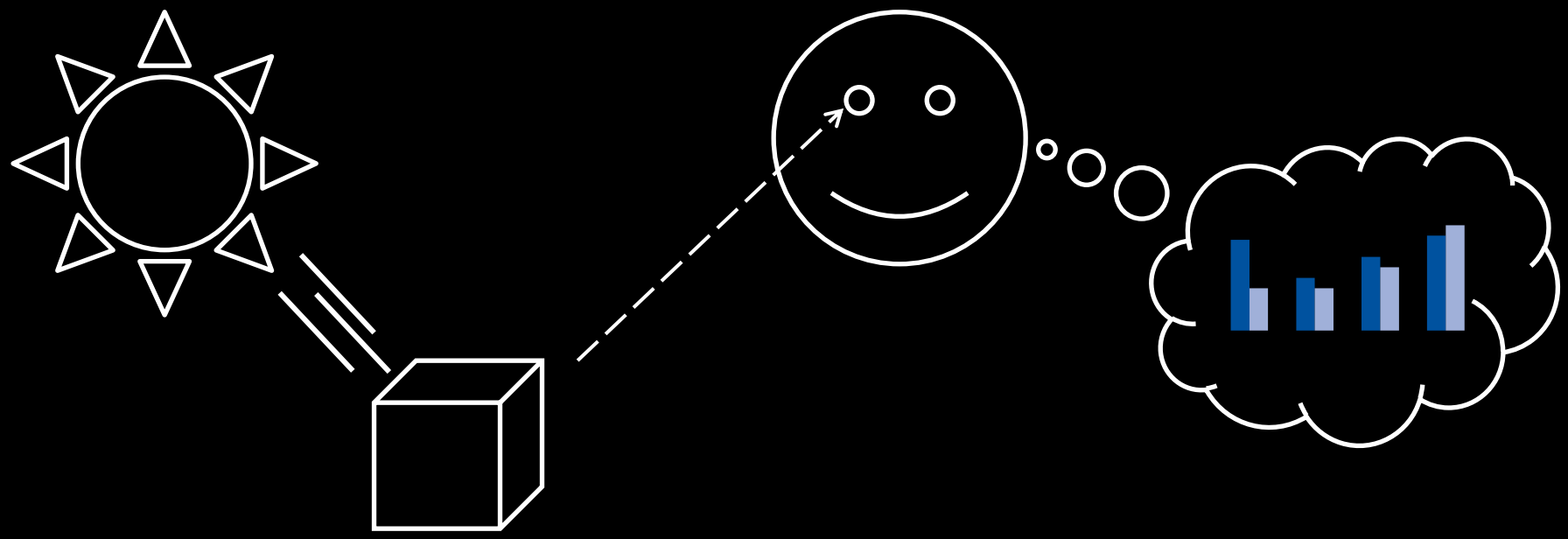
Data Visualization by Excel.tv

6	1	2	6	6	9	6	2	2	3
3	1	6	1	3	7	5	1	3	5
8	2	2	6	7	5	6	1	3	3
7	3	6	7	5	7	4	6	7	6
5	3	6	5	7	6	1	7	1	6
3	9	9	4	7	8	9	8	2	8
5	5	3	6	5	2	1	3	8	7
6	7	3	1	9	6	2	9	5	7
2	8	8	1	3	7	7	6	9	4

6	1	2	6	6	9	6	2	2	3
3	1	6	1	3	**7**	5	1	3	5
8	2	2	6	**7**	5	6	1	3	3
7	3	6	**7**	5	**7**	4	6	**7**	6
5	3	6	5	**7**	6	1	**7**	1	6
3	9	9	4	**7**	8	9	8	2	8
5	5	3	6	5	2	1	3	8	**7**
6	**7**	3	1	9	6	2	9	5	**7**
2	8	8	1	3	**7**	**7**	6	9	4

