Data Visualization

Drawing insights out of the abyss

by: Jeff Lamoureux & Brian Graves

Data Visualization

1 Intros: Who are these guys?

2 Why this is hot right now

3 How to use effectively

4 What you need to get started

5 Q&A

Introductions

Jeff Lamoureux

MassMutual

Finance Visual Analytics

- 20 years of experience in Finance
- Passion for data & analytics
- Outdoors enthusiasts
- Dad

Brian Graves

MassMutual

Enterprise & ETX Analytics

- 15+ years in Tech & Financial Services
- Passion for data & analytics
- Trail running, biking, snowboarding
- Dad

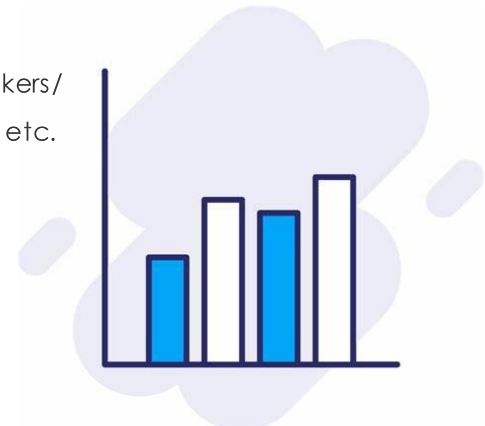
WHY this is hot right now 🔥 | Trends

GROWING INDUSTRY

- 2020 was a year of exponential growth
- 2025+ Experiencing another surge with cloud-based software and AI features built-in

GROWING INTEREST

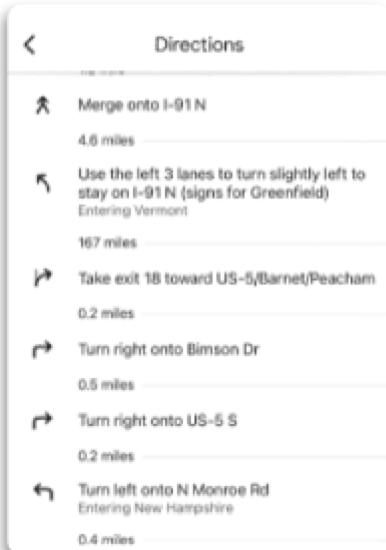
- The masses want BI
    - Facilitators: AI-Augmented Development and SaaS Platforms
    - We’re accustomed to dashboards …activity trackers/ watch, google maps route*, stock market trends, etc.



Google Maps Example | Let's go hiking!

Connecticut Convention Center → Mount Washington

- Remind you of a table? …or MapQuest!
- 27 steps in Details
- Heavy cognitive load



- Google maps ~ dashboard
- Key indicators to help make decisions faster
- Color and most important info…time & money!

WHY this is hot right now | Benefits

68%

of **decision-makers** in Fortune 500 companies **prioritize real-time dashboards** to optimize operational efficiency[1]

EFFICIENCIES

- Big data only getting bigger (LLM food)
- Trend & outlier spotting – use the human advantage

DATA-DRIVEN CULTURE

- "Data-driven decision making" is not going away
- Data-driven organizations are…
  - **23x** more likely to acquire customers,
  - **6x** more likely to retain customers, and
  - **19x** more likely to be profitable compared to their peers.[2]

Sources: [1]U.S. Bureau of Labor Statistics, [2]McKinsey

Why Our Brains Love Visuals (and How That Helps with Data)

Visual perception is fast and efficient.
Humans process images much faster than text.

Count the Cs

A	H	A	S	H	S	A
H	C	H	S	A	C	H
A	H	H	C	A	S	S
S	A	S	H	S	A	A
C	C	H	C	H	C	H
S	C	A	A	S	C	A
A	H	C	S	S	A	H
C	S	H	A	C	H	C
A	C	S	S	C	C	H

Count the Cs (again)

A	H	A	S	H	S	A
H	C	H	S	A	C	H
A	H	H	C	A	S	S
S	A	S	H	S	A	A
C	C	H	C	S	C	H
S	C	A	A	S	C	A
A	H	C	S	S	A	H
C	S	H	A	C	H	C
A	C	S	S	C	C	H

Count the Cs (again)

A	A	C	C	H	H	S	S
A	A	C	C	H	H	S	S
A	A	C	C	H	H	S	S
A	A	C	C	H	H	S	S
A	A	C	C	H	H	S	S
A	A	C	C	H	H	S	S
A	A	C	C	H	H	S	S
A	A	C	C	H	H	S	

16 16 16 15

Why Our Brains Love Visuals (and How That Helps with Data)

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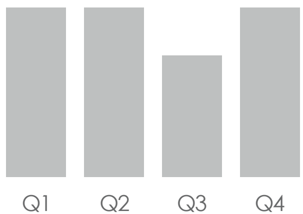
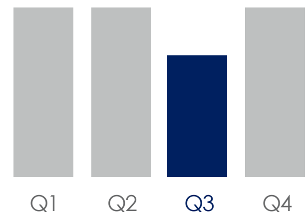
Preattentive attributes are processed in milliseconds.

