

# Tableau

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Mai 2021

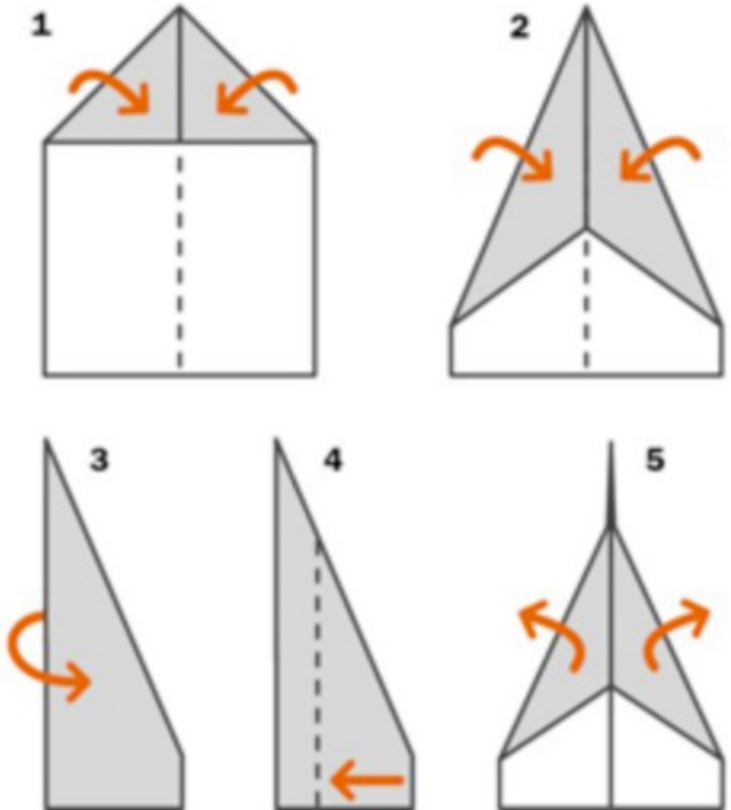


# The value of visualization

## HOW TO FOLD A PAPER PLANE (TEXT)

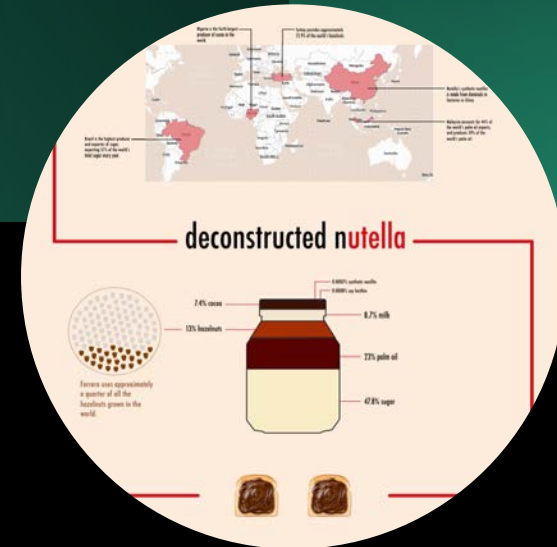
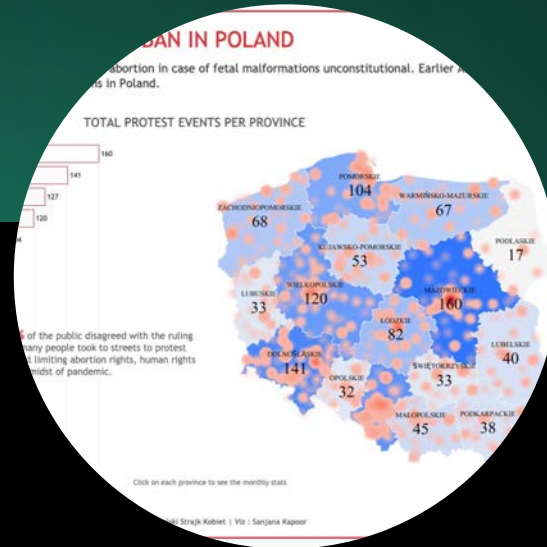
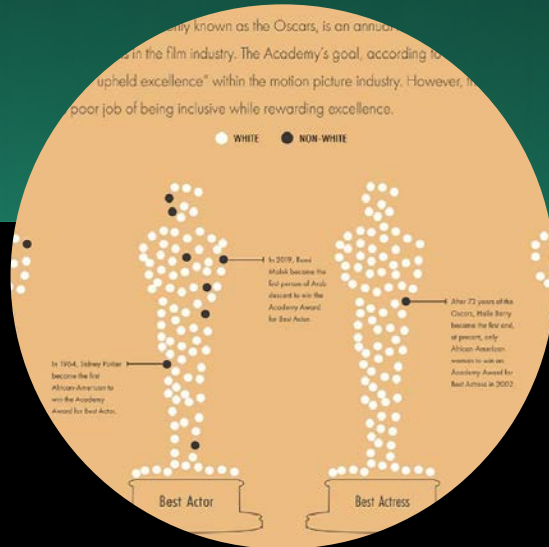
1. Fold a piece of 8.5x11" paper in half lengthwise to create a crease down its center. Then fold the top two corners to the center crease.
2. Take the top two corners and fold them again into the center crease.
3. Fold the two sides inward to the center crease so they are touching.
4. Create the first wing by creating a fold along the length of the paper about 1–1.5" from the spine. The fold should make the wing perpendicular to the body of the plane.
5. Repeat the above step to create the other wing for your paper plane.

## HOW TO FOLD A PAPER PLANE (VISUAL)



Brent Dykes (2019) Effective Data Storytelling: How to Drive Change with Data

# What would you like to visualize ...



- diversity at the Oscars  
<https://public.tableau.com/de-de/gallery/winners-oscars>
- protest against abortion ban in Poland  
[https://public.tableau.com/profile/sanjana.kapoor#!/vizhome/PROTESTSINPOLAND\\_MOM8/PROTESTSINPOLAND\\_MOM8](https://public.tableau.com/profile/sanjana.kapoor#!/vizhome/PROTESTSINPOLAND_MOM8/PROTESTSINPOLAND_MOM8)
- deconstructing Nutella  
<https://public.tableau.com/de-de/gallery/history-nutella>

# Software Components

- Tableau Public (free, no private files, saving files in the cloud, no Excel or image export)
- Tableau Desktop (70€/ month, student licenses available)
- Tableau Reader (free, offline browsing, data extraction)