Visual perception is the interpretation of processed information



Visualization concepts

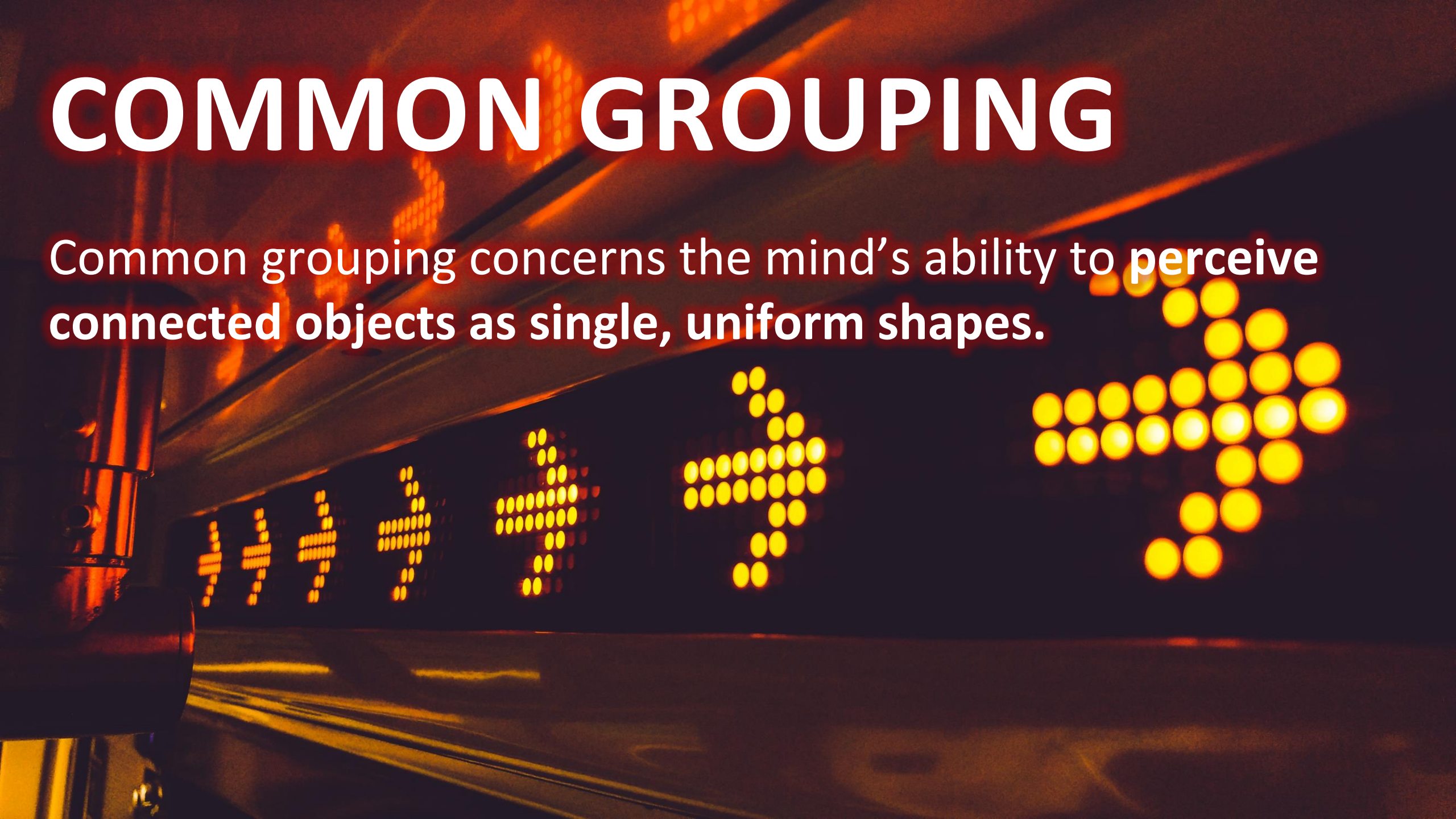
- Similarity
- Closure
- Common Grouping
- Continuation
- Color Variation
- Spatial Position


SIMILARITY
Elements which share similar characteristics like shape, color, or size will perceived as being part of a group.


CLOSURE
Closure allows us to perceive shapes, or objects, as complete forms when enough information about an object is already present.