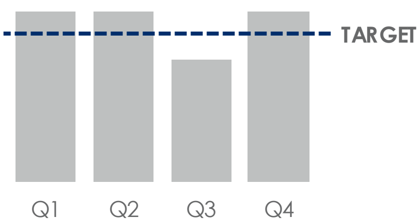
SIZE



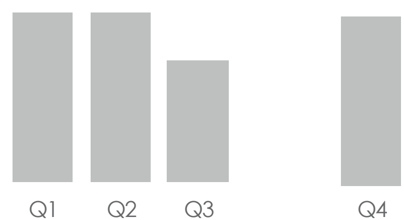
COLOR



ADDED MARKS



POSITIONING

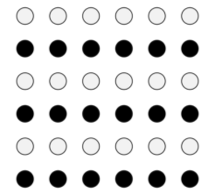


Learn more: Stephen Few | perceptualedge.com

By encoding insights visually, we can spot risks and opportunities faster.

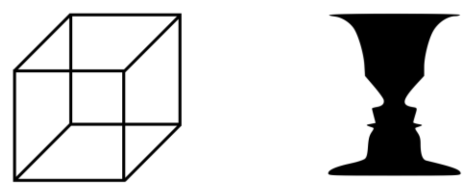
PROXIMITY

SIMILARITY



CLOSURE

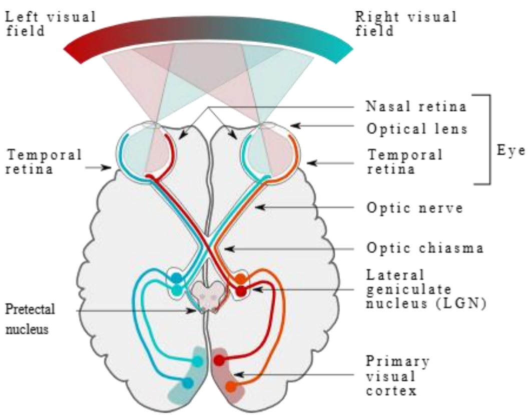
MULTISTABILITY



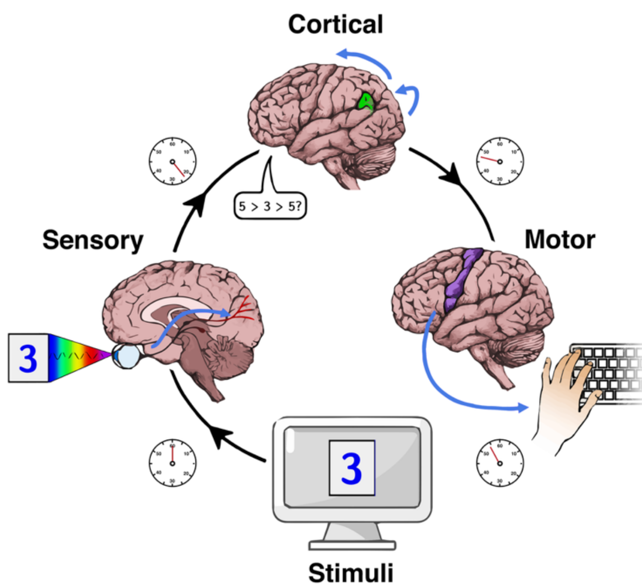
Learn more: Gestalt psychology | Wikipedia.org

By encoding insights visually, our teams can spot risks and opportunities faster.

SEEING = FAST



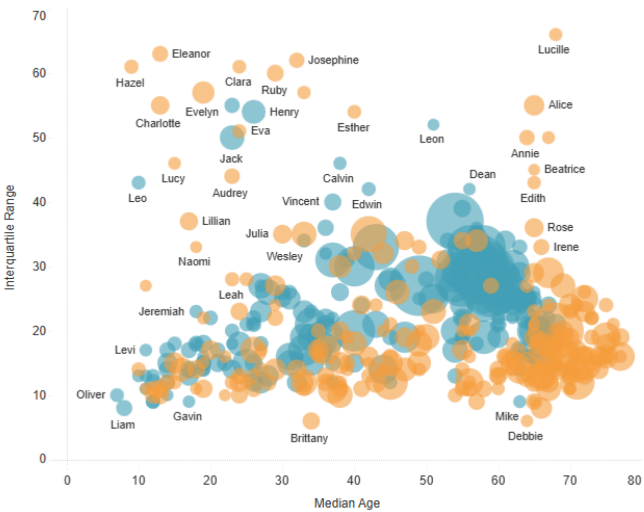
THINKING = SLOW



Learn more: Mental Chronometry | Wikipedia.org

Challenge: Can you make an insight pop in less than 5 seconds?