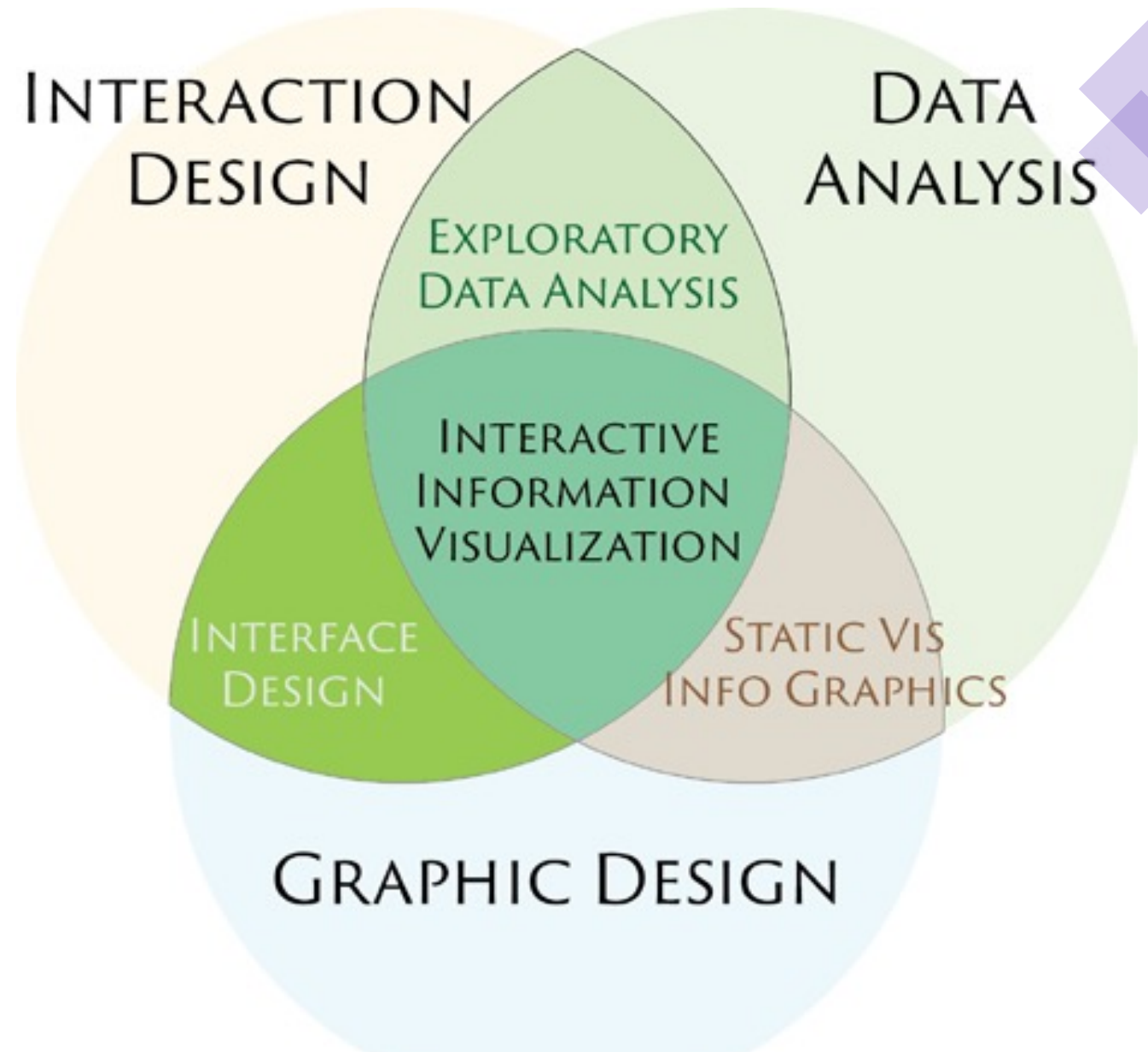
... and more

- Data prep and cleaning (Part of Desktop)
- Tableau Online (Cloud)

<https://www.tableau.com/products>

# Disclaimer

- beginners level
- surface scratching, not included:
  - i. matching fonts, colors, sizes (getting the basics right)
  - ii. data visualization (picking diagram types, infographics)
  - iii. digital storytelling as a craft (building a narrative, flow of elements, combining facts with people)



# New paradigm: Low-code development

- new coding philosophy
- between fully customized software and standardized software
- Citizen Developers:= empowered domain experts
- Agile & fast development (rapid prototyping, MVP)
- in the case of tableau we could think of two extremes in data visualization and analytics (e.g. a python-based platform vs a google analytics web frontend)
- in the end, low code & classic code complement each other (cf. group software vs enterprise / organisational software)

# Social implications of data visualizations

- Images and data visualization, what is it ?
  - knowledge presentation vs
  - knowledge / insight generation

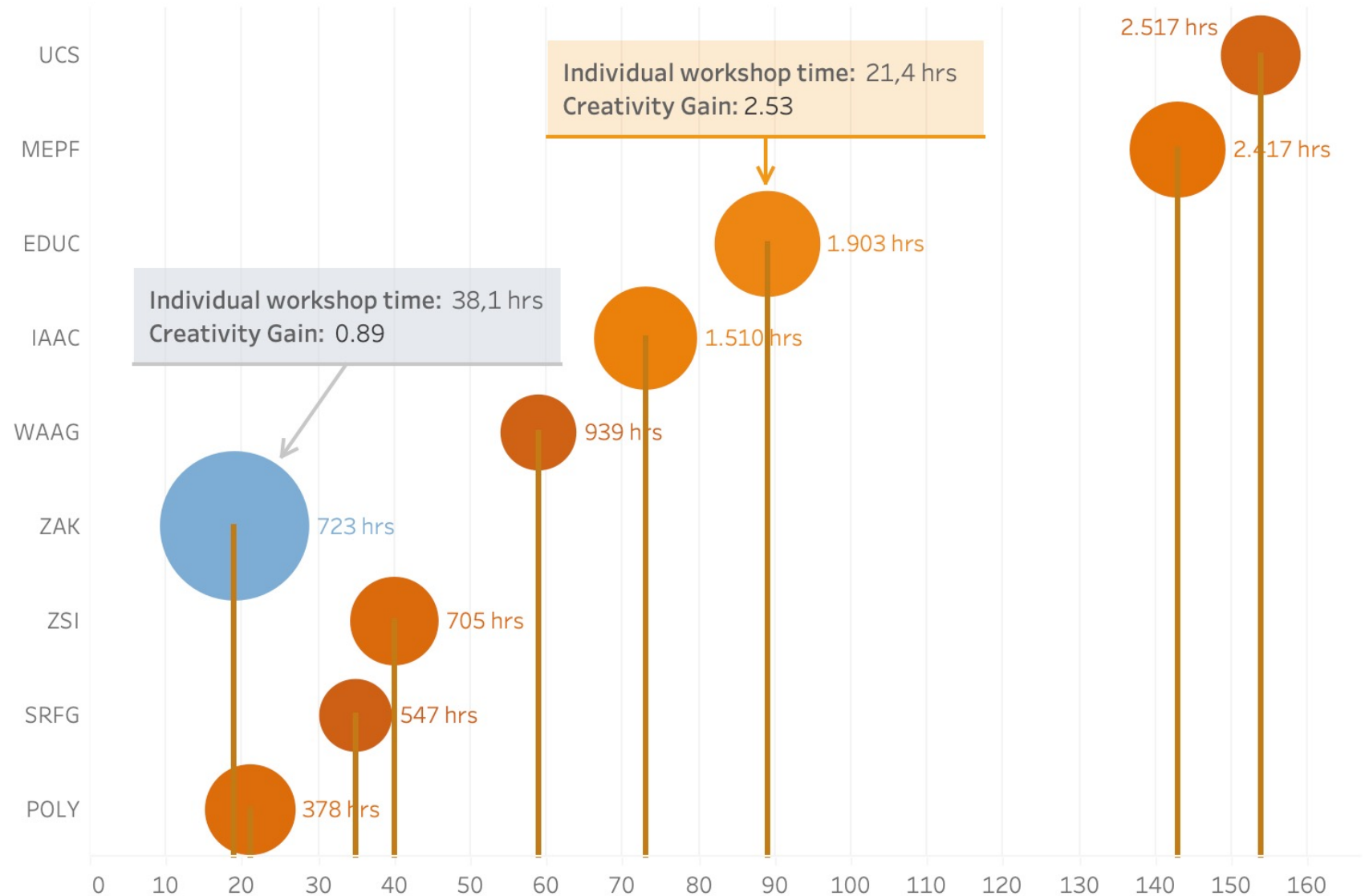
=> Visualisierung als Methode



1 Lollipop

Number of participants (x-axis) vs average workshop hours (circle).