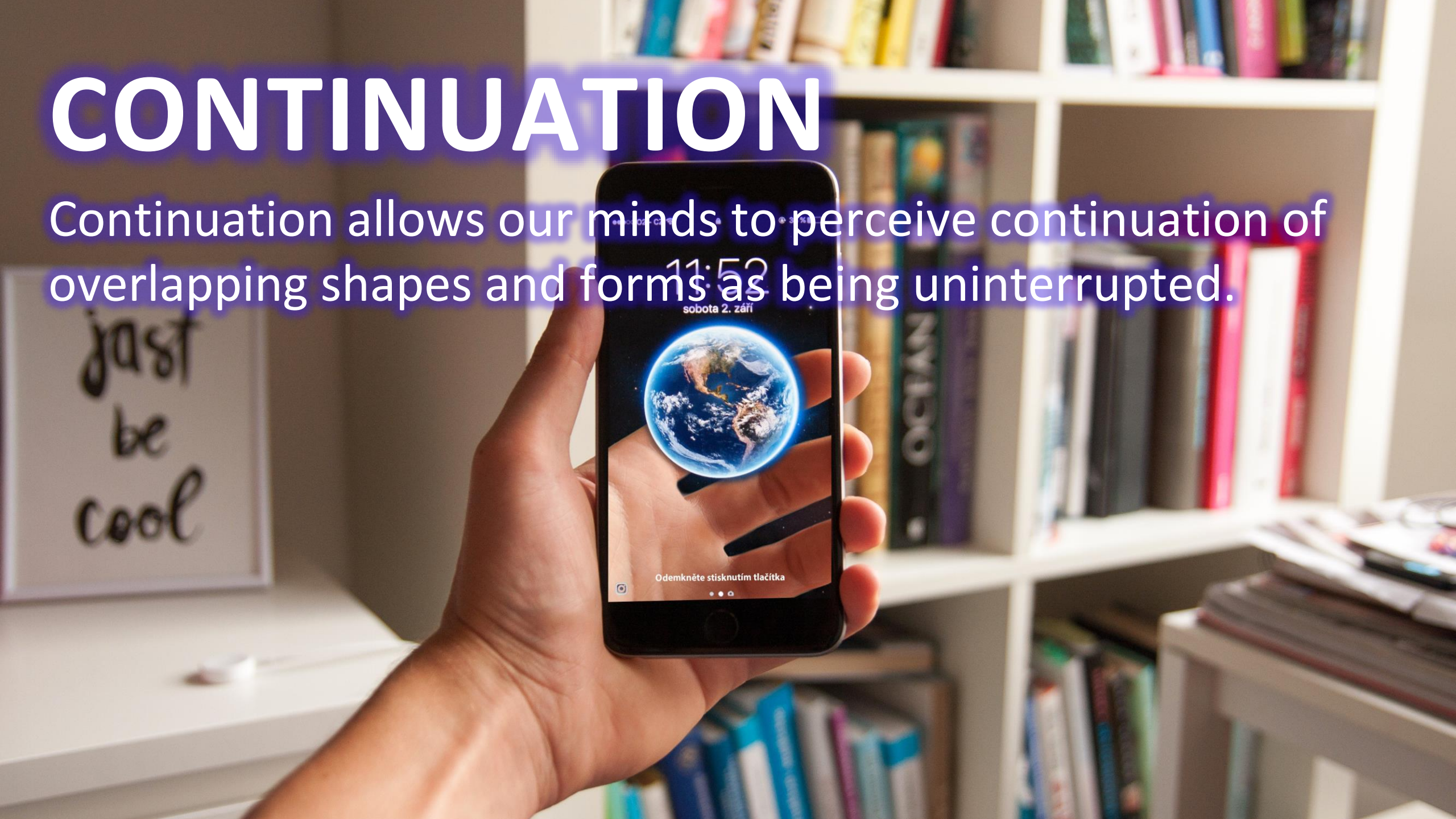
COMMON GROUPING

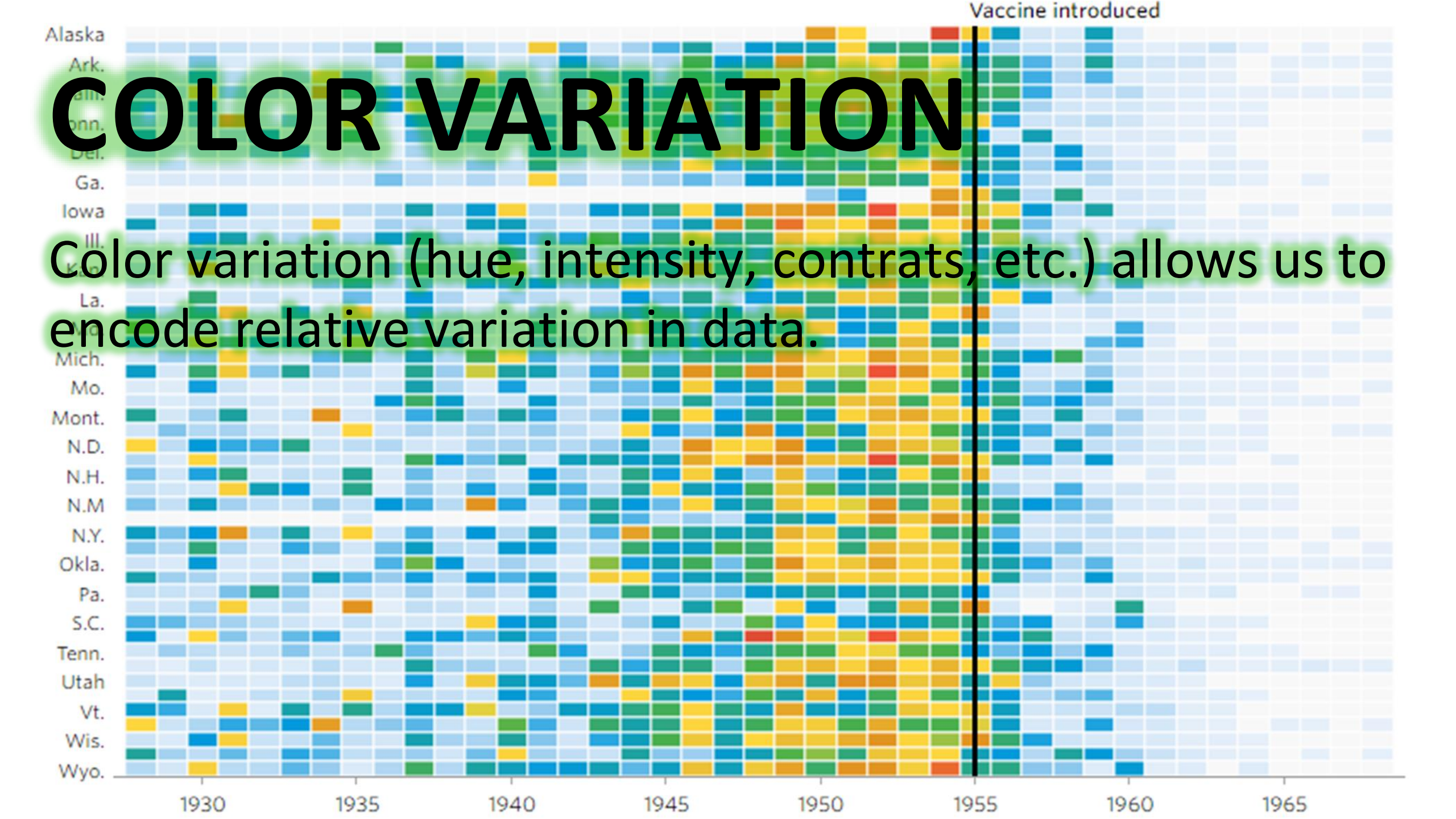
Common grouping concerns the mind's ability to **perceive connected objects as single, uniform shapes.**



CONTINUATION

Continuation allows our minds to perceive continuation of overlapping shapes and forms as being uninterrupted.





COLOR VARIATION

Color variation (hue, intensity, contrats, etc.) allows us to encode relative variation in data.

SPATIAL POSITION

Values are judged to be greater when they are **higher up** or farther to the right.

Ok but...

- Your manager won’t listen.
- You don’t have enough time (or knowledge) to create the perfect chart.
- You don’t necessarily agree.