Age Estimator | What's in a Name?



Using our methodology, your age!

They say never ask a person their age, and now you don't have to! **Just ask their name.** By blending over a century of birth records with life expectancy data, we can estimate the most likely age for any given name. This work was inspired by Nate Silver's 2014 exploration of name demographics for *FiveThirtyEight*.

- **Birth Rates:** This analysis uses U.S. birth records from 1910 to 2023, which provide a count of how many babies each year received each name. The data comes from the Social Security Administration and includes names with at least 50 births in a given year.
- **Survival Rates:** The Society of Actuaries publishes life expectancy tables every decade, providing survival probabilities by age and gender. Linear interpolation was used to estimate annual survival rates for each birth year for finer granularity.
- **Age Estimation:** By combining birth and survival rates, we can approximate the number of living people with each name. The median is the 50th percentile age for all living people with the given name, while the interquartile range (IQR) is the spread from the 25th to the 75th percentile.

Names hold stories of trends, traditions, and the passage of time. In addition to estimating the likely age of a name, this analysis explores the patterns of name popularity, how names rise and fall, and what these trends reveal about the culture of their time. **Together, these insights offer a richer understanding of names, their evolution, and the generations they represent.**

Learn more: Age Estimator: Can We Guess Your Age? By Kinsey Miller | Tableau Public

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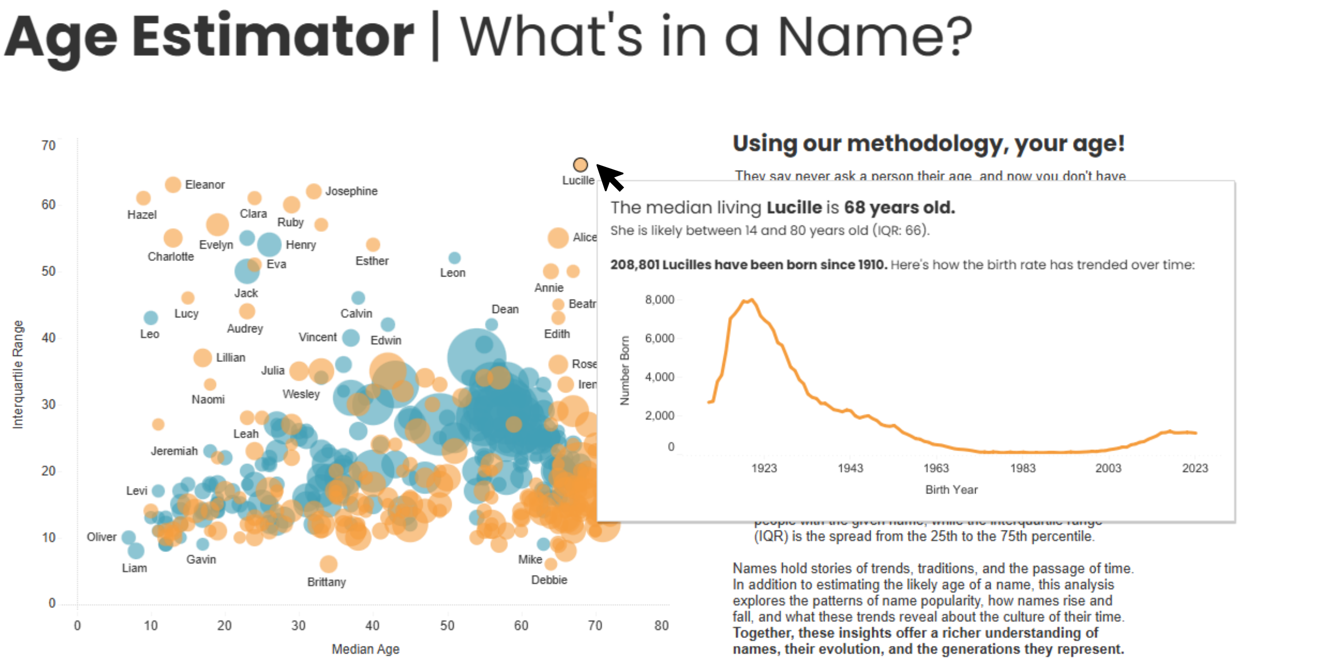