Partners are ordered by sum of hours (participants x duration of all workshops)



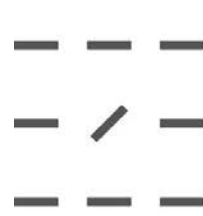


# Ingredients

- Difference between dimensions & measures
- Difference between continuous & discrete
- Drag & Drop
- Bubble chart
- Colour coding
- Marker labelling
- Annotations

# Pre-attentive visual properties

- What guides our attention when interpreting a visualization?



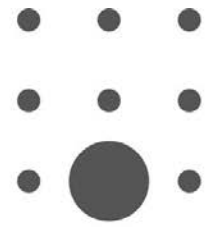
Orientation



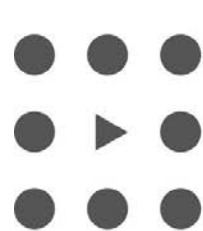
Length



Width



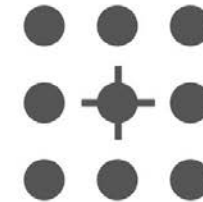
Size



Shape



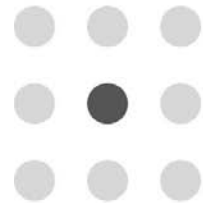
Curvature



Added Marks



Enclosure



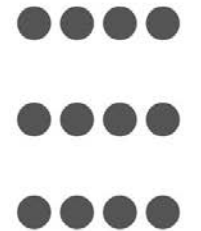
Contrast



Colour



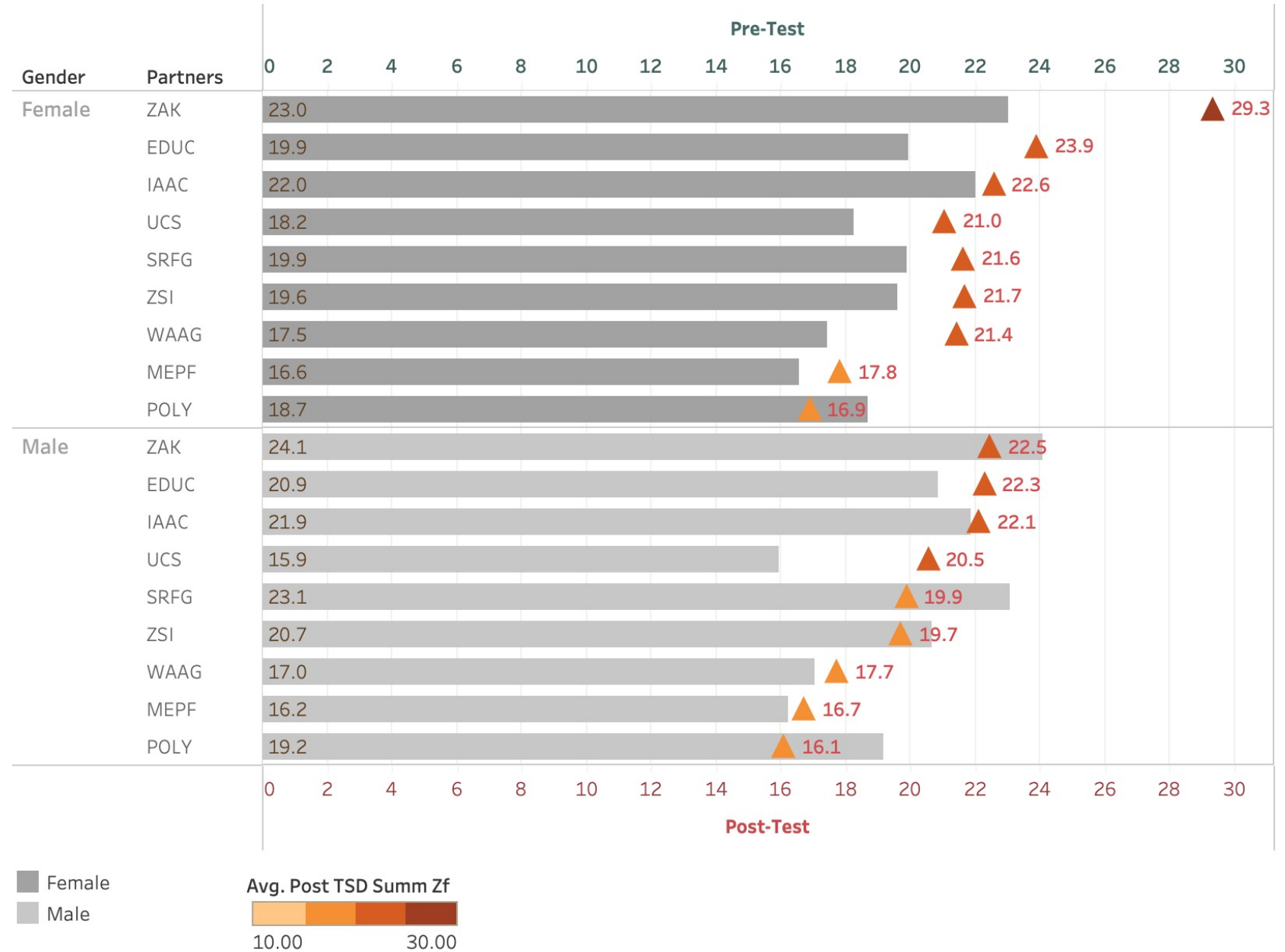