- What about infographics?
- Do they really need to follow data visualization rules?

Data graphics are for when we are investigating data, looking to uncover some story.

Infographics are for when we already have the story but we want graphics to support the message.

Less Complex

Infographics

High-Level Audience

Leadership
Management
Shareholders
Stakeholders
Clients

More Complex

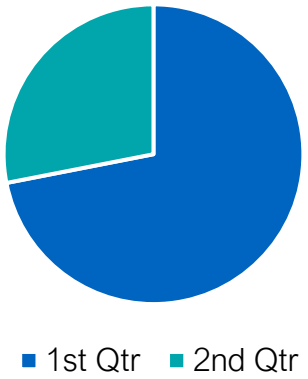
Data Graphics

Subject Matter Experts

Coworkers and technical managers
Colleagues
Technical stakeholders
Academic conferences

Less Complex

Infographics

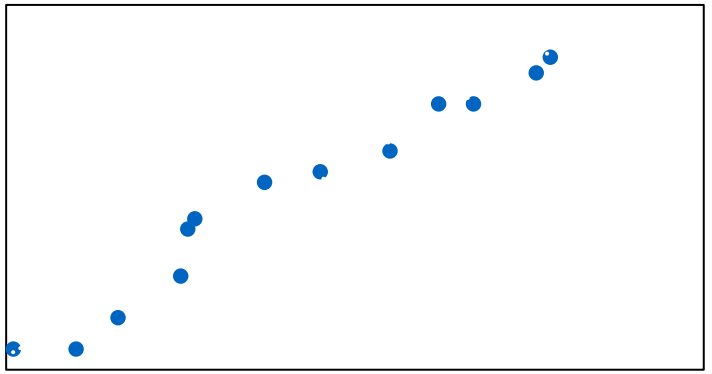


- Analysis is complete.
- Charts support a preexisting narrative.