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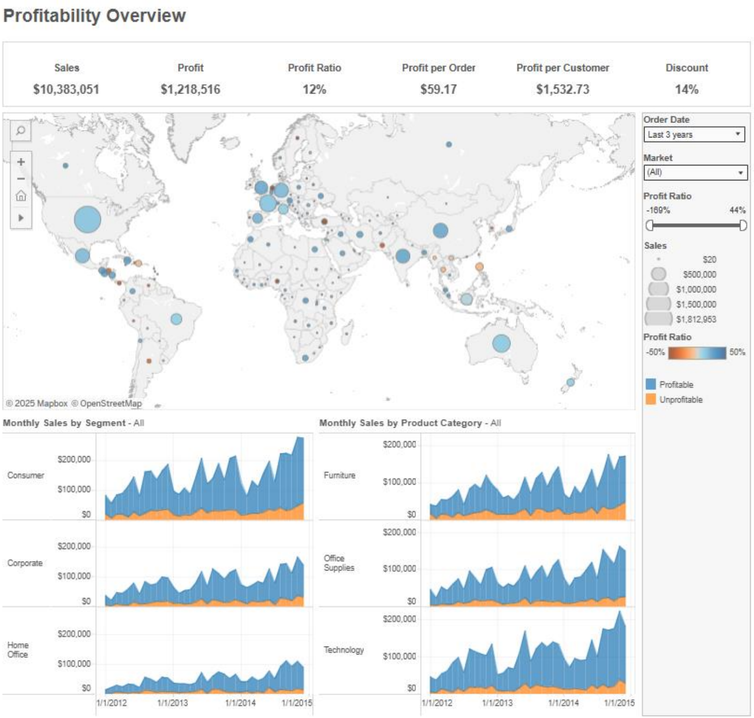
Remove non-data ink (“chartjunk”). Focus on what matters.



Learn more: Superstore Sales By Technical Product Marketing | Tableau Public

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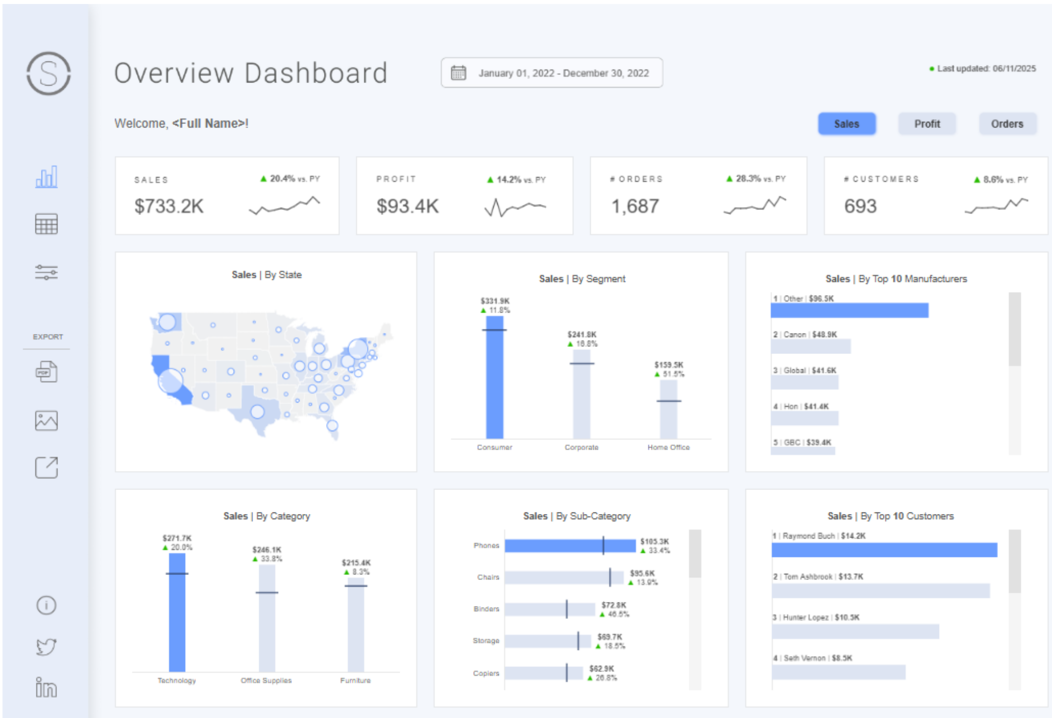
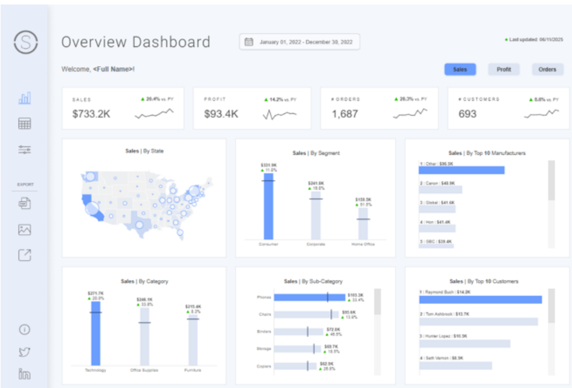