Position



Spatial Grouping

2 Dual axes

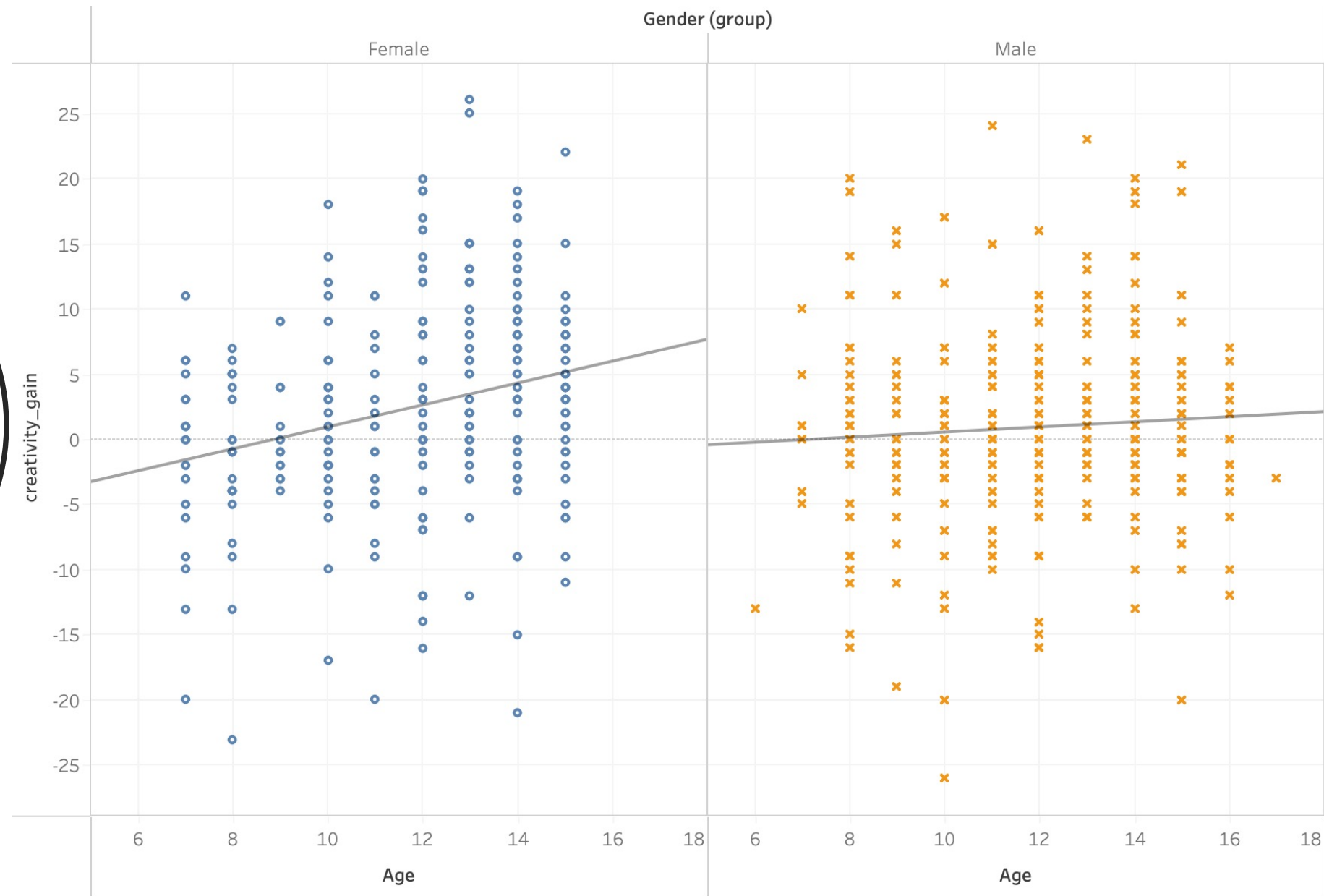
Creativity Scores (Pre- and Post-Test)



# Ingredients

- Using 'dual axis' and 'synchronizing axis'
- Flipping axes
- Building hierarchies
- Styling the axes

## 3 Trendlines



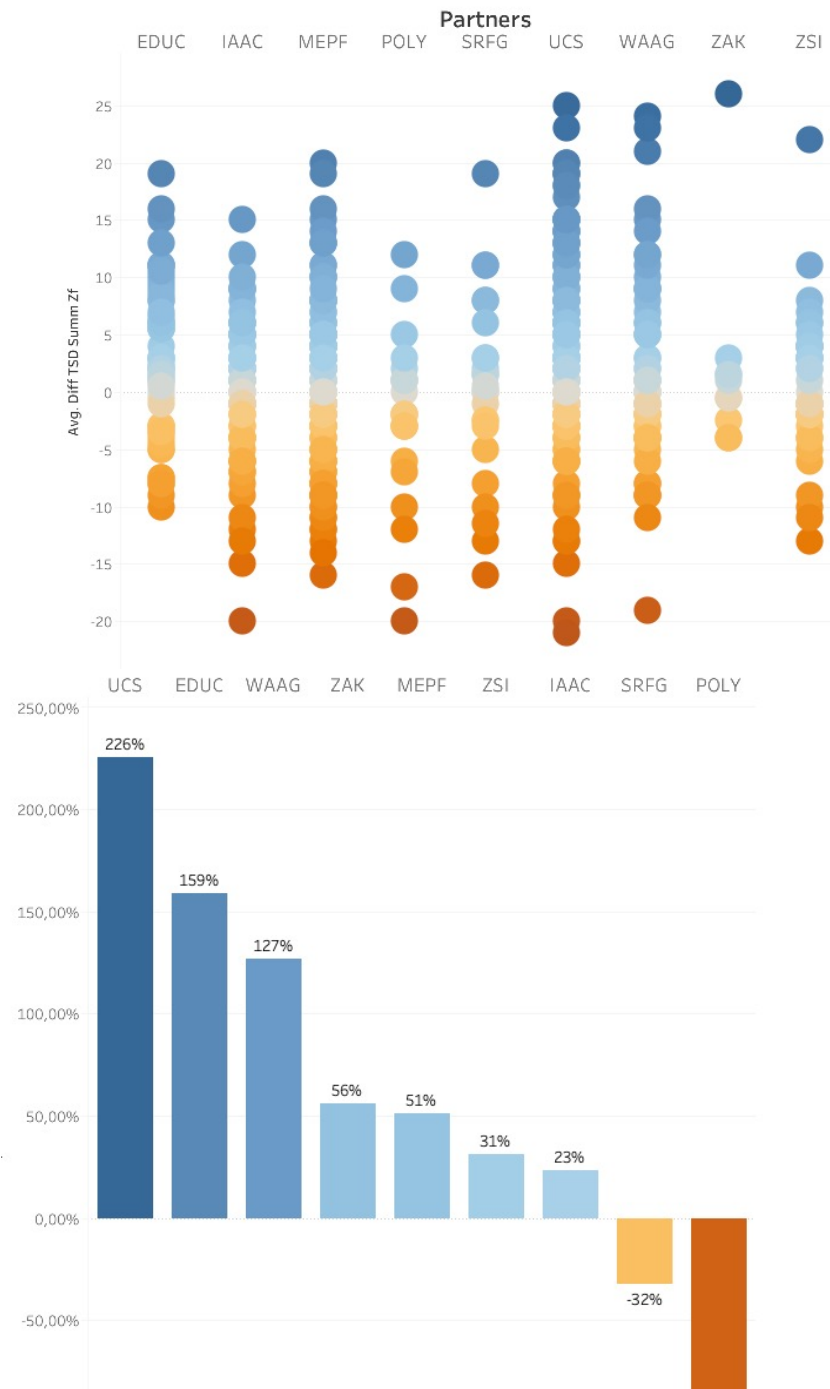
Panels		Line		Coefficients				
<u>Row</u>	<u>Column</u>	<u>p-value</u>	<u>DF</u>	<u>Term</u>	<u>Value</u>	<u>StdErr</u>	<u>t-value</u>	<u>p-value</u>
creativity_g ain	Female	< 0,0001	251	Age	0,840365	0,193346	4,34643	< 0,0001
creativity_g ain	Male	0,24764	315	Age	0,195797	0,169046	1,15825	0,24764

<u>Field</u>	<u>DF</u>	<u>SSE</u>	<u>MSE</u>	<u>F</u>	<u>p-value</u>
<b>Gender (group)</b>	2	696.32718	348,164	6,07351	0,0024559