High-Level Audience

More Complex

Data Graphics



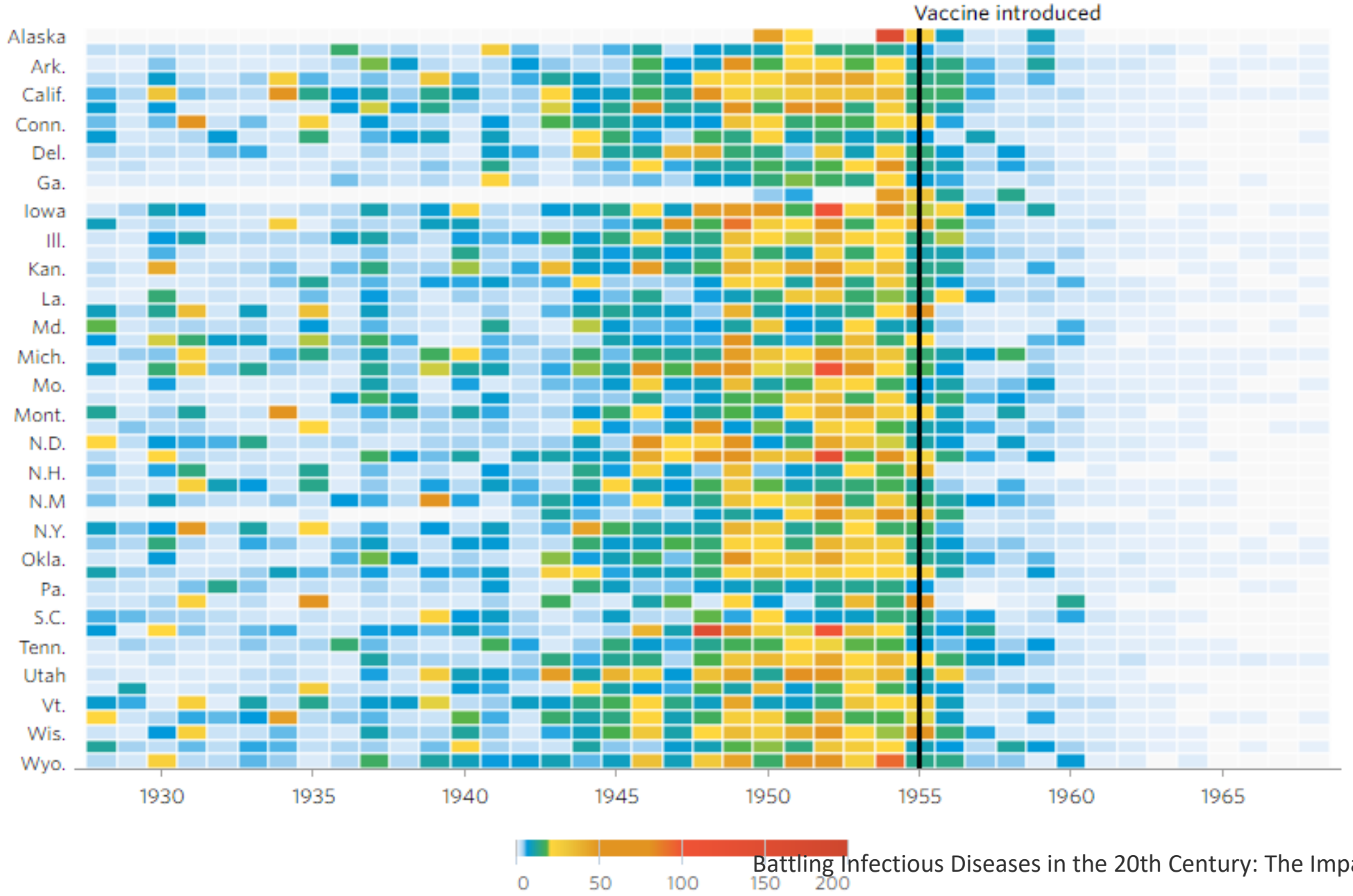
- Exploratory Analysis
- Charts used to help identify results.

