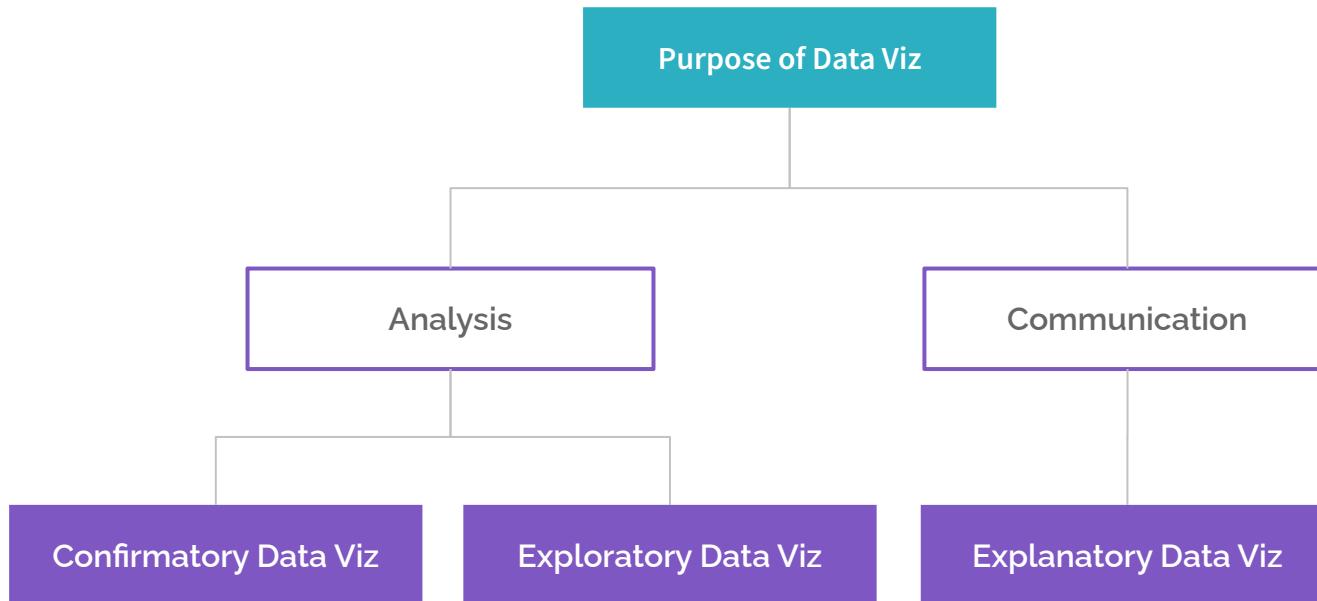
Breaking the  
Rules

1

# Why Data Visualization?

Why Data Visualization?

# Purpose of Data Visualization (Data Viz)



# Why Data Visualization? Human Perception

## Ingesting Data

Verbally

Numerically

Graphically

*"Im Fach-Bachelor Informatik lag die mittlere Studiendauer im Prüfungsjahr 2012 bei 8, 2013 bei 7, 2014 bei 7.27, 2015 bei 6.97, 2016 bei 7.39, 2017 bei 7.19, 2018 bei 8.23, 2019 bei 8.64, 2020 bei 9.7, 2021 bei 8.46 bei einer Regelstudienzeit von 6."*

Prüfungsjahr	Fach-Bachelor Informatik	
	Mittelwert Fachstudiendauer	Regellstudienzeit
2012	8	6
2013	7	6
2014	7,27027027	6
2015	6,970588235	6
2016	7,390243902	6
2017	7,193548387	6
2018	8,23255814	6
2019	8,64	6
2020	9,70212766	6
2021	8,457627119	6



Why Data Visualization? / Human Perception

# Example: Analysis of Anscombe's Quartet

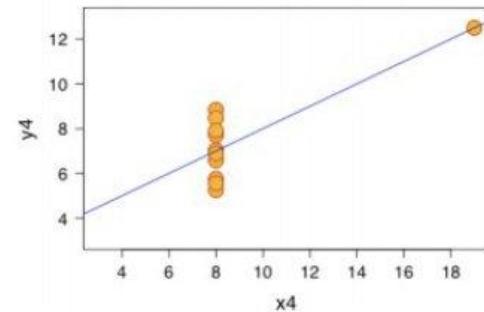
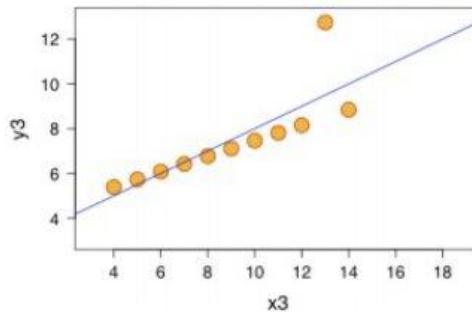
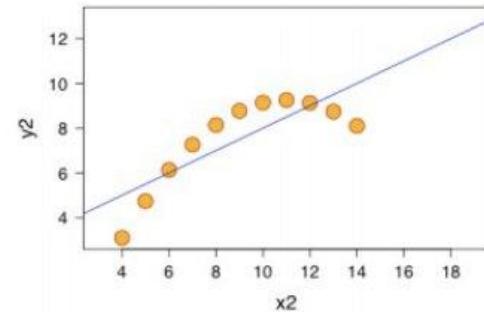
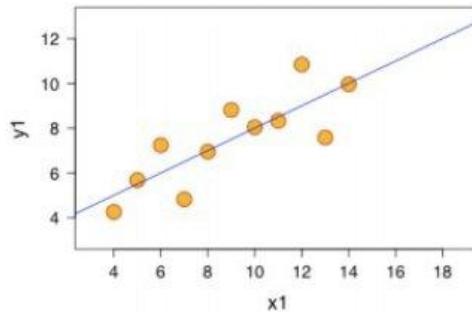
1	2	3	4				
X1	Y1	X2	Y2	X3	Y3	X4	Y4
10.0	8.04	10.0	9.14	10.0	7.46	8.0	6.58
8.0	6.95	8.0	8.14	8.0	6.77	8.0	5.76
13.0	7.58	13.0	8.74	13.0	12.74	8.0	7.71
9.0	8.81	9.0	8.77	9.0	7.11	8.0	8.84
11.0	8.33	11.0	9.26	11.0	7.81	8.0	8.47
14.0	9.96	14.0	8.10	14.0	8.84	8.0	7.04
6.0	7.24	6.0	6.13	6.0	6.08	8.0	5.25
4.0	4.26	4.0	3.10	4.0	5.39	19.0	12.50
12.0	10.84	12.0	9.13	12.0	8.15	8.0	5.56
7.0	4.82	7.0	7.26	7.0	6.42	8.0	7.91
5.0	5.68	5.0	4.74	5.0	5.73	8.0	6.89

group	x mean	y mean	x variance	y variance	correlation
1	9.00	7.50	11.00	11.00	0.45
2	9.00	7.50	11.00	11.00	0.45
3	9.00	7.50	11.00	11.00	0.45
4	9.00	7.50	11.00	11.00	0.45

Why Data Visualization? / Human Perception

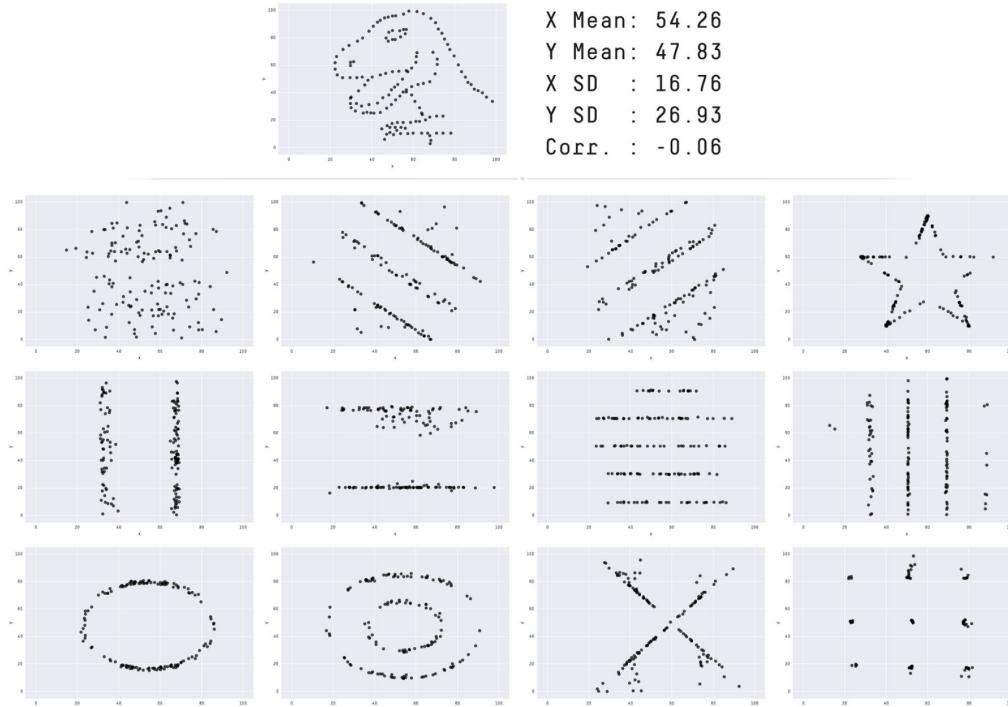
# Example: Analysis of Anscombe's Quartet

1	2	3	4				
X1	Y1	X2	Y2	X3	Y3	X4	Y4
10.0	8.04	10.0	9.14	10.0	7.46	8.0	6.58
8.0	6.95	8.0	8.14	8.0	6.77	8.0	5.76
13.0	7.58	13.0	8.74	13.0	12.74	8.0	7.71
9.0	8.81	9.0	8.77	9.0	7.11	8.0	8.84
11.0	8.33	11.0	9.26	11.0	7.81	8.0	8.47
14.0	9.96	14.0	8.10	14.0	8.84	8.0	7.04
6.0	7.24	6.0	6.13	6.0	6.08	8.0	5.25
4.0	4.26	4.0	3.10	4.0	5.39	19.0	12.50
12.0	10.84	12.0	9.13	12.0	8.15	8.0	5.56
7.0	4.82	7.0	7.26	7.0	6.42	8.0	7.91
5.0	5.68	5.0	4.74	5.0	5.73	8.0	6.89



Why Data Visualization? / Human Perception

# Example: The Datasaurus Dozen



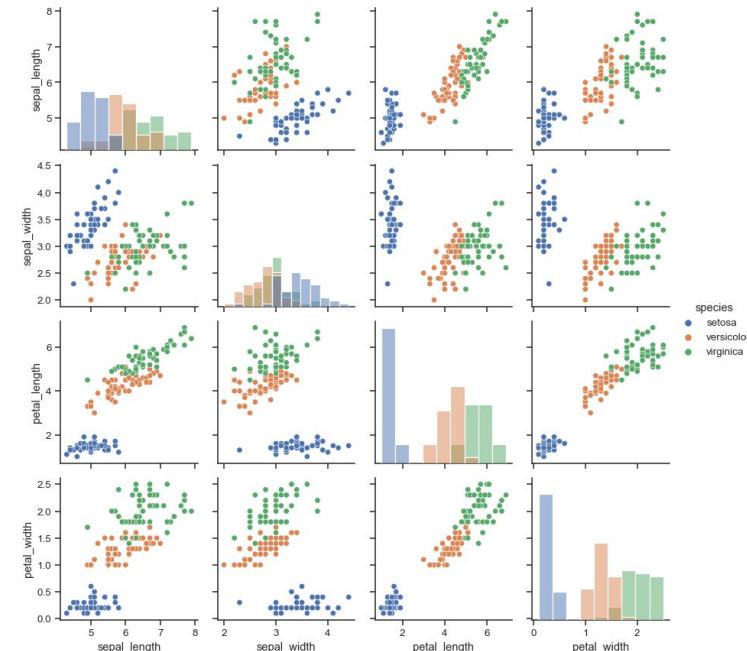
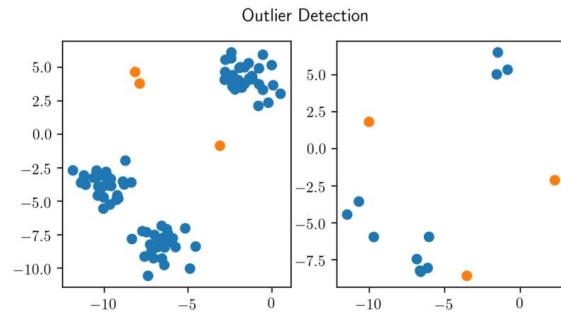
*...make both  
calculations  
and graphs.*

F.J. Anscombe, 1973

Why Data Visualization?