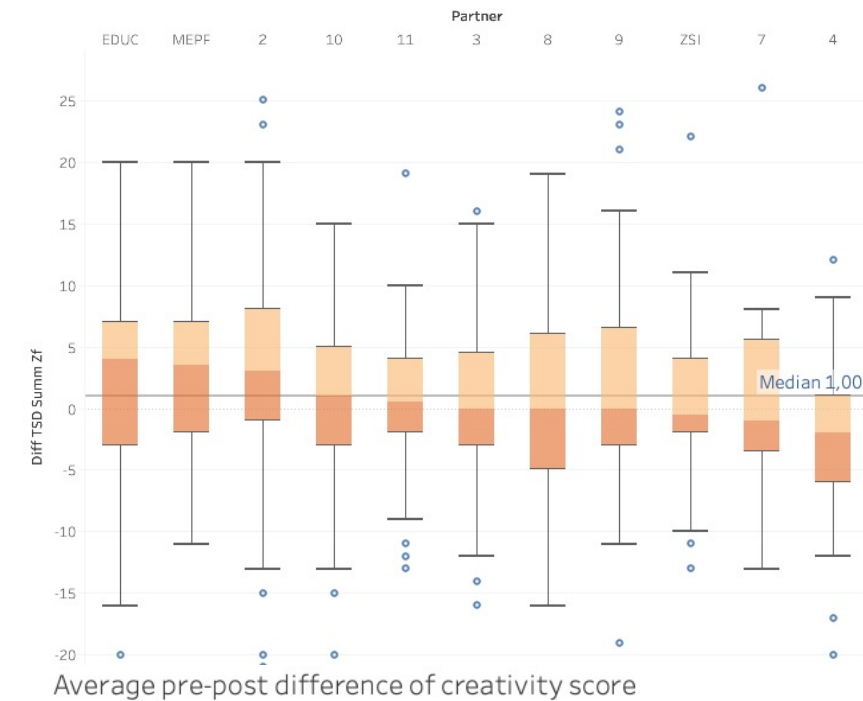
**Model formula:** Gender (group)\*( Age + intercept )  
**Number of modelled observations:** 570  
**Number of filtered observations:** 0  
**Model degrees of freedom:** 4  
**Residual degrees of freedom (DF):** 566  
**MSE (mean squared error):** 57,3249  
**R-Squared:** 0,0436155  
**Standard error:** 7,57132  
**p-value (significance):** < 0,0001

4 x Same Message ?

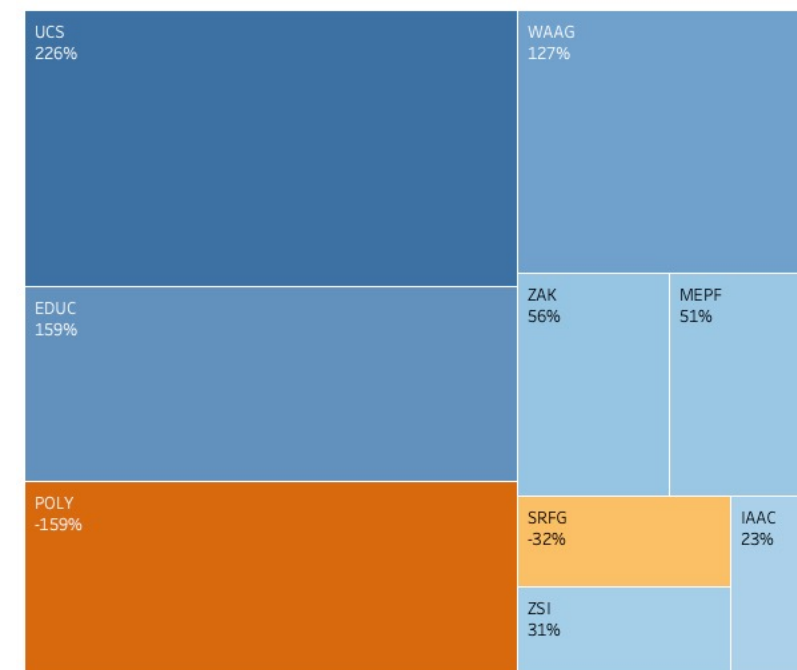
Differences between partners (Pre-post creativity gains)



Differences between partners (Pre-post creativity gains)