Subject Matter Experts

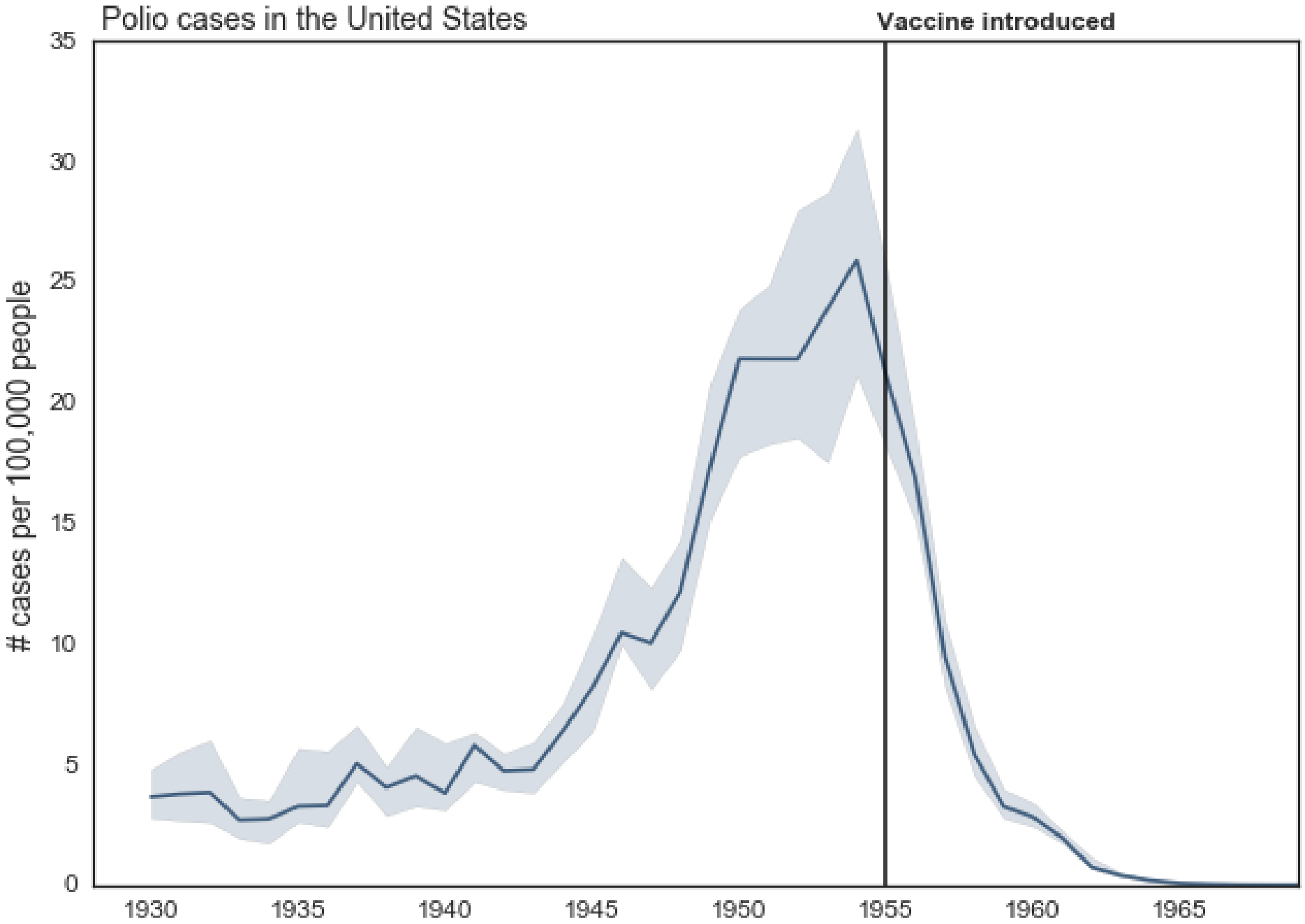
PRINCIPLE #1

WHAT WE PRESENT MUST ALWAYS BE THE **NATURAL EXTENSION** OF THE UNDERLYING PROBLEM.