# Visual Analytics / Exploratory Data Analysis (EDA)

- identify mistakes in collection / processing
- find violations of statistical assumptions
- detect outlier
- observe patterns in the data
- make hypothesis



2

# But Is It That Hard?

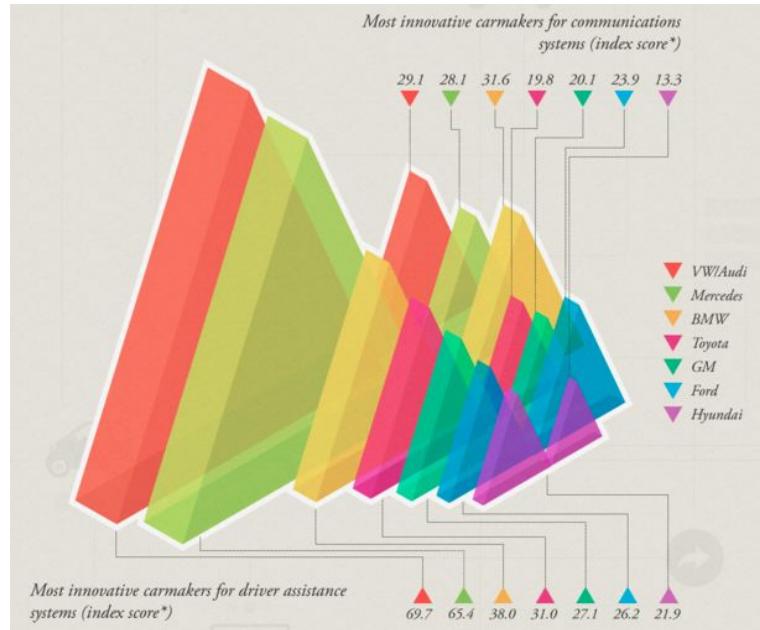
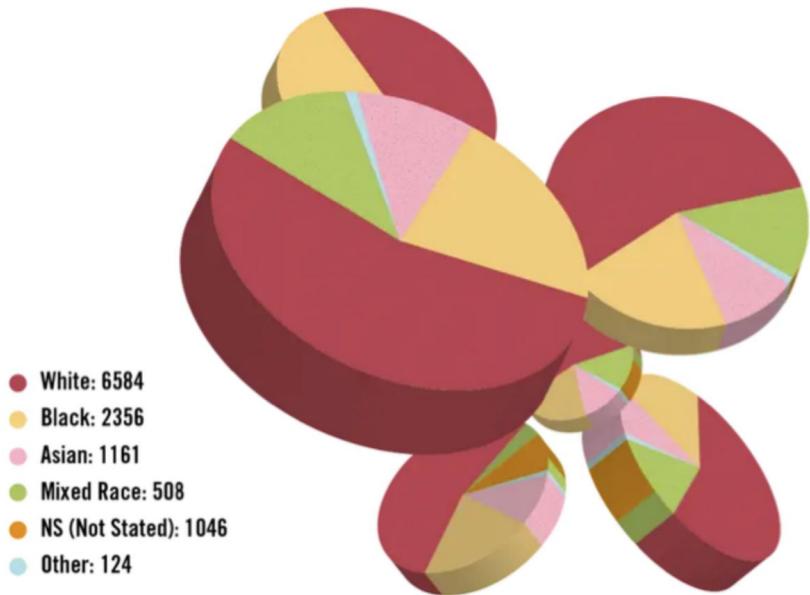
*Nobody sets out to make a bad  
graph. But it happens.  
Again and again.*

Cole Nussbaumer Knaflic

But Is It That Hard?

# Good Chart or bad Chart?

Convictions in England and Wales for class A drug supply.

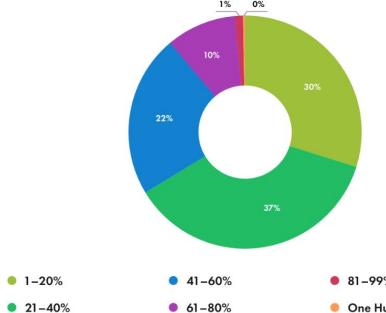


# But Is It That Hard?

# Good Chart or bad Chart?



Amount of Operating Income Expected to Lose in 2020



National Survey of COVID-19 Impact  
on United States Museums



30% of respondents expect to lose up to 20% of their income in 2020

27% of respondents expect to lose 21-40% of their income in 2020

24% of respondents expect to lose 41-60% of their income in 2020

11% of respondents expect to lose 61-80% of their income in 2020

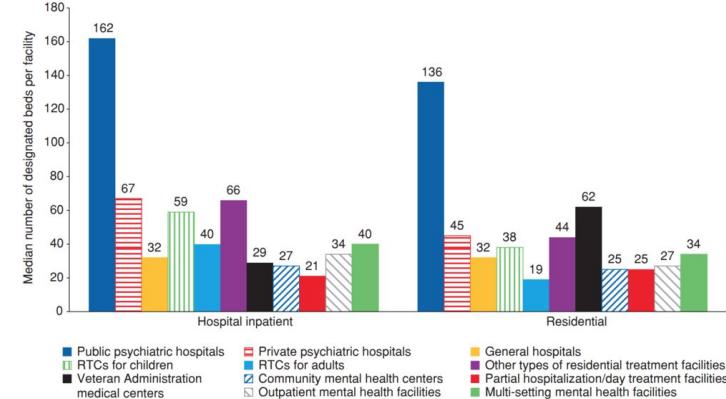
23% of respondents expect to lose 81-99% of their income in 2020

\* number of respondents — 538

Source: American Alliance of Museums

Right image from viz.wtf

Figure 2.6. Median number of designated beds for mental health treatment per facility, by service setting and facility type: April 29, 2016



SOURCE: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, National Mental Health Services Survey (N-MHSS), 2016.

But Is It That Hard?

# Wouldn't you use a recipe to make a great pie?

Like **recipes** for great pies there are **principles** for great data visualizations.



3

# How to Do It Better

# **Effective Data Visualization**

How To Do It Better / Effective Data Viz

# Effective Data Visualization

Replace cognition  
with perception

Audience

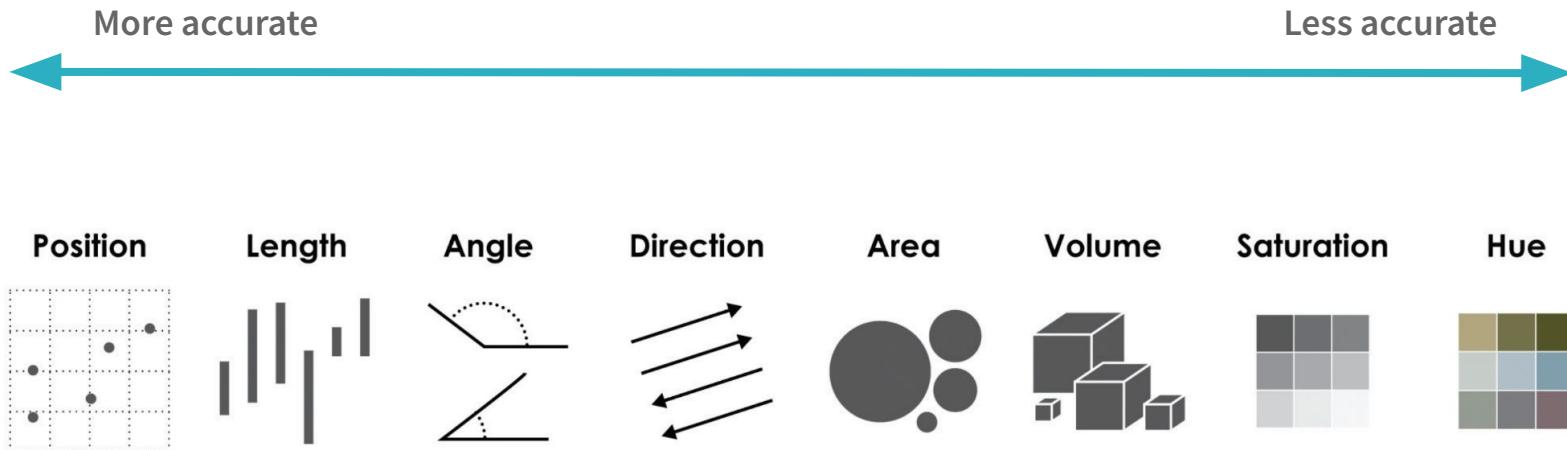
"**Visual representations** of datasets designed to help **people** carry out **tasks** more effectively."

Goal

*Tamara Munzner, Visualization Analysis & Design*

How To Do It Better / Effective Data Viz / Perception Accuracy

# Effectiveness of visual cues / encodings for quantitative data



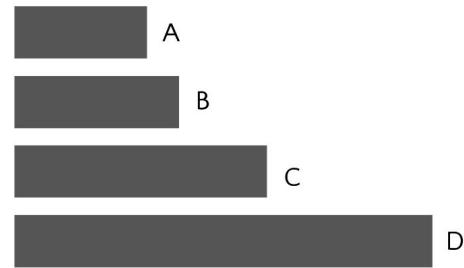
How To Do It Better / Effective Data Viz / Perception Accuracy

# Example: How much bigger is D compared to A?

Color saturation

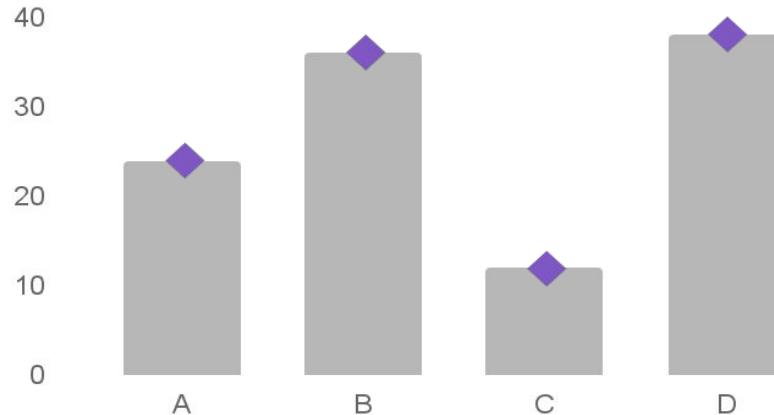
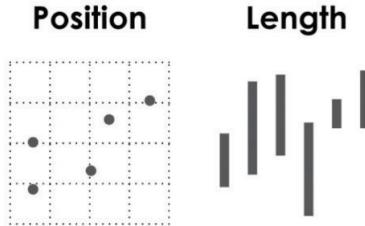


Length



How To Do It Better / Effective Data Viz / Perception Accuracy

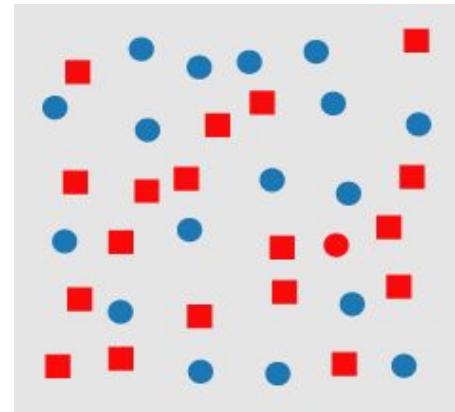
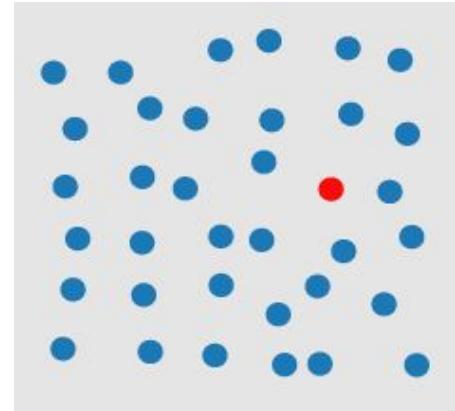
**In practice: Bar charts are highly effective as they use both position & length**



# When things “pop out” aka preattentive processing

Research about how humans analyse images

- Found limited set of **visual properties are detected very rapidly and accurately** by the low-level visual system
- Called **preattentive**, since their detection seemed to precede focused attention / happens within milliseconds
- Simple example of a preattentive task is the **detection of a red circle** in a group of blue circles

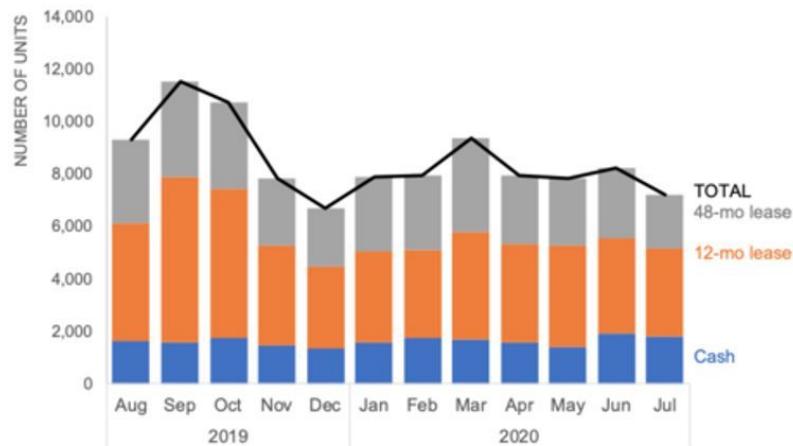


How To Do It Better / Effective Data Viz / Preattentive Processing (Pop out)