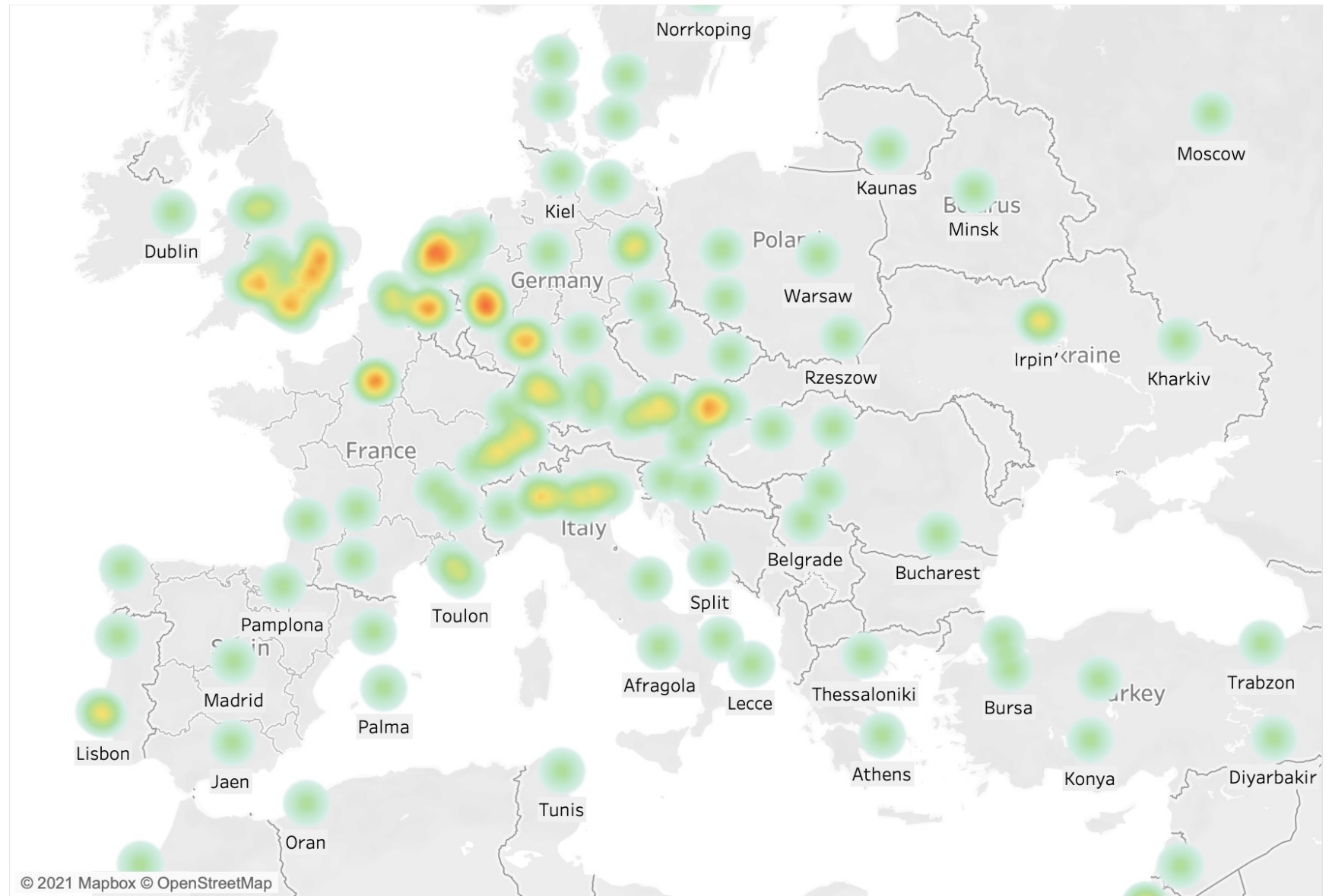


Average pre-post difference of creativity score





# Geographical Data



Map based on Longitude (generated) and Latitude (generated). The marks are labeled by City. Details are shown for Country and City. The view is filtered on Exclusions (City,Country) and Inclusions (City,Country). The Exclusions (City,Country) filter keeps 354 members. The Inclusions (City,Country) filter keeps 142 members.



# Storytelling

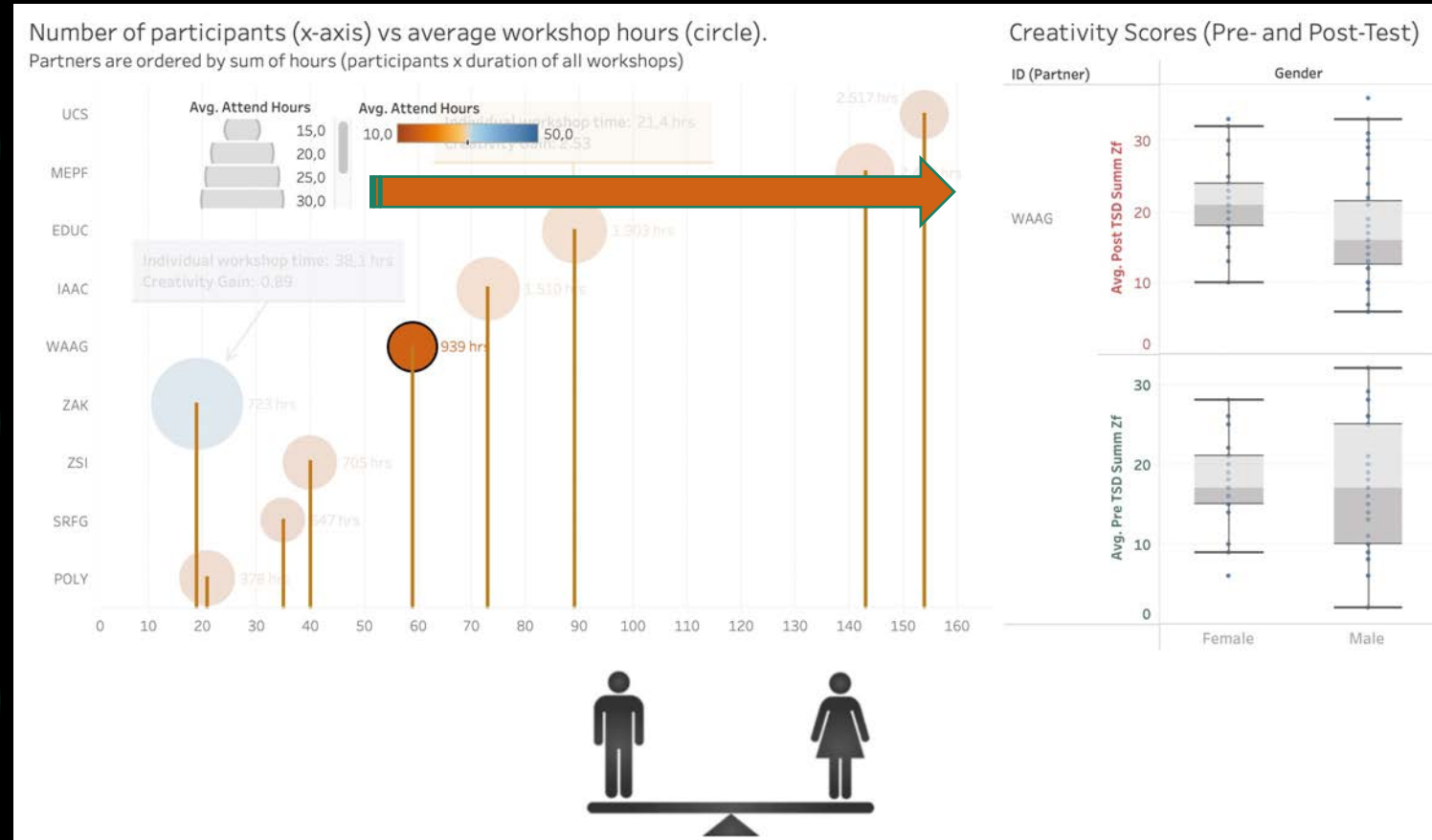
<https://www.tlnt.com/stop-telling-us-the-end-of-your-story-first/>

How do you know if there is a **STORY** to tell ...



# Dash-boarding

- Adding pictures & text
- Making thing float
- Combining worksheets
- Using filters



# After 2 weeks, room for improvement ...

- getting relevant data & in-depth data knowledge: recruitment, sampling, question quality, what's in the data
- sufficient understanding of statistics : measures needed, quality judgement (e.g. k-nearest neighbour clustering )
- visualization driven by expectations
- aesthetics: colour combination, less is more



Annex



# Diagram types

<https://public.tableau.com/profile/andy.kriebel#!/vizhome/VisualVocabulary/VisualVocabulary>

## Visual Vocabulary

There are so many ways to visualise data - how do we know which one to pick? Click on a category below to decide which data relationship is most important in your story, then look at the different types of charts within the category to form some initial ideas about what might work best. This list is not meant to be exhaustive, nor a wizard, but is a useful starting point for making informative and meaningful data visualisations.

### Deviation

Emphasise variations (+/-) from a fixed reference point. Typically the reference point is zero but it can also be a target or a long-term average. Can also be used to show sentiment (positive/neutral/negative).

### Correlation

Show the relationship between two or more variables. Be mindful that, unless you tell them otherwise, many readers will assume the relationships you show them to be causal (i.e., one causes the other).

### Ranking

Use where an item's position in an ordered list is more important than its absolute or relative value. Highlight the points of interest.

### Distribution

Show values in a dataset and how often they occur. The shape (or 'skew') of a distribution can be a memorable way of highlighting the lack of uniformity or equality in the data.

### Change over Time

Give emphasis to changing trends. These can be short (intra-day) movements or extended series traversing decades or centuries. Choosing the correct time period is important to provide suitable context for the reader.

### Part-to-Whole

Use where the reader's interest is in the component elements. If the reader's interest is in the size of the components, consider a magnitude chart instead.