Polio

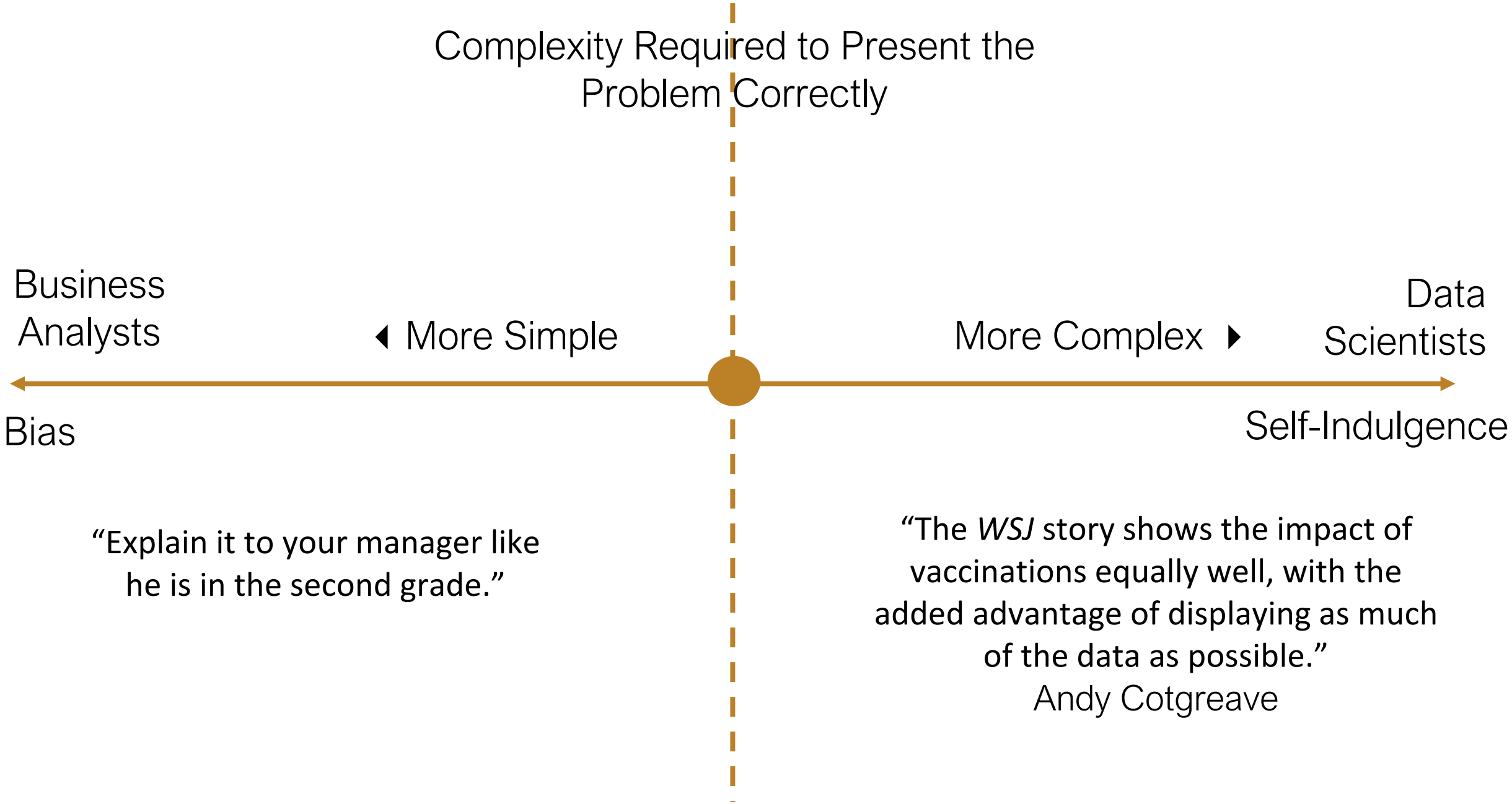


Battling Infectious Diseases in the 20th Century: The Impact of Vaccines, Wall Street Journal



Data source: Project TYCHO (tycho.pitt.edu) | Author: Randy Olson (randalolson.com / @randal_olson)