# In practice: Emphasis with preattentive attributes

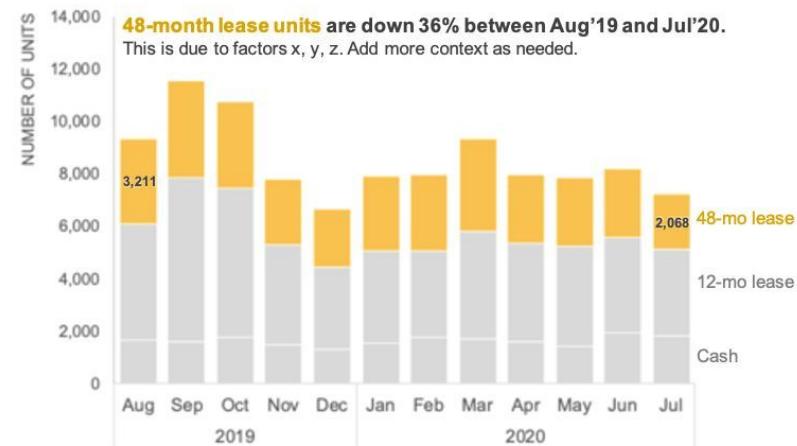
BEFORE: **no emphasis**

Sales over time by purchase type



AFTER: **clear emphasis**

Sales over time by purchase type



# Tufte's Data Viz Formulas

*Above all else  
show the data*

Edward Tufte

How To Do It Better / Tufte's Data Viz Formulas

# Maximize Data-Ink Ratio

$$\textit{Data-ink ratio} = \frac{\textbf{Data-ink}}{\textbf{Total ink used in the graphic}}$$

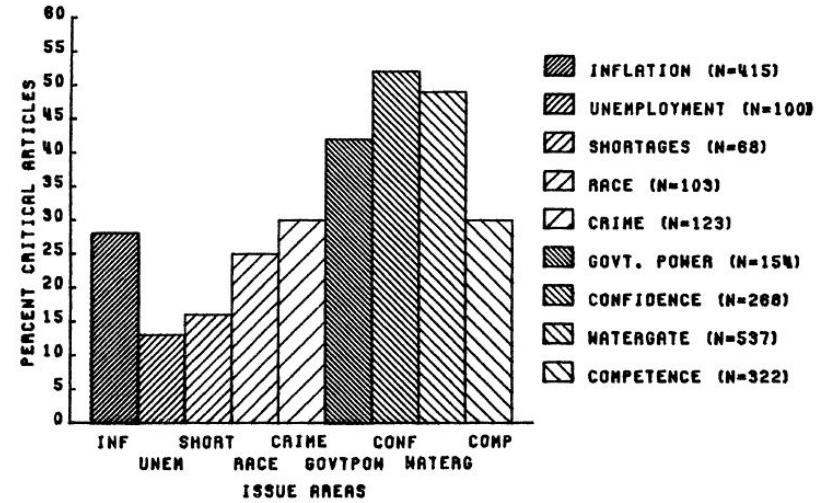
1.0 - proportion of a graphic that can be erased without loss of data-information

How To Do It Better / Tufte's Data Viz Formulas / Maximize Data-Ink Ratio

# Remove Chartjunk / Clutter

Non-data-ink or redundant data-ink  
that can be removed

- redundant labels
- excessive grids and figurative decoration
- uninformative colors
- moiré effect
- extra dimensionality



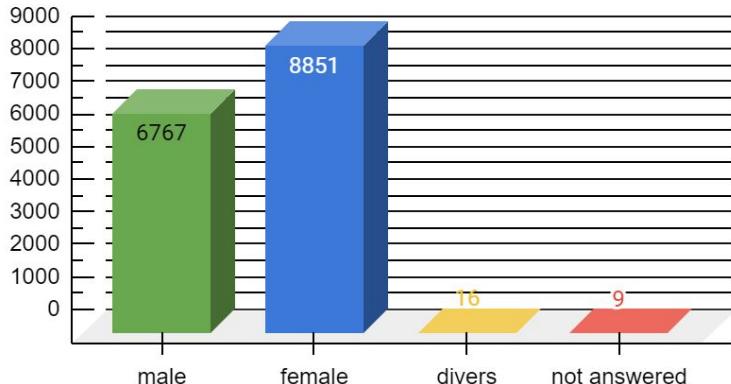
Source: Center for Political Studies Media Content Analysis Study, 1974; available through the University of Michigan, ICPSR. Not to be cited without full bibliographical reference to the present article.

How To Do It Better / Tufte's Data Viz Formulas / Maximize Data-Ink Ratio

## Example: Remove Chartjunk / Clutter

not ideal

Students (Wintersemester 2022/23)



Students (Wintersemester 2022/23)

better

8851

6767



Students (Wintersemester 2022/23)

How To Do It Better / Tufte's Data Viz Formulas

## Lie Factor

“The representation of numbers, as physically measured on the surface of the graphic itself, should be directly proportional to the quantities represented.”

*Edward Tufte*

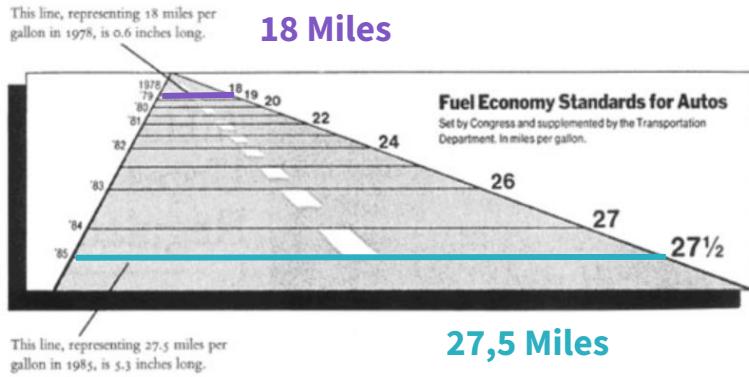
$$\text{Lie Factor} = \frac{\text{size of effect shown in graphic}}{\text{size of effect in data}}$$

should be 1.0

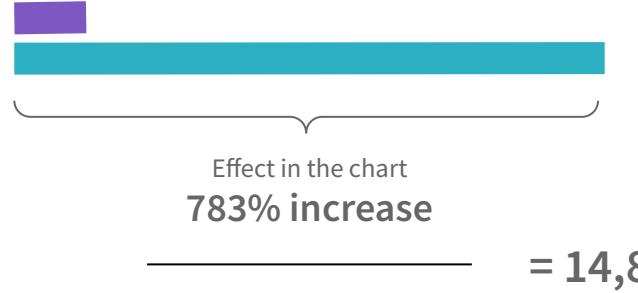
How To Do It Better / Tufte's Data Viz Formulas / Lie Factor

# Example: Lying with perspective distortion

lying chart



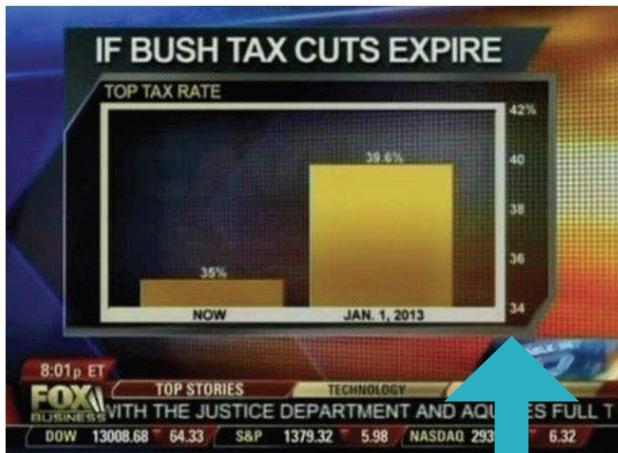
lie factor



How To Do It Better / Tufte's Data Viz Formulas / Lie Factor

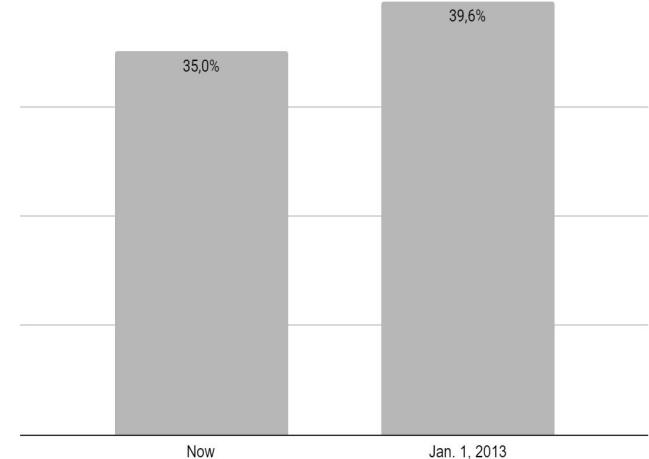
## Example: Identify the lie

lie



Axis starts at  
34 instead of 0

truth

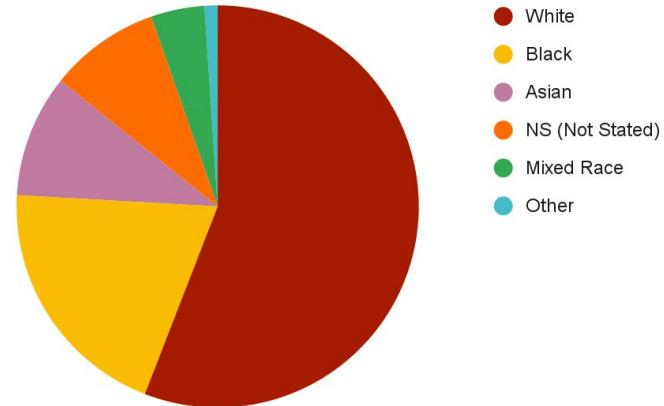
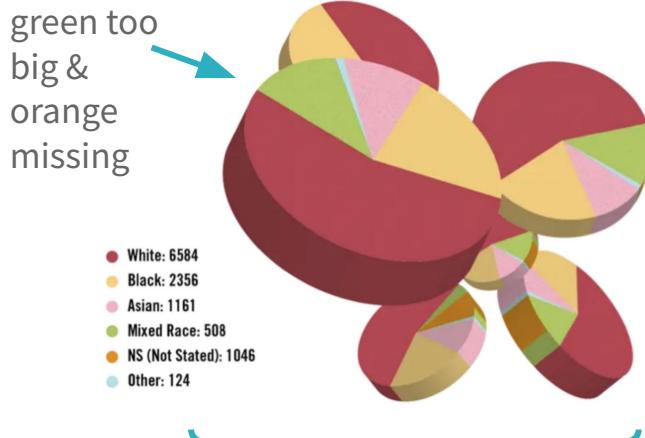


# How To Do It Better / Tufte's Data Viz Formulas / Lie Factor

## Example: Identify the lie



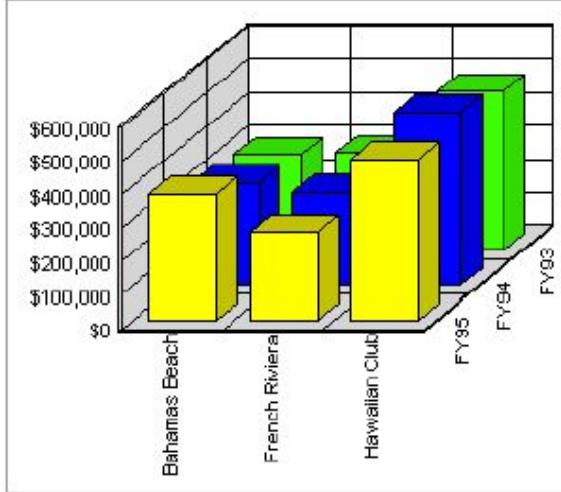
Convictions in England and Wales for class A drug supply.