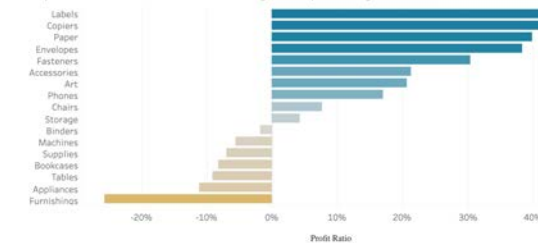
### Magnitude

### Spatial

### Flow

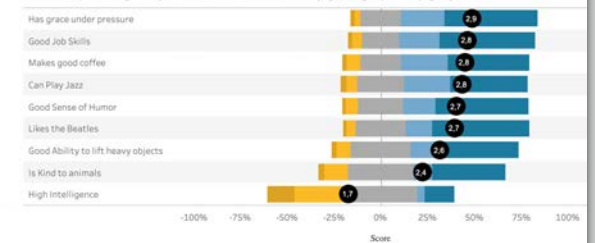
#### Diverging Bar

A simple standard bar chart that can handle both negative and positive magnitude values



#### Diverging Stacked Bar

Perfect for presenting survey results which involve sentiment (e.g., disagree/neutral/agree)



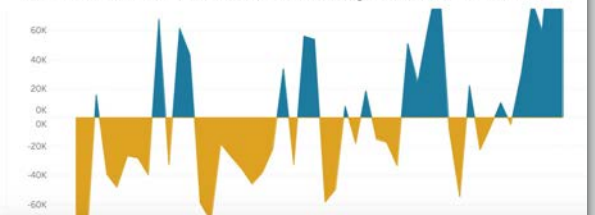
#### Spine Chart

Splits a single series into contrasting components (e.g., Male/Female)



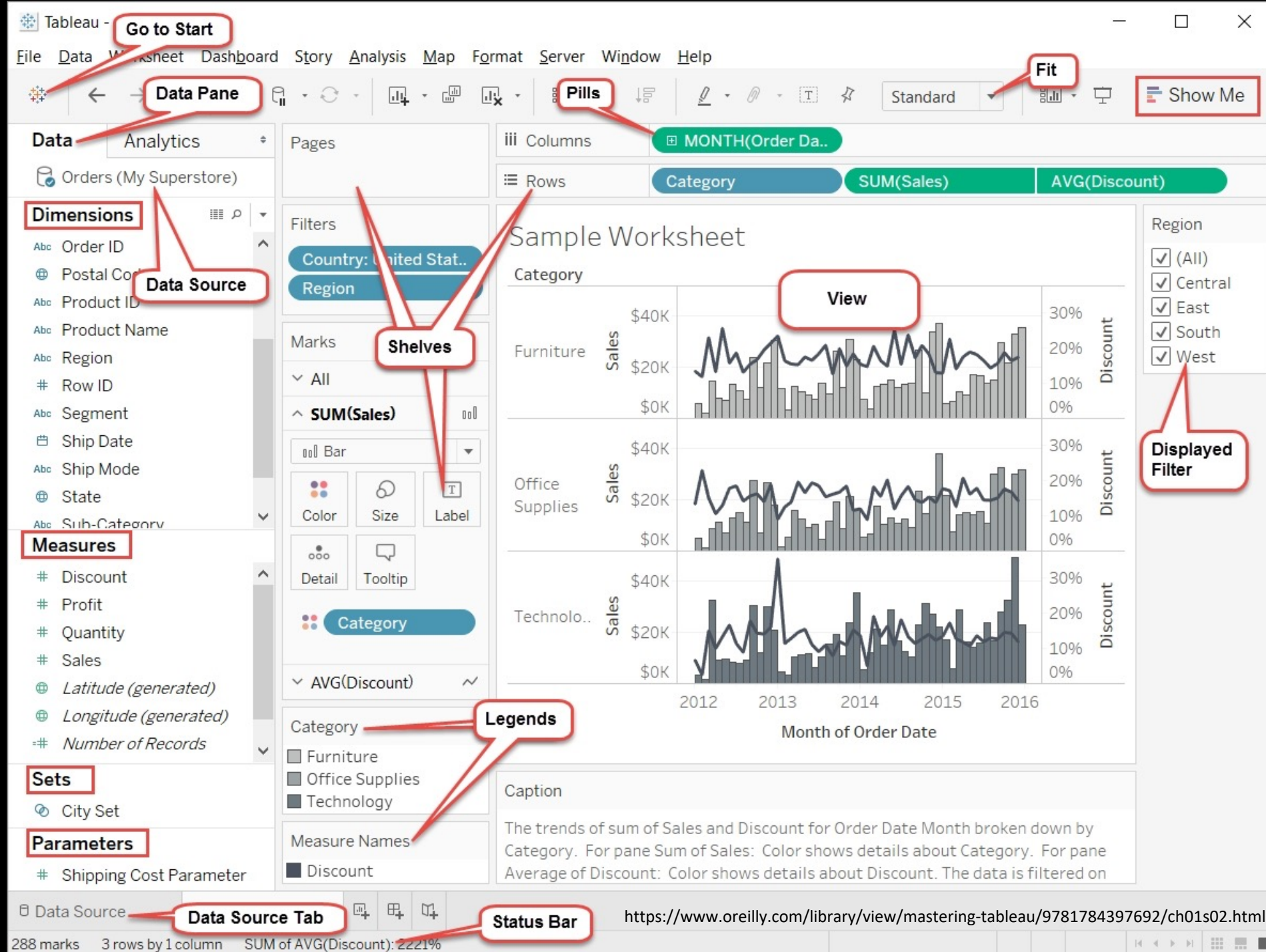
#### Surplus/Deficit Filled Line

The shaded area of these charts allows a balance to be shown - either against a baseline or between two series.





# Terminology



Trend 6: Democratized technology services (low-code and 'no code' development)

<https://www.gartner.com/smarterwithgartner/6-trends-on-the-gartner-hype-cycle-for-the-digital-workplace-2020/>