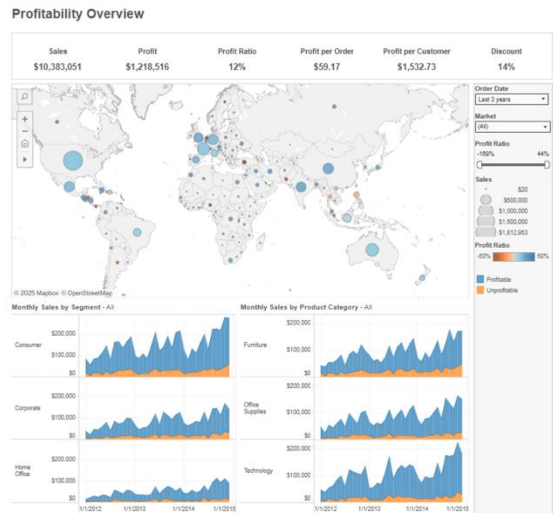
Learn more: Superstore Dashboard by Priya Padham | Tableau Public

Question: Which one would you trust to make a million-dollar decision?

CLEAR



CLUTTERED



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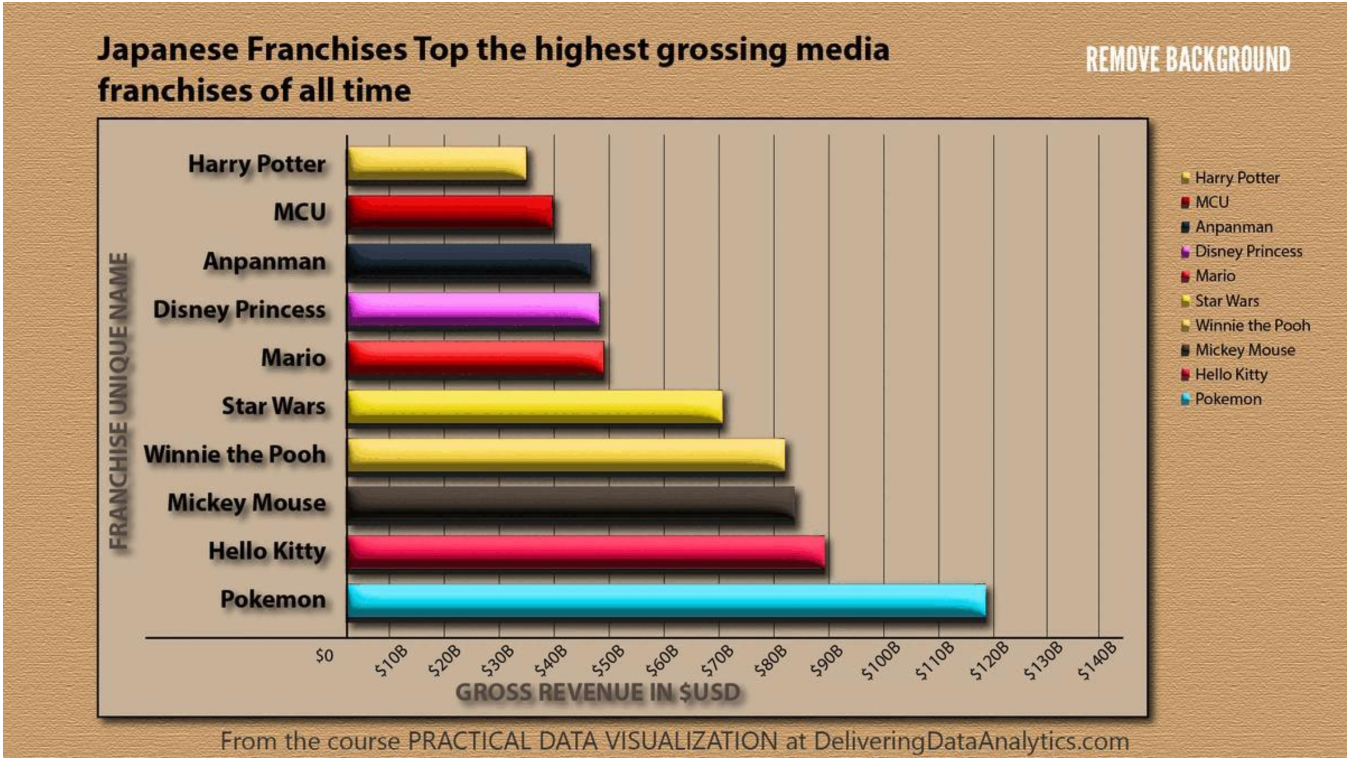
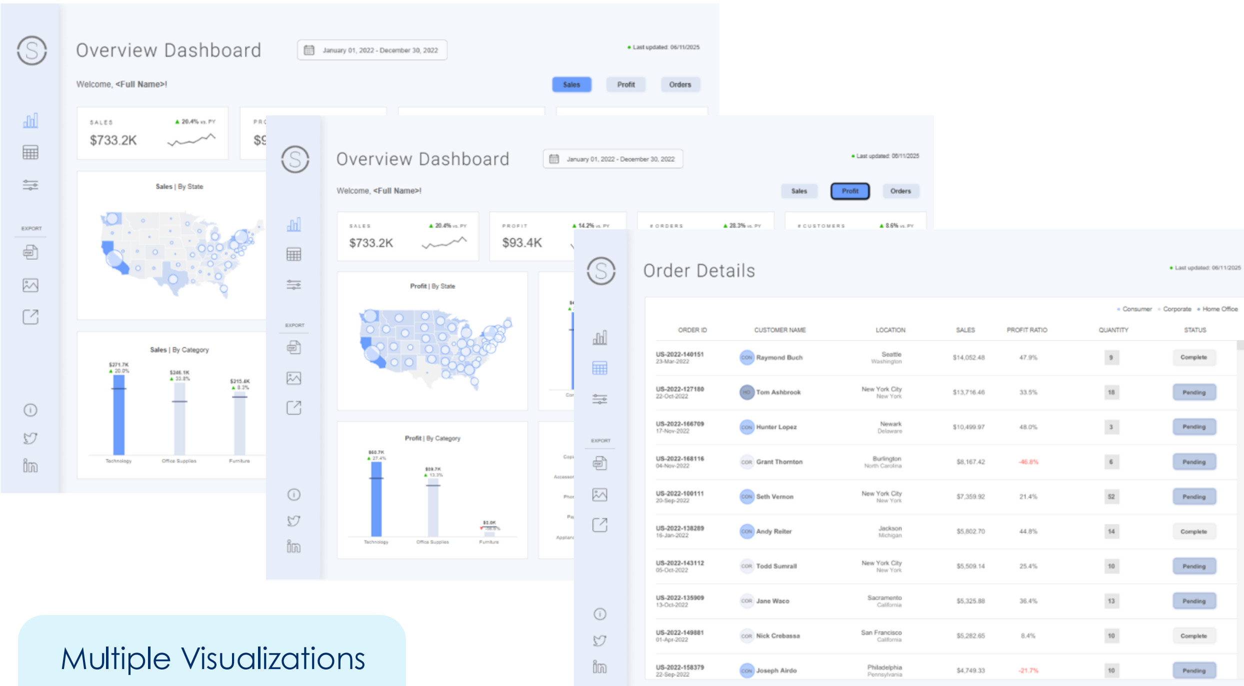