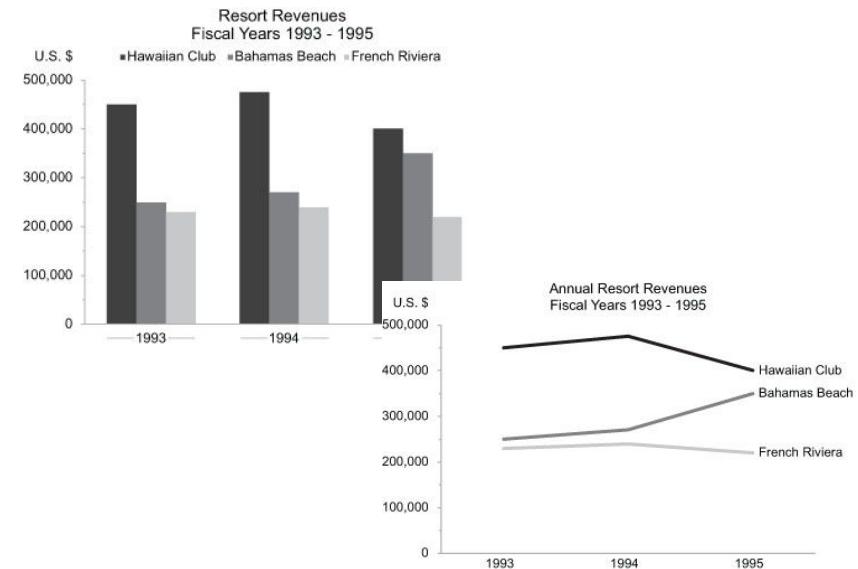
# How To Do It Better / Tufte's Data Viz Formulas

## 2D almost always better than 3D

not ideal



better

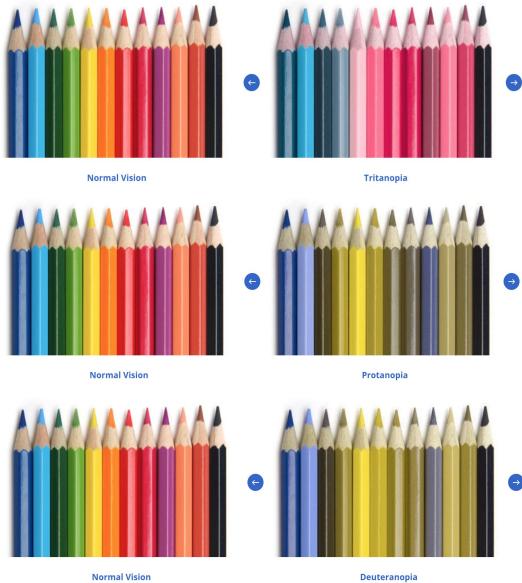


# Use Color With Caution



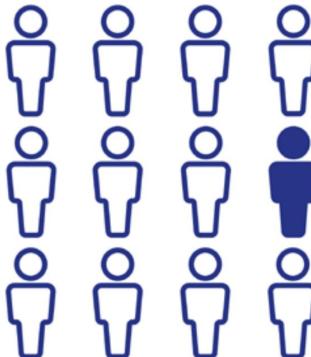
How To Do It Better / Use Color With Caution

# 300 million people with color blindness worldwide

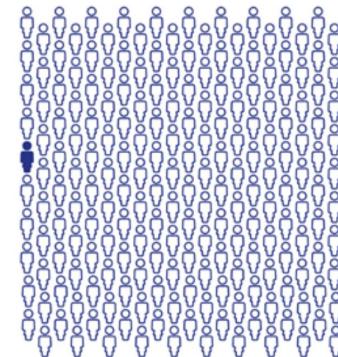


Colour blindness is one of the world's most common inherited conditions. Statistically, it affects:

1 IN 12 MEN

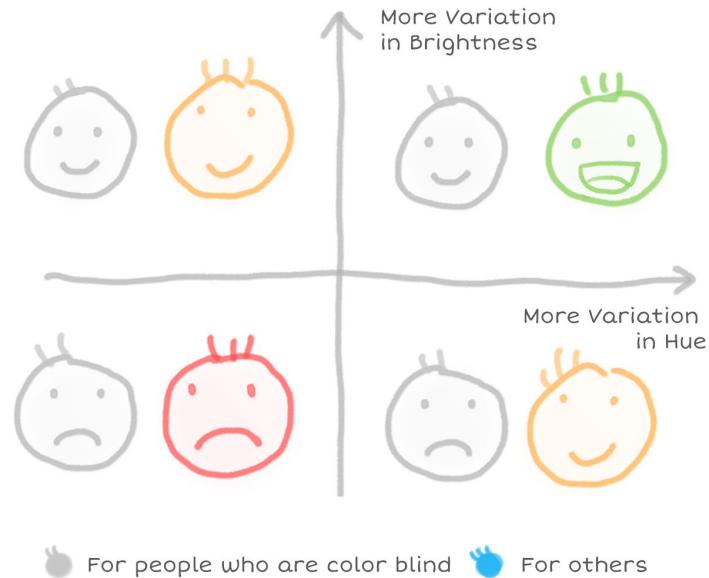
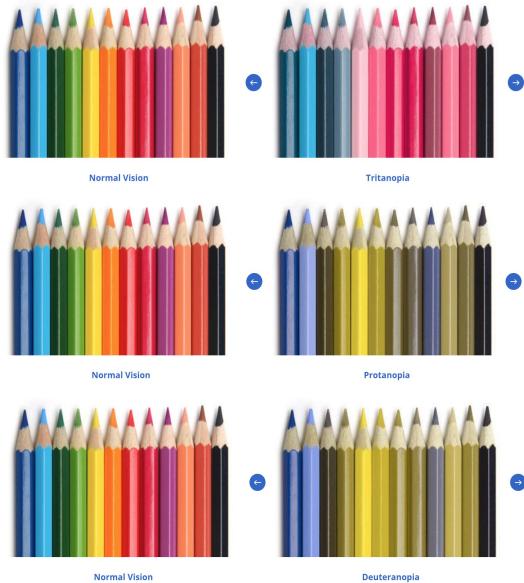


1 IN 200 WOMEN



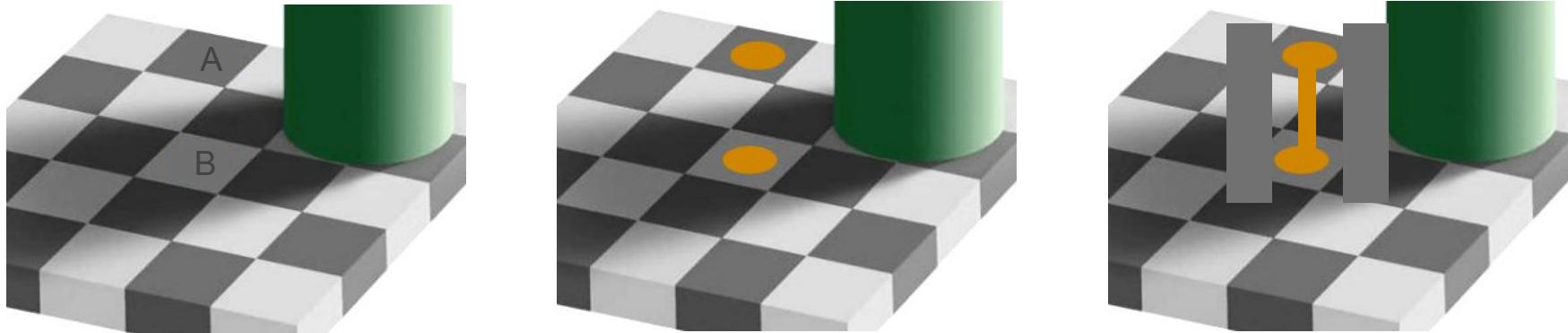
How To Do It Better / Use Color With Caution

# Optimize colors for people with color blindness



How To Do It Better / Use Color With Caution

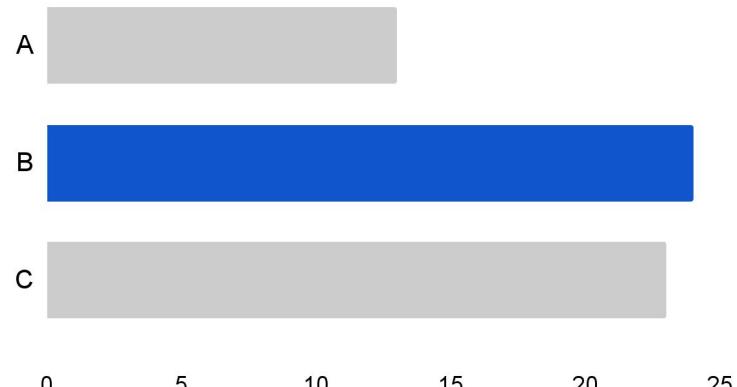
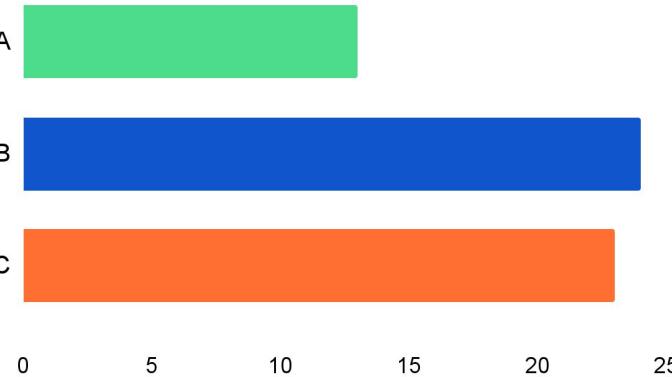
## Color judgement is relative



Relative hue, lightness & contrast perception based on context

How To Do It Better / Use Color With Caution

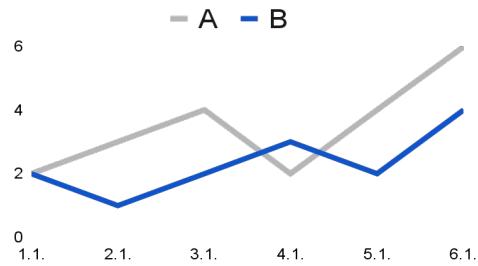
# Use as little color as possible, e.g. pop out effect



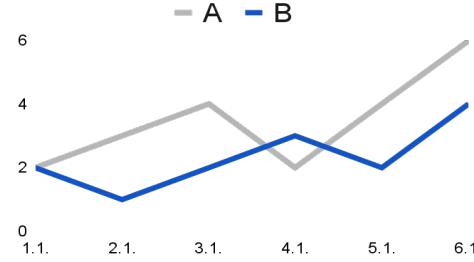
How To Do It Better / Use Color With Caution

## Be consistent

not ideal



better



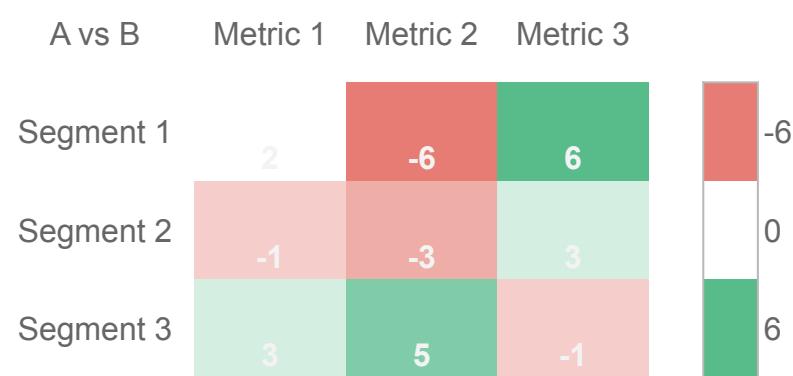
How To Do It Better / Use Color With Caution

# Look for obvious options

not ideal



better



# How To Do It Better / Use Color With Caution

# Use Data Viz Color Palette Tools

Number of data classes: 6 Nature of your data: Sequential  
Pick a color scheme: Multi-hue: Single hue:  
Only show: colorblind safe print friendly photocopy safe  
Context: roads cities borders  
Background: solid color terrain  
color transparency

ColorBREWER 2.0 color advice for cartography

6-class BuPu

#cdf8fb #bf3e6 #9ebcd #8c96c #8056a #8107c

© Cynthia Brewer, Mark Harrower and The Pennsylvania State University  
Source code and feedback  
Back to Flash version  
Back to ColorBrewer 1.0

axismaps

VIZ PALETTE By Elijah Meeks & Susie Lu

PICK Use Chroma.js Add Replace Use ColorGradiant Use ColorBrewer

EDIT 7 Colors Add #hex Orgb Hsl

GET String quotes Object with metadata #f1d700 "#ff14e "#a8775 "#ee504 "#cd346 "#9d2d7 "#0000ff & backgroundColor="white" & fontColor="black" & mode="deuteranomaly"

COLORS IN ACTION Sample font Randomize Data Stroke: Dark None

COLOR REPORT Arc link colors difficult to tell apart as: Lines or small points Medium areas Large areas

Original	Deutan54
#fba7a8d	pink
#ff044d	orange
#ff0050	yellow
#3940b	blue
#0033b	blue
#8c65a	purple
#ff0071	tan
#f1d700	#ff14e
#9d2d7	#a8775
#0000ff	#ee504
#cd346	#cd346
#9d2d7	#9d2d7
#f1d700	#f1d700

Tools: [colorbrewer2.org/](http://colorbrewer2.org/) and [projects.susielu.com/viz-palette](http://projects.susielu.com/viz-palette)

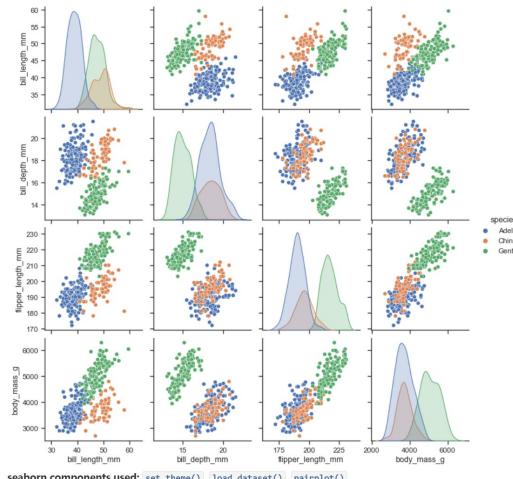
**Use Data  
Viz Tools  
Without Blindly  
Trusting the  
Defaults**

# How To Do It Better / Using Data Viz Tools

## Seaborn provides great statistical / exploratory visualizations

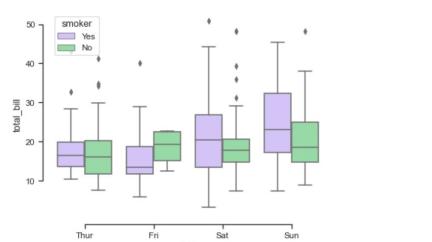


Scatterplot Matrix



```
import seaborn as sns
sns.set_theme(style="ticks")
df = sns.load_dataset("penguins")
sns.pairplot(df, hue="species")
```