# Low-code principles

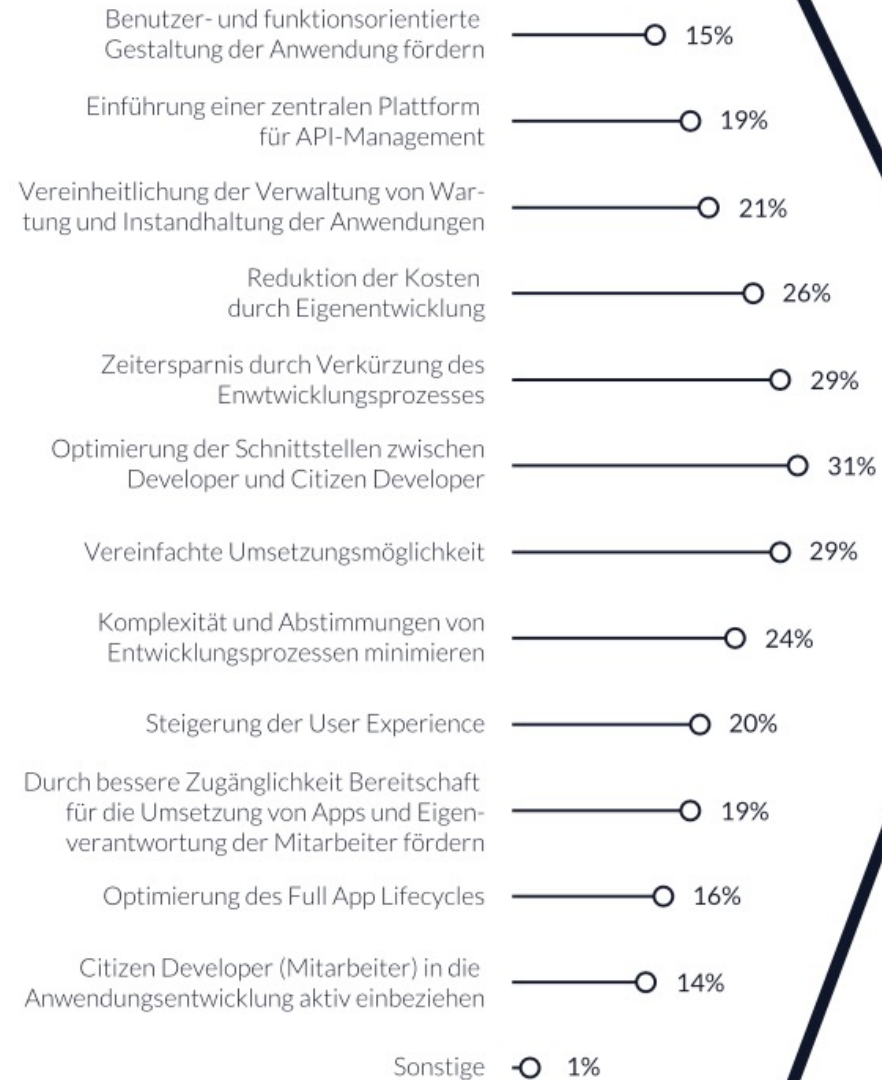
- Don't repeat yourself (*or others*) – DRY \*  
(database connectors, data slicing, visual styling)
- Principle of orthogonality  
(i.e. independence of changes in the system)
- Graphical interfaces as a way to handle complexity

\* Andrew Hunt und David Thomas „The Pragmatic Programmers“

# Aims of low code

Crisp\_LowCodeDevelopment  
\_Studie\_2019\_0.pdf

**// Welches sind die maßgeblichen Ziele, die Ihr Unternehmen mit der Einführung einer Low Code Development-Plattform verfolgt/verfolgen würde?**



## // Welche Herausforderungen / Bedenken sehen Sie mit der Einführung bzw. Nutzung von Low Code-Plattformen?



n = 150, Mehrfachnennung

Crisp\_LowCodeDevelopment  
\_Studie\_2019\_0.pdf



## // Können Sie bereits heute eine Low Code Development Plattform in Ihrem Unternehmen nutzen?



**15%**

Wir sehen uns technisch nicht in der Lage, ein solches Entwicklungstool einzuführen



**35%**

Ja, sowohl technisch als auch organisatorisch



**45%**

Die technische Einführung ist kein Problem, wir können es organisatorisch nicht abbilden / die Prozess- und Unternehmenskultur muss

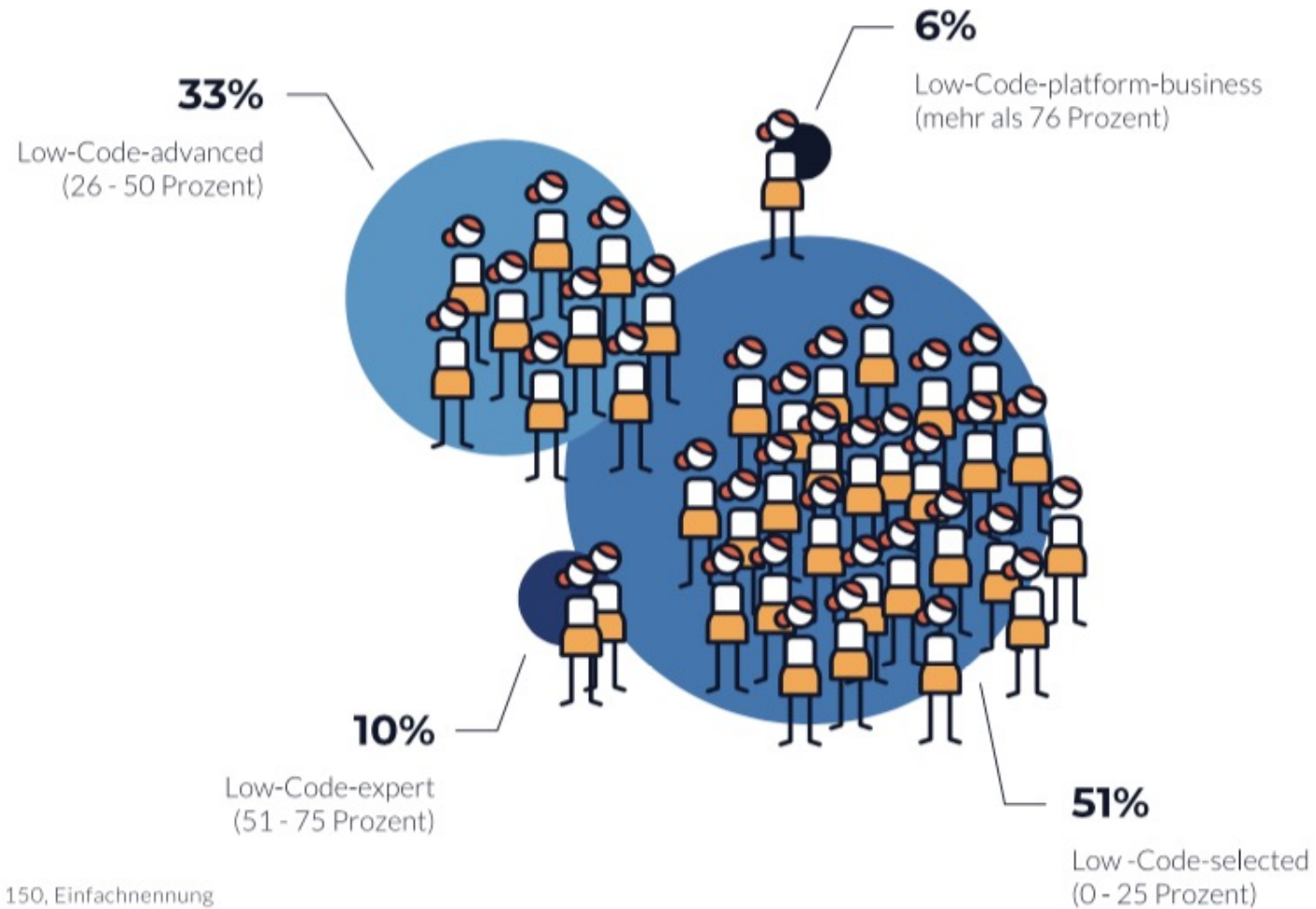


**5%**

Auf keinen Fall

## Adoption

*// Wieviel Prozent Ihrer Mitarbeiter werden zukünftig zum Citizen Developer?*







# Troubleshooting

- not able to save

Tableau Server



**An error occurred while attempting to save the workbook.**

The Tableau server you are publishing to requires extracts to be enabled for data sources.  
Use the Data menu to enable the extracts for the following data sources:

Data Extract Required  
statistical-area-2-2020-generalised

[Learn More](#)

OK

Beware of the glitch ...

It's enough to click on your worksheet before you save. It does not work if you try to save from the data source screen.