Use consistent layouts, limited color palettes, and clear typography.

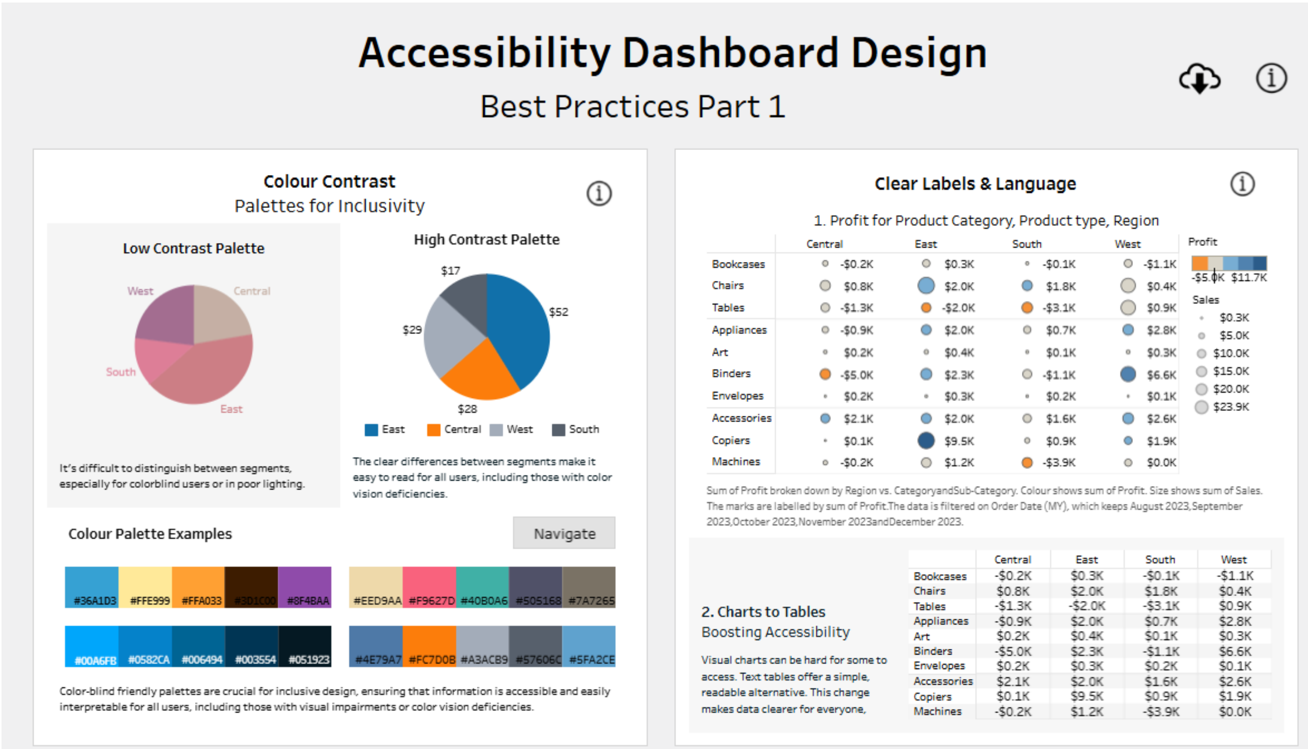


Multiple Visualizations

One Look and Feel

Learn more: Superstore Dashboard by Priya Padham | Tableau Public

Design for accessibility and quick comprehension.



	Central	East	South	West
Bookcases	-$0.2K	$0.3K	-$0.1K	-$1.1K
Chairs	$0.8K	$2.0K	$1.8K	$0.4K
Tables	-$1.3K	-$2.0K	-$3.1K	$0.9K
Appliances	-$0.9K	$2.0K	$0.7K	$2.8K
Art	$0.2K	$0.4K	$0.1K	$0.3K
Binders	-$5.0K	$2.3K	-$1.1K	$6.6K
Envelopes	$0.2K	$0.3K	$0.2K	$0.1K
Accessories	$2.1K	$2.0K	$1.6K	$2.6K
Copiers	$0.1K	$9.5K	$0.9K	$1.9K
Machines	-$0.2K	$1.2K	-$3.9K	$0.0K

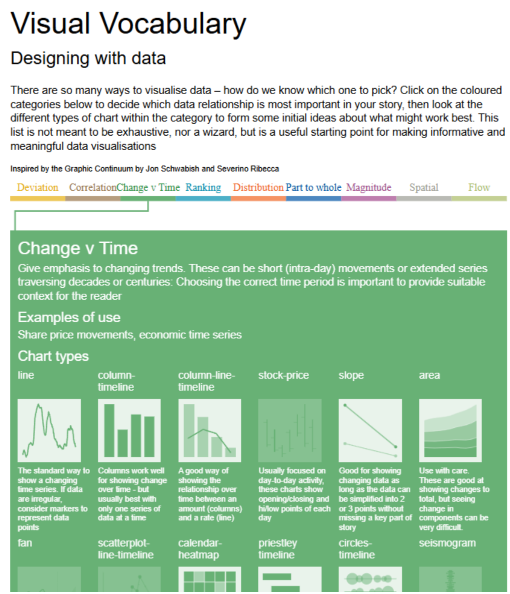
Learn more: Accessibility Dashboard Design by Keren Aharon | Tableau Public

Challenge: Use this checklist and clean up some “junk” from a recent data project.

Data-Ink Ratio Checklist

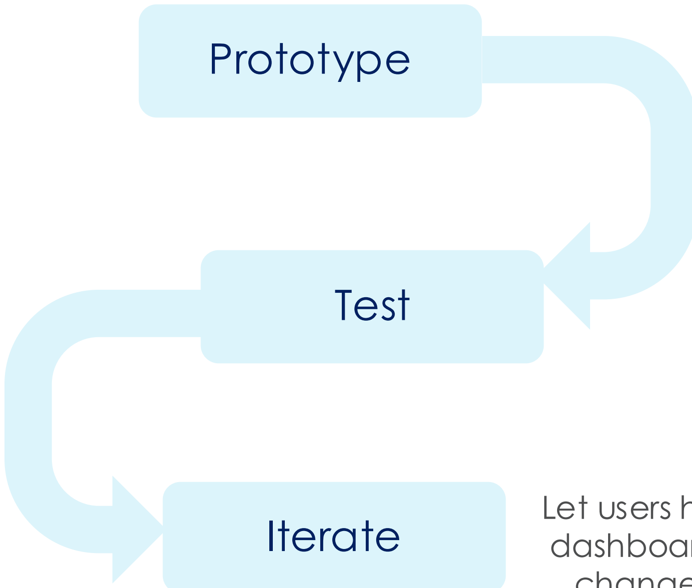
- ✓ Remove unnecessary lines, backgrounds, 3D effects
- ✓ Choose chart types by relationship, not habit
- ✓ Use clear, consistent typography and fonts
- ✓ Place the most important view top-left
- ✓ Use horizontal text and clear labels
- ✓ Use a limited color palette