Grouped boxplots

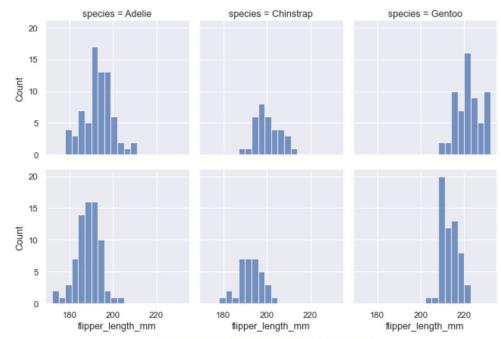


```
import seaborn as sns
sns.set_theme(style="ticks", palette="pastel")

# Load the example tips dataset
tips = sns.load_dataset("tips")

# Draw a nested boxplot to show bills by day and time
sns.boxplot(x="day", y="total_bill",
            hue="smoker", palette=[ "#m", "#g"],
            data=tips)
sns.despine(offset=10, trim=True)
```

Facetting histograms by subsets of data



```
import seaborn as sns
sns.set_theme(style="darkgrid")
df = sns.load_dataset("penguins")
sns.FacetGrid(df, x="flipper_length_mm", col="species", row="sex",
              binwidth=3, height=3, facet_kws=dict(margin_titles=True),
              )
```

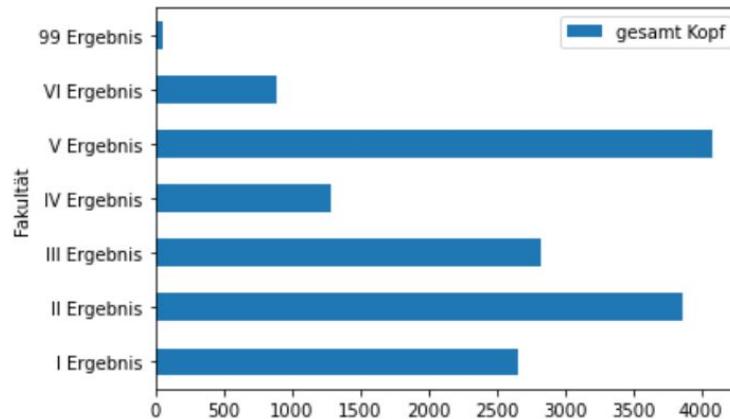
# How To Do It Better / Using Data Viz Tools

## Styling Plots with Seaborn

```
[1]: import pandas as pd  
import matplotlib.pyplot as plt  
import seaborn as sns
```

```
[4]: df.plot(kind='barh', x='Fakultät', y='gesamt Kopf')
```

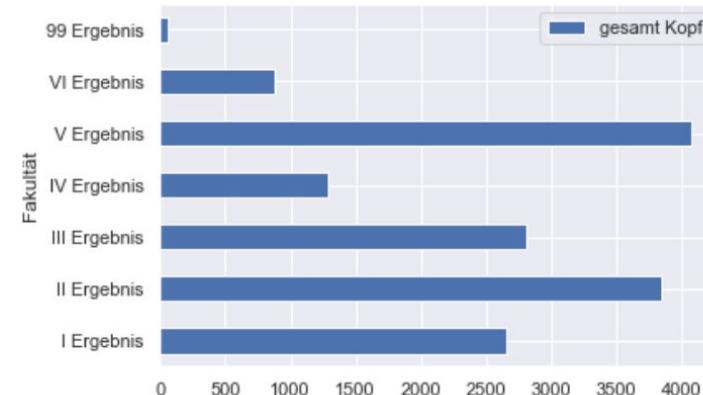
```
[4]: <AxesSubplot:ylabel='Fakultät'>
```



```
[33]: sns.set_theme()
```

```
[34]: df.plot(kind='barh', x='Fakultät', y='gesamt Kopf')
```

```
[34]: <AxesSubplot:ylabel='Fakultät'>
```



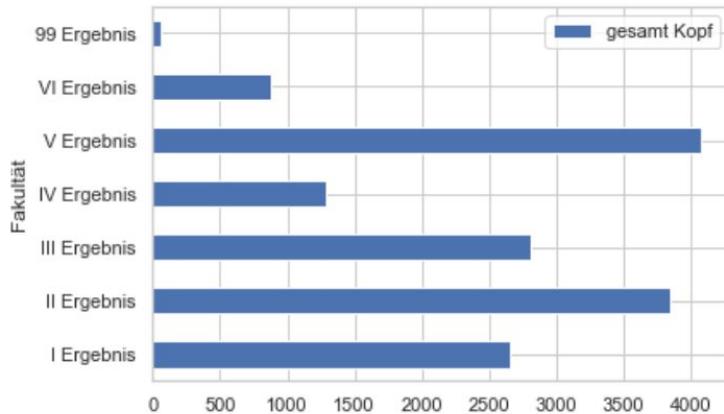
# How To Do It Better / Using Data Viz Tools

## Styling Plots with Seaborn

```
[54]: sns.set_theme(style="whitegrid")
```

```
[55]: df.plot(kind='barh', x='Fakultät', y='gesamt Kopf')
```

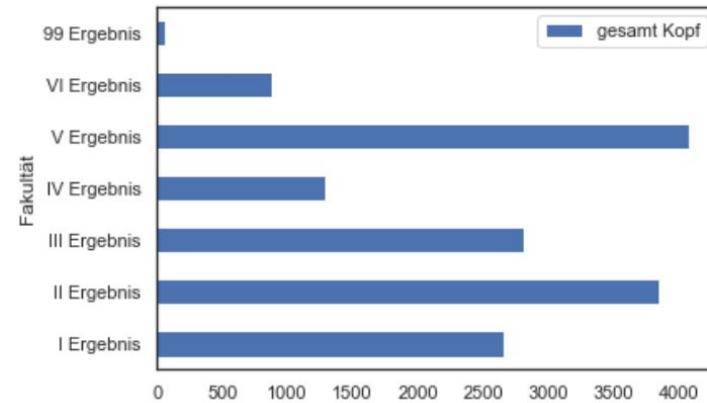
```
[55]: <AxesSubplot:ylabel='Fakultät'>
```



```
[46]: sns.set_theme(style="white")
```

```
[47]: df.plot(kind='barh', x='Fakultät', y='gesamt Kopf')
```

```
[47]: <AxesSubplot:ylabel='Fakultät'>
```



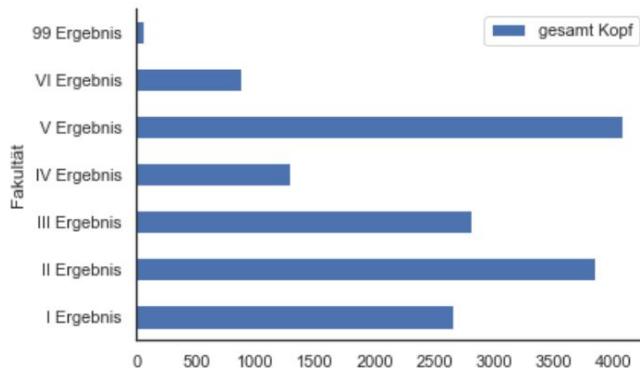
# How To Do It Better / Using Data Viz Tools

## Styling Plots with Seaborn

```
[48]: custom_params = {"axes.spines.right": False, "axes.spines.top": False}
sns.set_theme(style="white", rc=custom_params)
```

```
[49]: df.plot(kind='barh', x='Fakultät', y='gesamt Kopf')
```

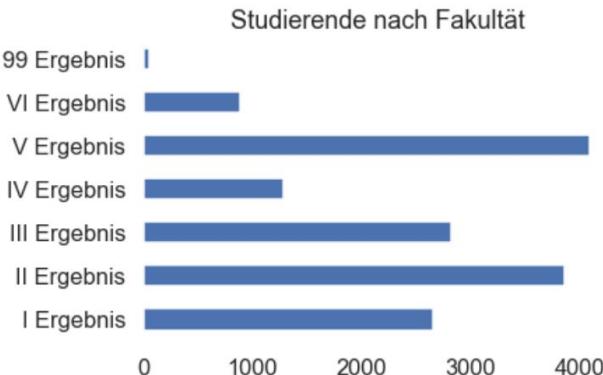
```
[49]: <AxesSubplot:ylabel='Fakultät'>
```



```
[62]: custom_params = {
    "axes.spines.right": False,
    "axes.spines.top": False,
    "axes.spines.left": False,
    "axes.spines.bottom": False
}
sns.set_theme(style ="white", rc=custom_params, context="talk")
```

```
[66]: ax =df.plot(kind='barh', x='Fakultät', y='gesamt Kopf', legend=False)
ax.set_title("Studierende nach Fakultät")
ax.set_ylabel("")
```

```
[66]: Text(0, 0.5, '')
```



# **Use GenAI!?**

# How To Do It Better / Use GenAI!?

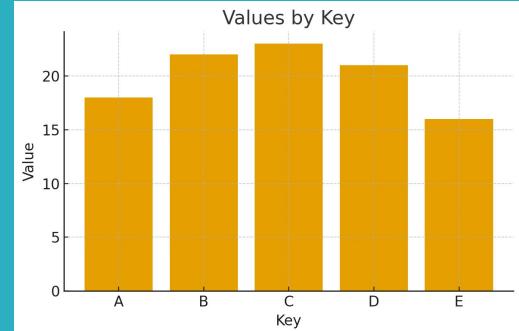
## Experiment: Creating charts with ChatGPT

Effectively visualise this data:

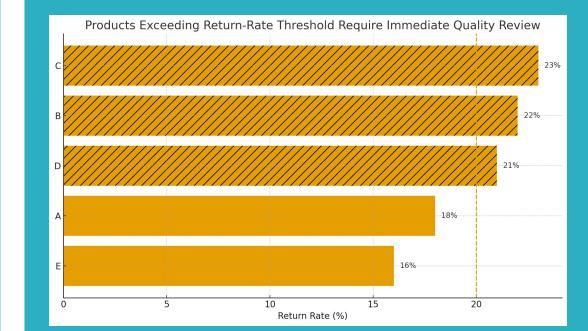
Key	Value
A	18
B	22
C	23
D	21
E	16

the key actually represent our products and the value the percentage of returned items. help my turn this into an **effective data vis / story to show to our product quality team as they should probably address this**

would it not be a more effective visual if it would be an ordered **horizontal** chart leveraging preattentive attributes to highlight the worst products (above **avg return rate**) and add a descriptive and actionable title so that people would only have to look at the chart and directly get the point?

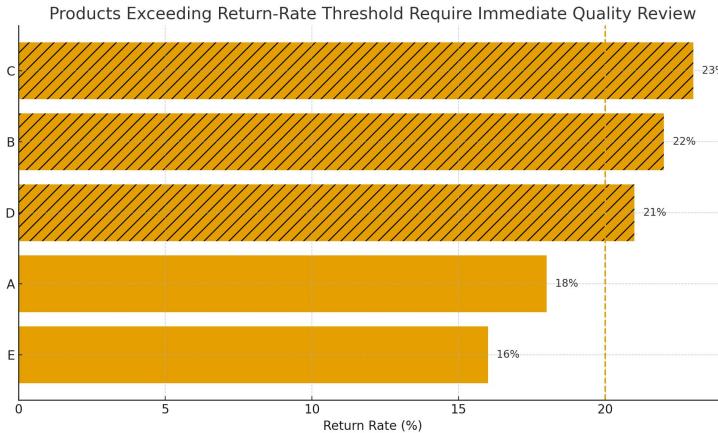


- + suggestions like:
  - sort from highest to lowest return rate
  - Highlight high-return products in a contrasting color
  - Add annotations like
    - "23% — highest return rate"
    - ">20% threshold for concern"

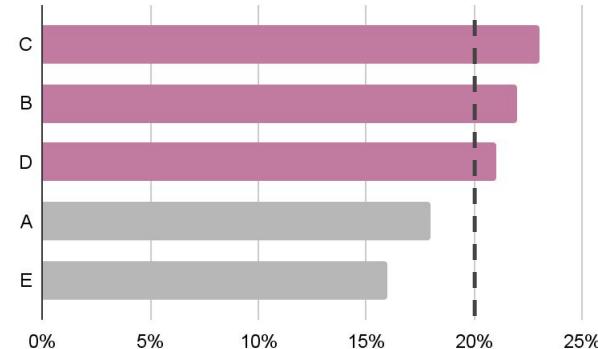


How To Do It Better / Use GenAI!?

# Experiment: Creating charts with ChatGPT



Above Average Return Rates for Products C, B & D should be investigated



How To Do It Better / Use GenAI!?

# GenAI as your personal Assistant & Advisor

In my presentation I want to include statistics about [your topic]. Point me towards the most relevant and trustworthy public statistics about it?

I have seen that the distribution of [your variable] in [describe dataset] is left skewed. Is this typical? Why is that?

Help me create this chart [image enclosed] with [add tool]

Give me an effective and actionable Chart-Title for this chart [image enclosed]. I want to show it to [add audience] in order to [describe the goal]

Help me to  
**Find**

Help me to  
**Understand**

Help me to  
**Create**

Help me to  
**Optimize**

How To Do It Better / Use GenAI!?