¯_(ツ)_/¯

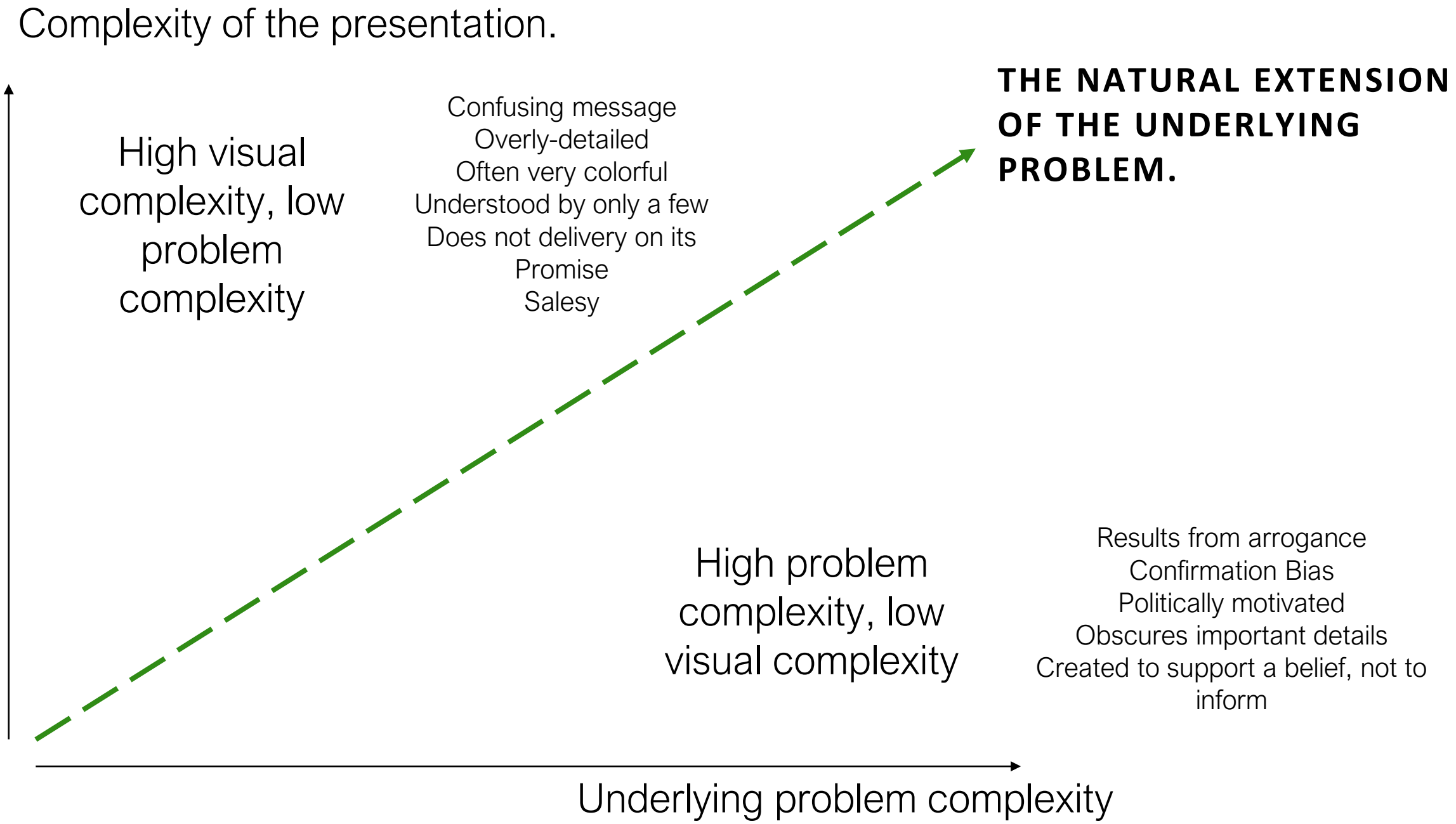

Complexity Required to Present the Problem Correctly
Business Analysts
More Simple
More Complex
Data Scientists
Bias
Self-Indulgence
"Explain it to your manager like he is in the second grade."
"The *WSJ* story shows the impact of vaccinations equally well, with the added advantage of displaying as much of the data as possible."
Andy Cotgreave

PRINCIPLE #2

VISUAL COMPLEXITY OFTEN RESULTS WHEN WE DON'T KNOW OUR AUDIENCE.

PRINCIPLE #3

OVER SIMPLIFICATION OFTEN RESULTS WHEN WE DON'T TRUST OUR AUDIENCE.


Complexity of the presentation.
High visual complexity, low problem complexity
Confusing message
Overly-detailed
Often very colorful
Understood by only a few
Does not delivery on its Promise
Salesy
THE NATURAL EXTENSION OF THE UNDERLYING PROBLEM.
High problem complexity, low visual complexity
Results from arrogance
Confirmation Bias
Politically motivated
Obscures important details
Created to support a belief, not to inform
Underlying problem complexity

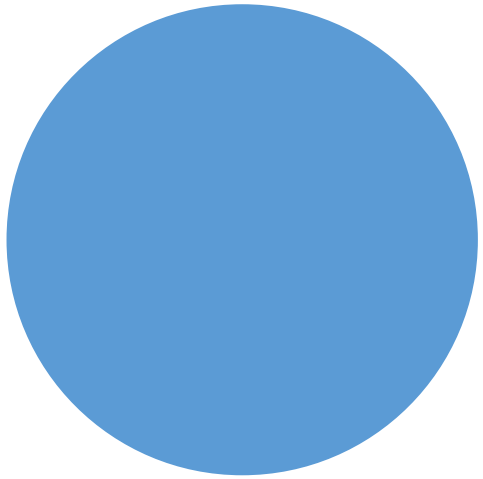
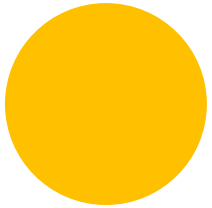
Principle #4

Proper data visualization is about trade-offs.

Sometimes one seemingly correct choice hurts you in another way.

Principle #5

Respect your audience!

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