Pick the right chart type



Learn more: FT Visual Vocabulary by Jon Schwabish and Severino Ribecca | *GitHub Public*

Involve users early → prototype, test, and iterate.



Involve users early.
Rough drafts, not finished products.

5-Second Rule
“What did you see?”
CLEAR Framework

Let users help shape the dashboard. Document changes as you go.

Use structured critique (e.g., The C.L.E.A.R. Feedback Framework)

The C.L.E.A.R. Feedback Framework

- C — CONTEXT: Understand the user and how they will use your data viz.
- L — LOOK: Observe how end users interact with the dashboard.
- E — EVALUATE: Find out what's working and not working.
- A — ASK: Collect direct feedback and suggestions ("I like…, I wish..., What If?")
- R — REFINE: Make improvements based on feedback and repeat the process.

When users help shape your data visualization project, adoption increases, and endless rework and complaining will become a thing of the past.

Visualization is a "micro-training" tool. Repeated exposure builds literacy.

Learn more: Building a Data Culture with Data Storytelling by Brent Dykes | EffectiveDataStorytelling.com

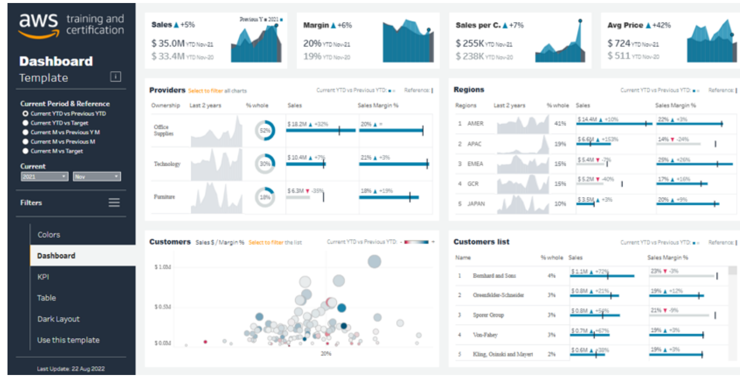
Standardized visualizations + governed metrics = increased trust and adoption.

Data Visualization Culture Checklist

- ✓ Continuous improvement over time
- ✓ Standardize chart types and colors
- ✓ Create an easy-to-use style guide
- ✓ Celebrate and showcase wins
- ✓ Promote data literacy training
- ✓ Document metric definitions

Flexible Consistency

Speed of Trust



Learn more: AWS Training and Certification Style Guide by Yvan Fornes | Tableau Public

WHAT you need to get started ✅

- Growth mindset
- Analytics community

PEOPLE

- Human-centered approach
- Data

PROCESS

- Toolkit
- Constantly evolving landscape

TECHNOLOGY

WHAT | Technology

MAGIC QUADRANT: ANALYTICS & BI

- Familiar Leaders
- Web-native embedded analytics finding a niche
- All have cloud-based options making them easy to get started

Gartner

WHAT | Process (Data)

Data Visualization = 80% Data + 20% Visualization

PRIORITY #1…ACCURACY.

- To gain adoption of reporting, trust in data is key
- Understand how to model information for scale

GETTING HOOKED UP

- Connectors – Direct connection to data warehouses, data lakes, even lakehouses!
- Bring your own data {BYOD} – Our friend Excel.
  - Enter data wrangling tools like PowerAutomate, Alteryx, Tableau Prep, etc.
  - Just for fun! Try Kaggle.

WHAT | People

CURIOSITY & COLLABORATION

- Have a **growth mindset** – lots of resources to kickstart your data visualization journey. Platform specific or via your company learning tools LinkedIn Learning, Degreed, etc.
- Find your analytics **community** – locally and worldwide (web)
    - Examples: DataFam, Alteryx community gamification
- **Inspiration –** “stealing” is a good thing :)

Data visualization is a science, language, and art.

When we get it right, we help our organizations see together and act together.

Let’s keep drawing insights out of the abyss – together!

Jeff Lamoureux

Thank you!

Questions?

Brian Graves