# "A Reading List on GenAI for Data Visualization" by Enrico Bertini

## Prompt-to-Vis Systems

LLMs can be used to ask an AI system to generate charts based on a problem, enabling data scientists to use natural language, code, domain language

- [LIDA: A Tool for Automatic Infographics using Language Models](#)
- [ChartGPT: Leveraging Large Language Models to Generate Charts](#)
- [Visualization Generation with LLMs](#)
- [DynaVis: Dynamic Data Visualization Generation with LLMs](#)

## Captioning and Accessibility

Describing charts in terms of their structure and content is crucial for interpretation and accessibility. Can LLM provide the necessary support to support these important

and make it easier access to visual

arts for Data-Driven

M-based Conversational

ed Data Visualization  
users

## LLMs as Chart Readers

Can LLMs do some of the evaluative work that humans normally do with data visualizations? These papers examine the capabilities of LLMs and evaluate their performance in a series of interpretation and reasoning tasks.

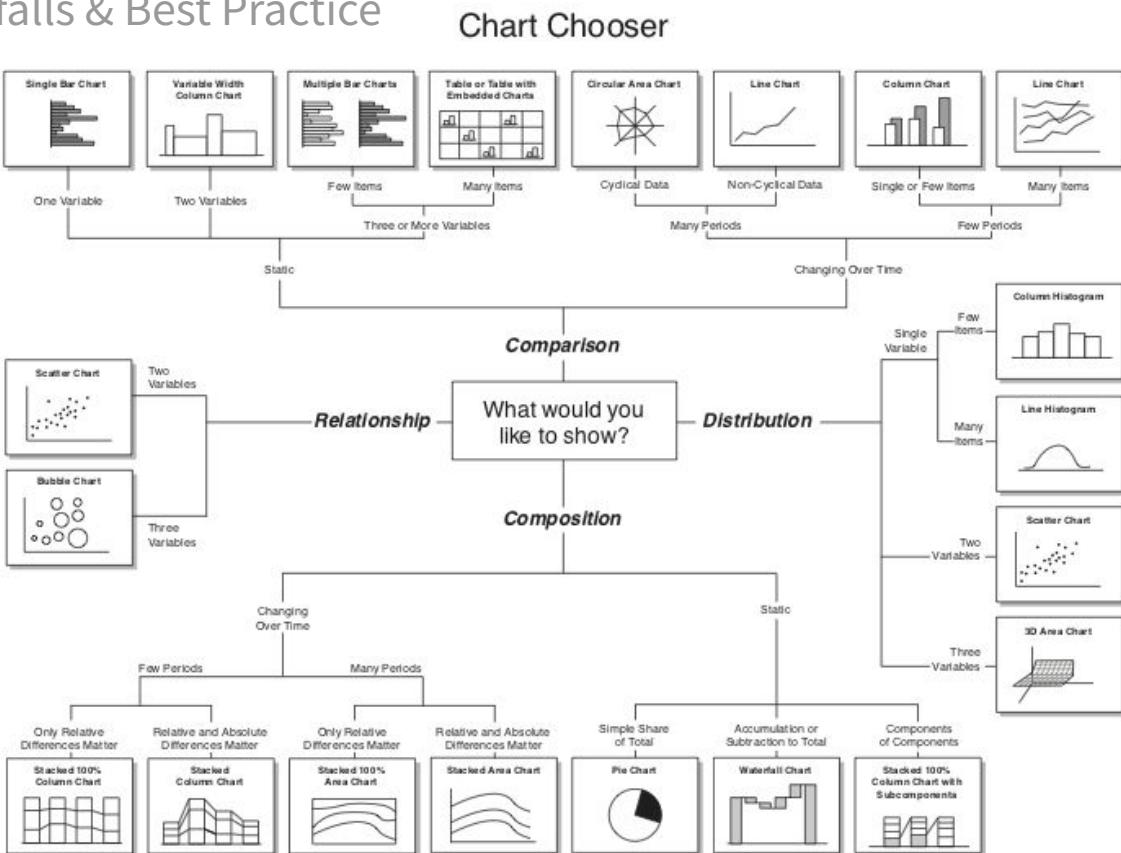
- [Probing the visualization literacy of vision Language Models: The good, the bad, and the ugly.](#)
- [How good \(or bad\) are LLMs at detecting misleading visualizations?](#)
- [How aligned are human chart takeaways and LLM predictions? A case study on bar charts with varying layouts.](#)

# **Common Pitfalls & Best Practice**

## How To Do It Better / Common Pitfalls & Best Practice

# What would you like to show?

1. Define your audience & goal
2. Pick a chart type and the appropriate tool
3. Transform your data if needed

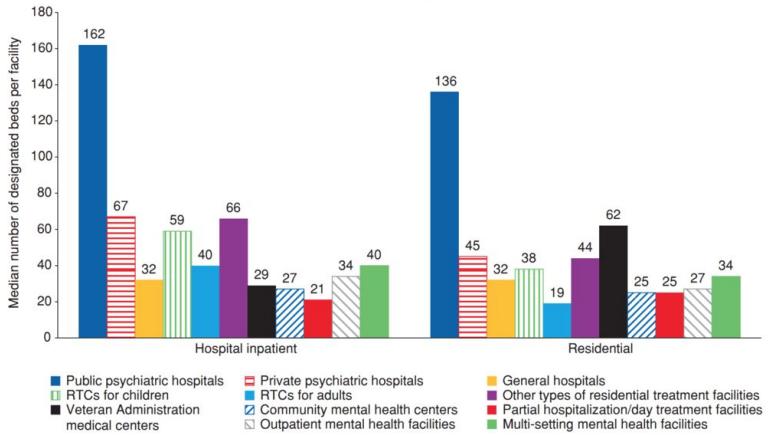


# How To Do It Better / Common Pitfalls & Best Practice

## Horizontal bar chart for long labels

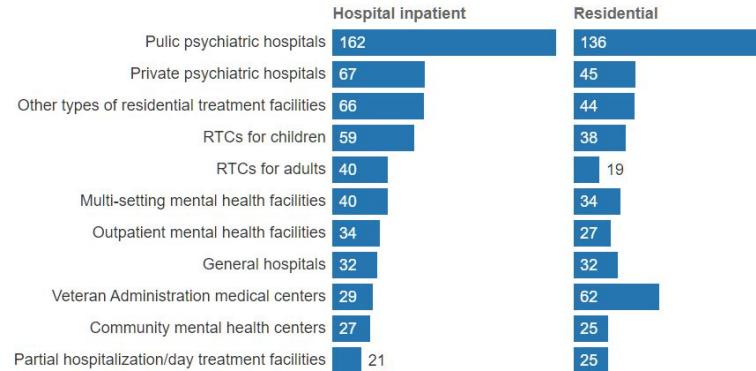
not ideal

Figure 2.6. Median number of designated beds for mental health treatment per facility, by service setting and facility type: April 29, 2016



better

Median number of designated beds for mental health treatment by service setting & facility type  
April 29, 2016

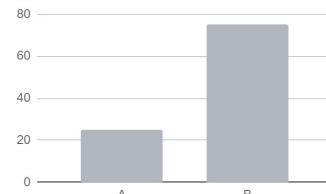
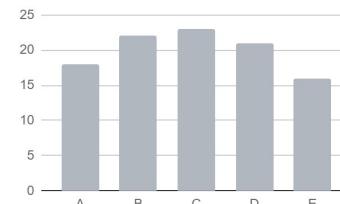
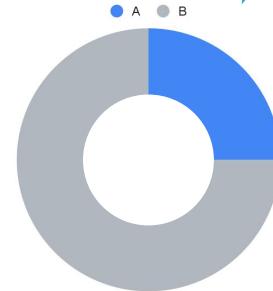


Embed • Created with [Datawrapper](#)

# Pie Chart - Only if you are very sure

...and make it  
a donut

- Bar chart shows frequency of proportion of categorical variables
- Pie charts do the same but use more space and are harder to read & compare
- Pie charts are arguably better for showing percentages of totality, and people do seem to like them, so they may be harmless in small amounts



How To Do It Better / Common Pitfalls & Best Practice

# Line Chart - Use proper aspect ratio

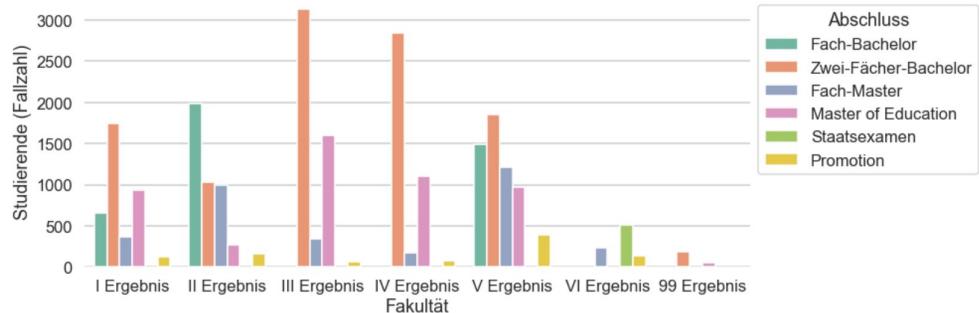
- The steepness of apparent cliffs is a function of aspect ratio (width:height)
- Most natural to us is the **Golden ratio (~16:10)**
- Line segments show connections, so do **not use in categorical data**



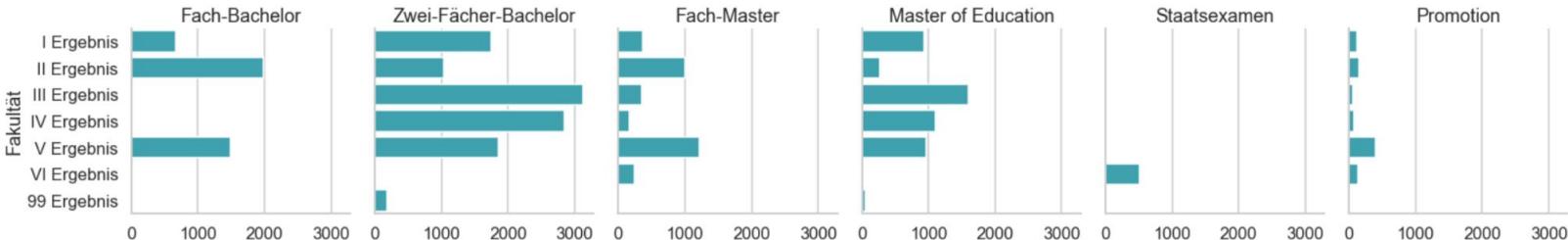
How To Do It Better / Common Pitfalls & Best Practice

# Small multiples - Effective display of multivariate data

not ideal

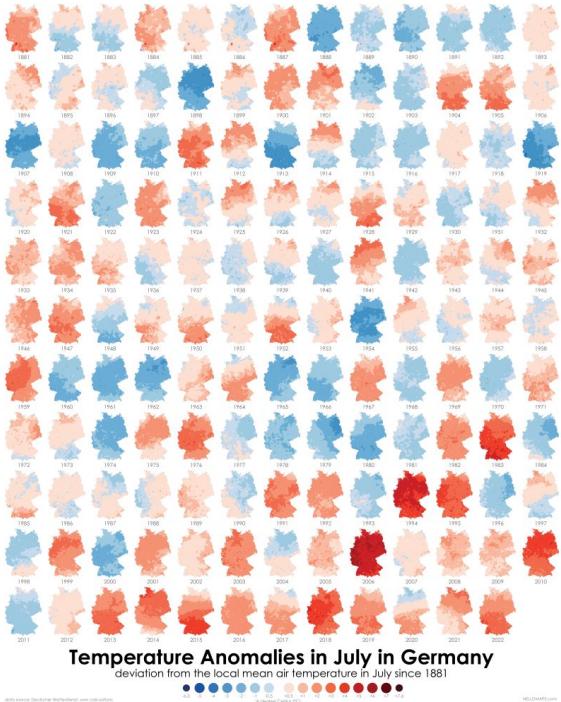


better

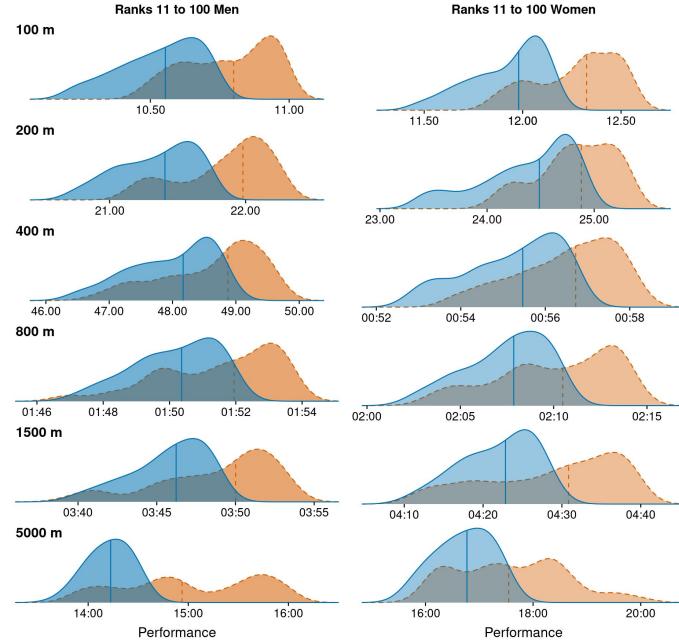


How To Do It Better / Common Pitfalls & Best Practice

# Small multiples - With various chart types



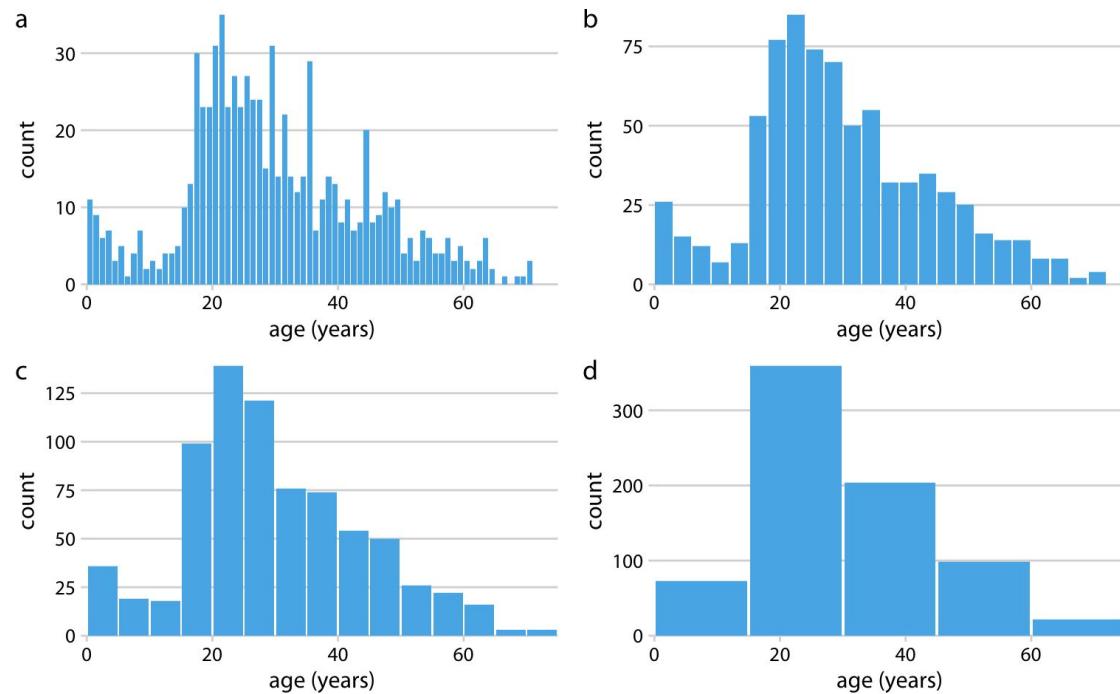
Sub-elite: Comparison of the distribution of performances for **2016-2019** and **2020**.  
Vertical line indicates the median performance



## How To Do It Better / Common Pitfalls & Best Practice

# Histograms - Appearance varies with bin width

- The default bin width is often not the best for the present data
- Always explore multiple bin widths



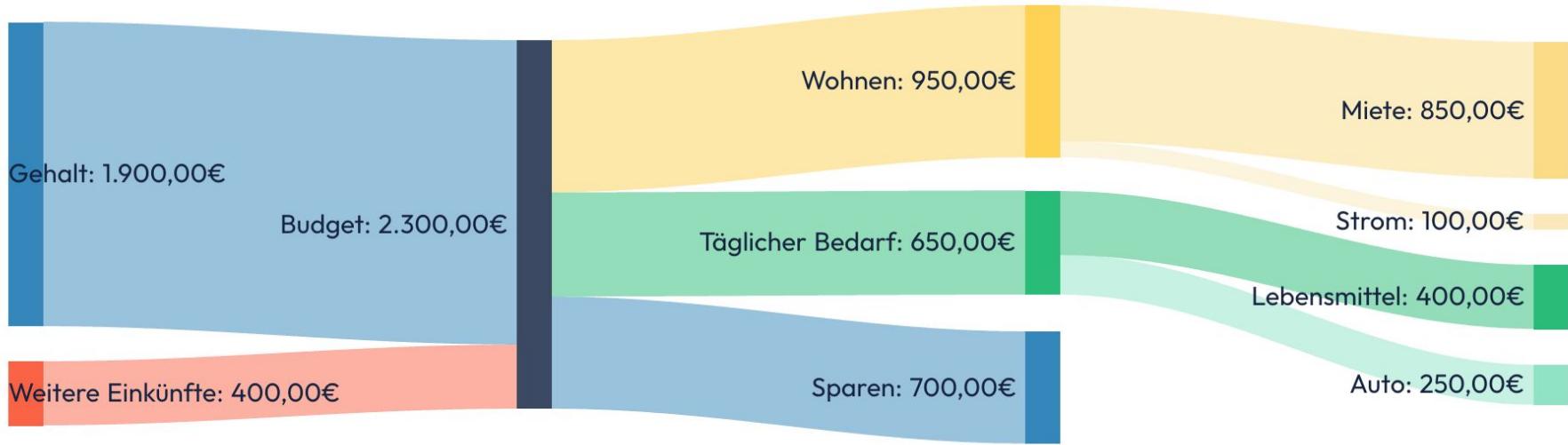
# Summary: Steps towards effective data viz

1. Set a clear goal: **Who** should do / understand **what**?
2. Use the **best tool** available & **don't rely on defaults**
3. Use **effective visual cue** (position > length > ...)
4. Show the data **without clutter and distortion**
  - a. 3D & Pie Chart is *mostly* problematic
  - b. Start axis at 0 if you use length to represent data
  - c. Use golden ratio (~16:10) for line charts
  - d. Clear labeling to provide context, prevent redundancy
5. Use **color with caution** and only if it means something
6. Make important aspects **pop out**

# **Advanced Techniques**

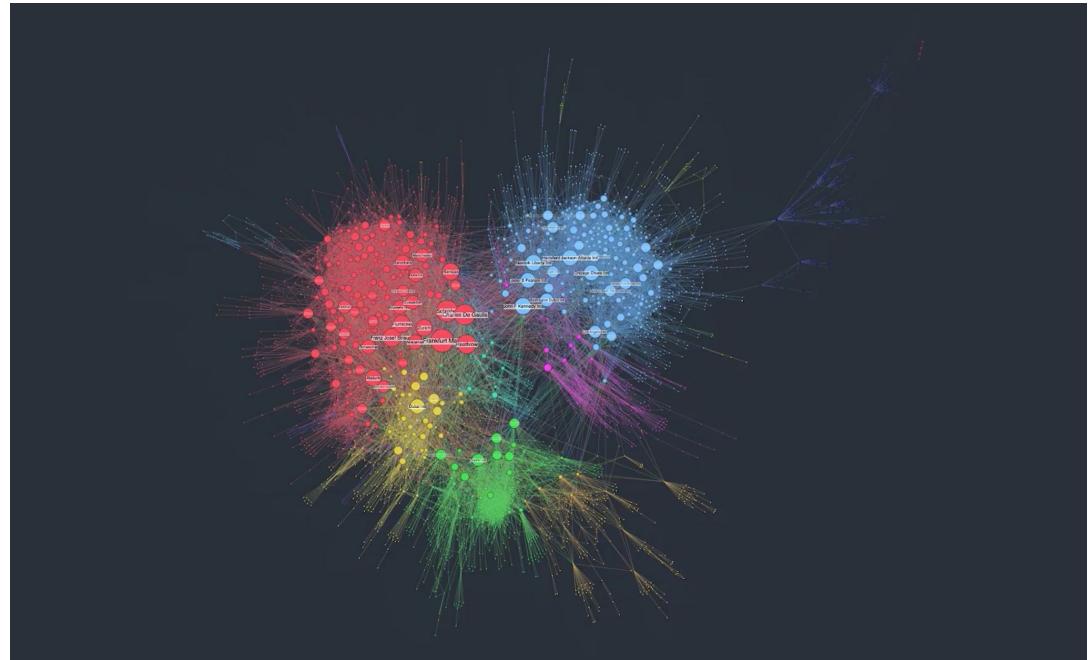
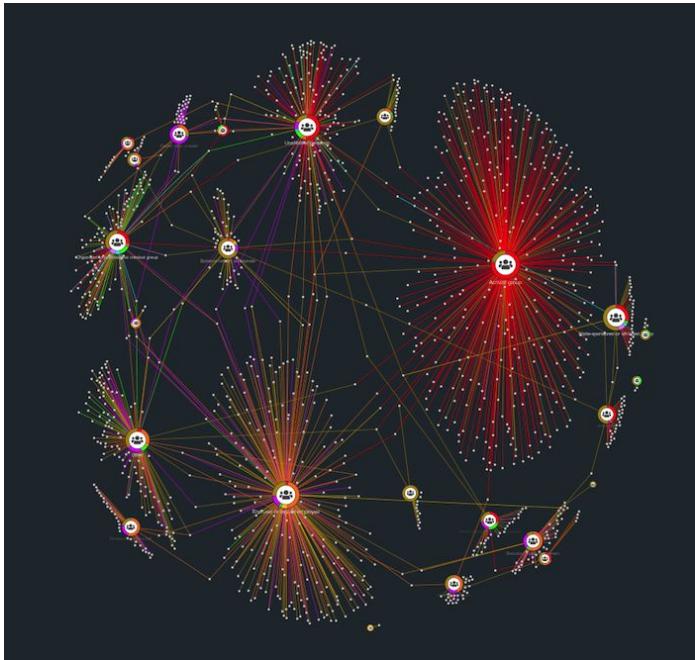
How To Do It Better / Advanced Techniques

# Sankey Diagram for visualising flows



How To Do It Better / Advanced Techniques

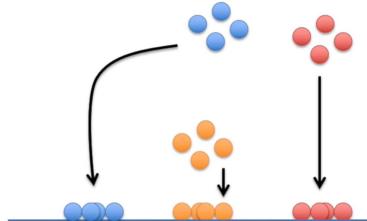
# Visual analysis of network data



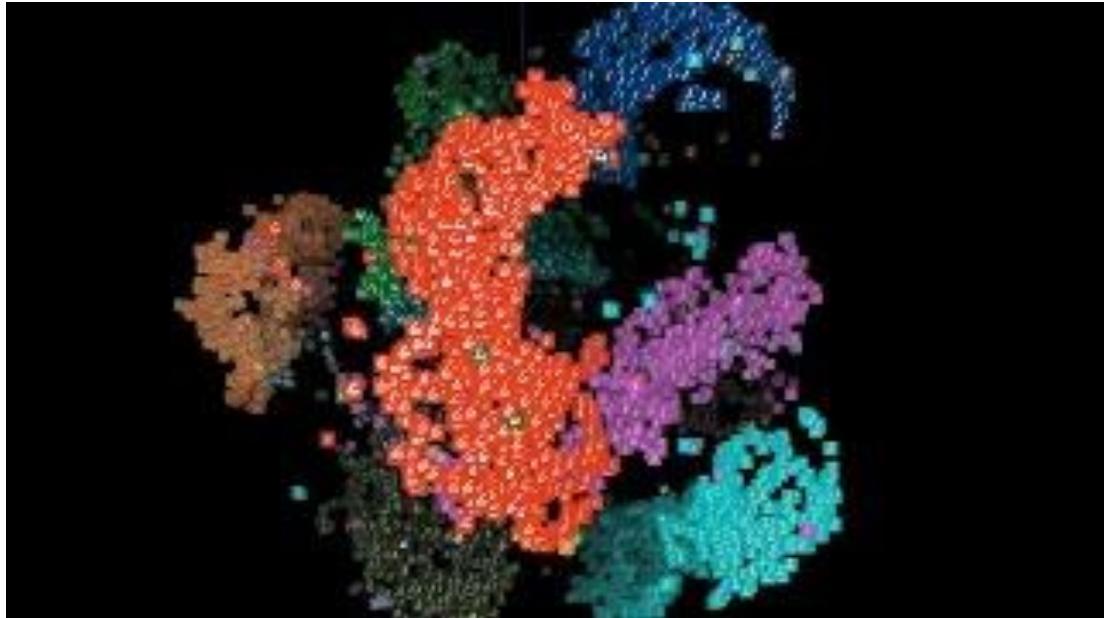
How To Do It Better / Advanced Techniques

# Visual analysis of high-dimensional data with t-sne

t-SNE uses principal component analysis for dimensionality reduction



What t-SNE does is find a way to project data into a low dimensional space (in this case, the 1-D number line) so that the clustering in the high dimensional space (in this case, the 2-D scatter plot) is preserved.





4

# Breaking the Rules

*A common mistake is to  
assume that [the rules] apply  
to all visualizations*

Nathan Yau

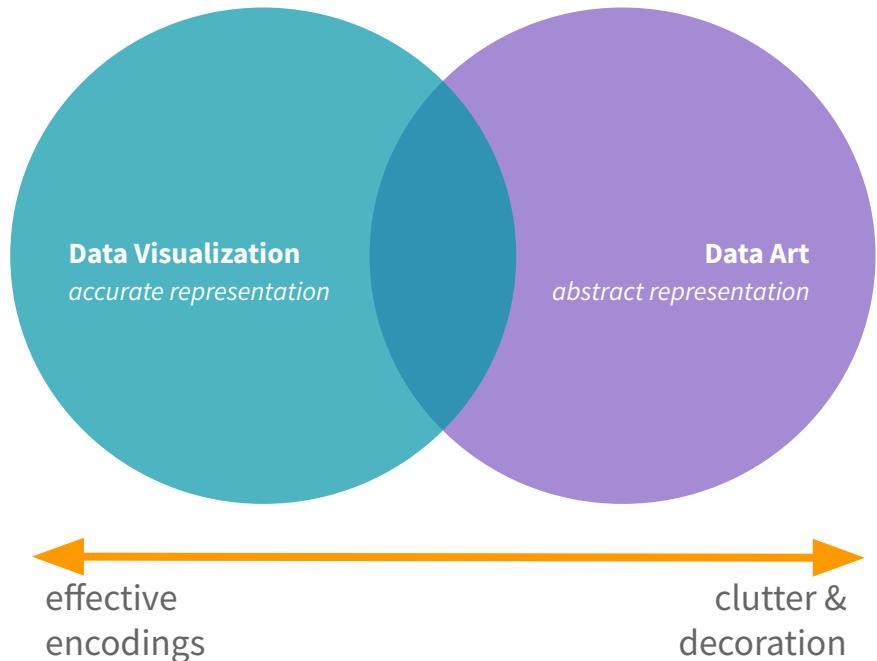
Breaking the Rules

# Not every data graphic is supposed to represent the data most accurately

“As a medium, visualization can also evoke feelings about a subject and encourage readers to ponder or simply appreciate the context of the data.

**Maybe memorability is the goal.”**

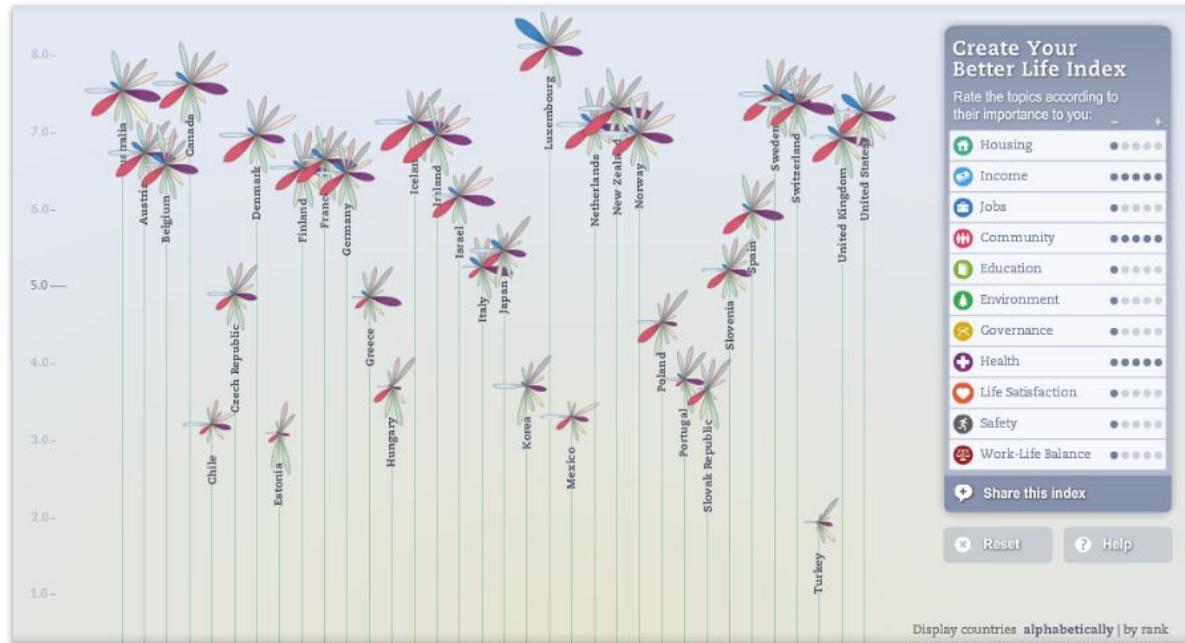
*Nathan Yau*



Breaking the Rules

# Beyond the gross domestic product: Better Life Index measures well-being across countries

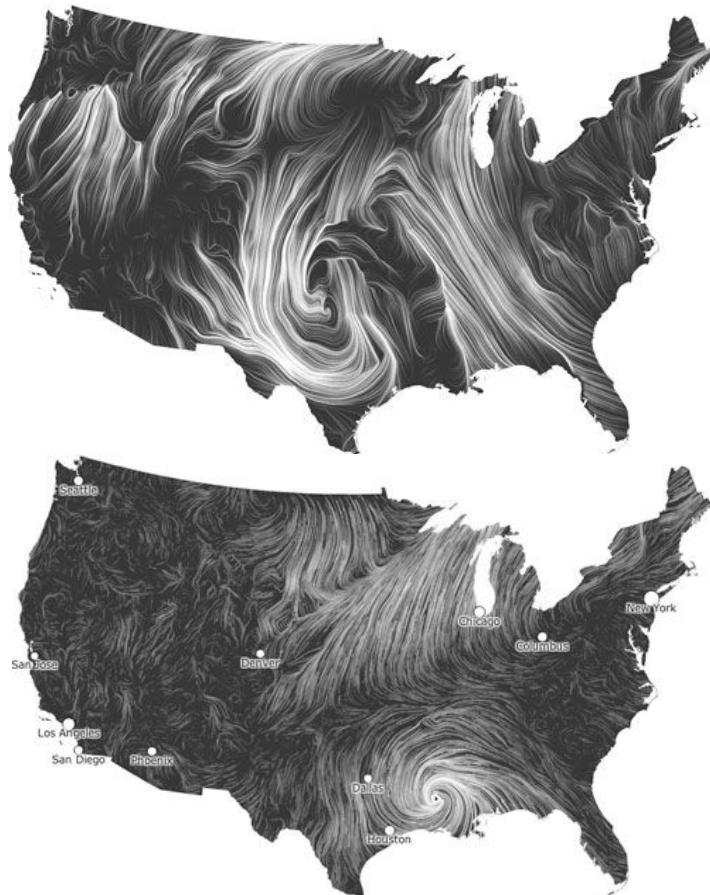
Creative Data Viz by OECD,  
Moritz Stefaner and  
Raureif



Breaking the Rules

# Surface Wind Data by Fernanda Viégas & Martin Wattenberg

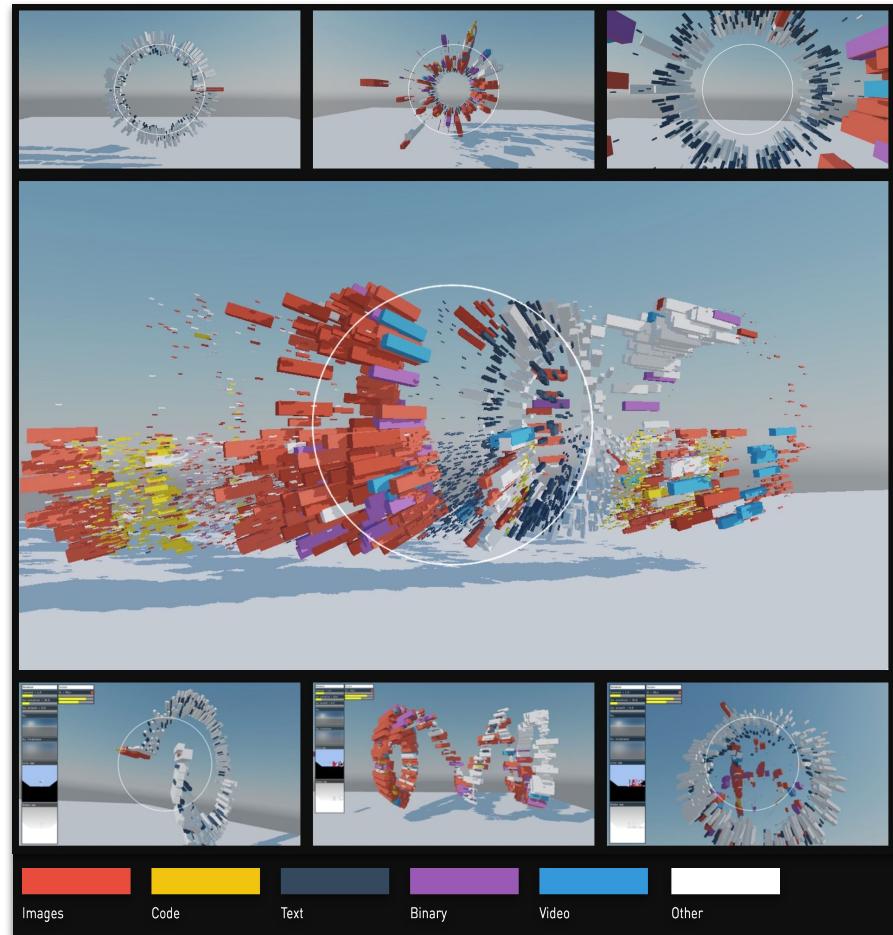
“Our map is designed to provide a dense, easily readable field and to highlight areas of high wind speed. It's implemented entirely in **HTML and JavaScript**. ”



Breaking the Rules

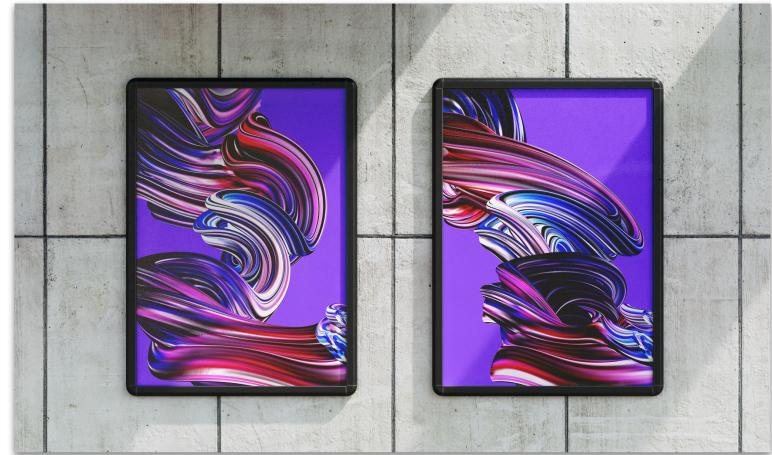
# Timespace by variable.io for Dropbox

Timespace is a visualization of a Dropbox folder with 6000 files reimaged as a place rather than just a list of files.



Breaking the Rules

# Abstract Data Art visualizing the GitHub Commits of open source repositories



A complex 3D rendering of several thick, twisted ribbons against a solid purple background. The ribbons are composed of numerous thin, parallel strands that create a strong sense of depth and motion through perspective. They are colored in a vibrant palette of blues, reds, purples, and blacks, with highlights and shadows giving them a metallic or plastic texture. The arrangement of the ribbons is dynamic, with some forming tight loops and others more loosely coiled, creating a visual flow across the frame.

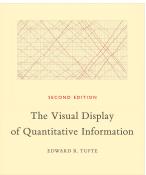
processing/  
p5.js-web-editor

kubernetes/  
kubernetes

aws/  
aws

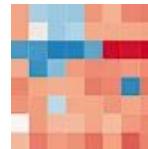
# (Re)Sources

# Researchers



## Edward Tufte

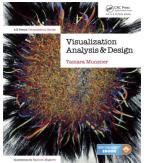
Professor Emeritus of Political Science, Statistics, and Computer Science at Yale University



## Enrico Bertini

Associate Professor at Northeastern University, Computer Science & Art/Media/Design

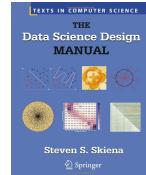
Blog, Newsletter & Podcast FILWD:  
<https://filwd.substack.com>



## Tamara Munzner

Professor of Computer Science at University of British Columbia

Data Viz Lecture Series (Videos & Slides):  
[cs.ubc.ca/~tmm/vadbook/](http://cs.ubc.ca/~tmm/vadbook/)



## Steven S. Skiena

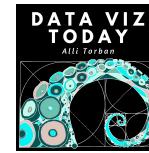
Distinguished Teaching Professor of Computer Science at Stony Brook University

# Practitioners



## Cole Nussbaumer Knaflic

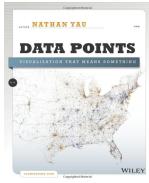
Founder, Speaker & CEO at storytelling with data  
Former People Analyst at Google



## Podcast Data Viz Today by Alli Torban

"This monthly podcast will help you become a more effective information designer."

[dataviztoday.com/](http://dataviztoday.com/)



## Nathan Yau

PhD in Statistics, with a focus on visualization for presenting data to non-professionals.

Data Viz Blog:  
[flowingdata.com/](http://flowingdata.com/)



**DATA STORIES**

## Podcast Data Stories by Moritz Stefaner & Enrico Bertini

"A podcast on data visualization"

[datastori.es/](http://datastori.es/)

# Community



DATA  
VISUALIZATION  
SOCIETY

**Data Visualization Society**

A nonprofit organization with the goal to celebrate, nurture, and advance the data visualization field.

Community, blog, magazin & newsletter:  
[datavisualizationsociety.org/](http://datavisualizationsociety.org/)