

Data Visualization Fundamentals



- Why visualization matters for analysts and business professionals



- What this training covers and the key outcomes



- The role of visualization in turning data into decisions



Why We Visualize Data



- Visuals communicate insights faster than raw numbers



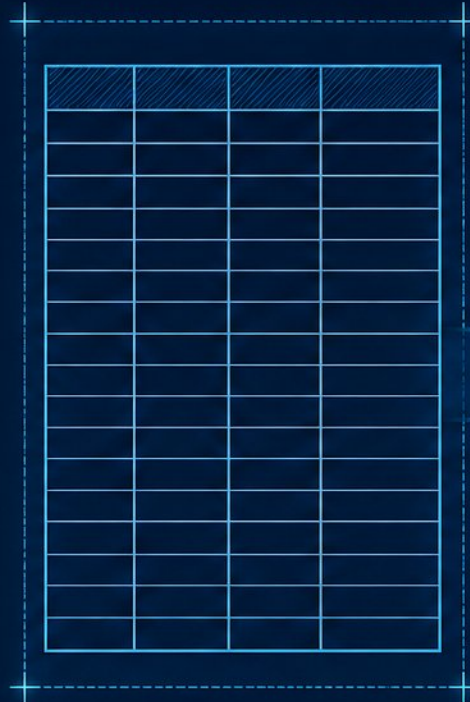
- Exploratory charts help analysts find patterns



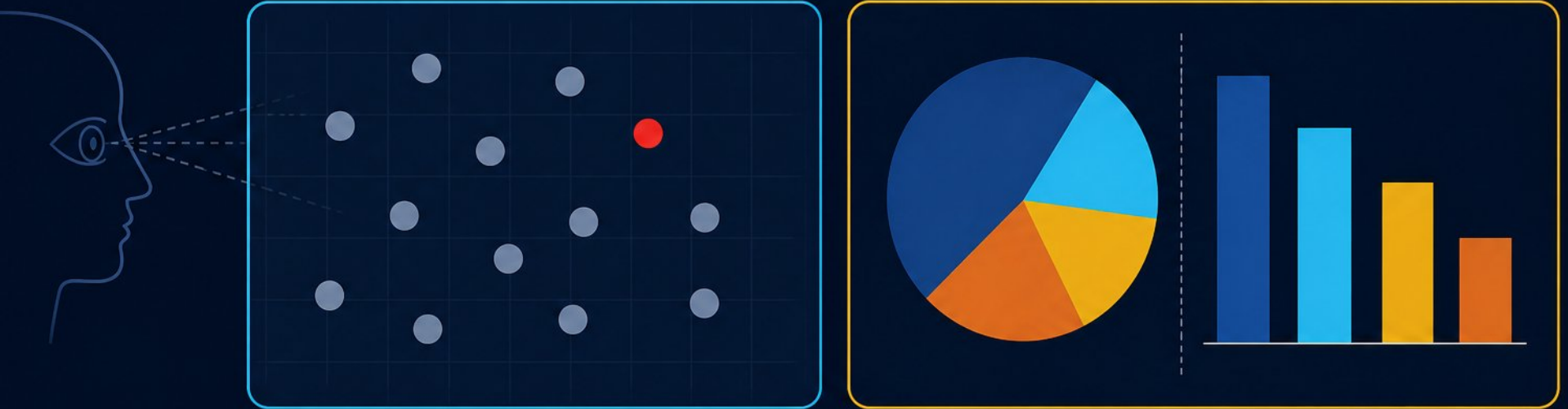
- Explanatory charts help audiences understand messages



- Match chart type to your message and audience



How We **Perceive** Charts



Preattentive attributes: color, size, position, and shape



Bar charts support accurate length comparison



Pie charts force angle and area judgments



Visual overload obscures the core message

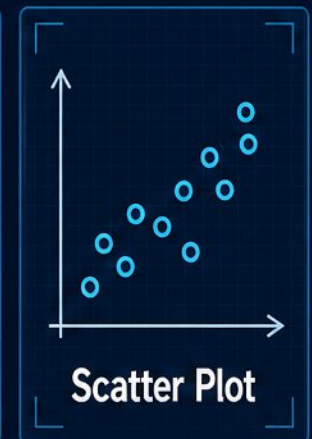
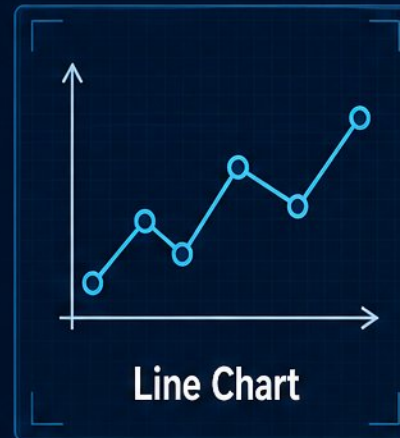


Avoid truncated axes and misleading encodings



Choosing the Right Chart Type

- **Comparison:** bars and columns
- **Trend over time:** line and area charts
- **Part-to-whole:** bar alternatives vs. pie/donut charts
- **Distribution:** histograms and box plots
- **Relationship:** scatter plots and heatmaps



A Decision Framework for Chart Selection

- Ask: comparing, trending, distributing, or a relationship?
- Match the message to bars, lines, scatter, or heatmap
- Avoid pie charts for precise part-to-whole comparisons
- Quick-reference guide: data question → chart type

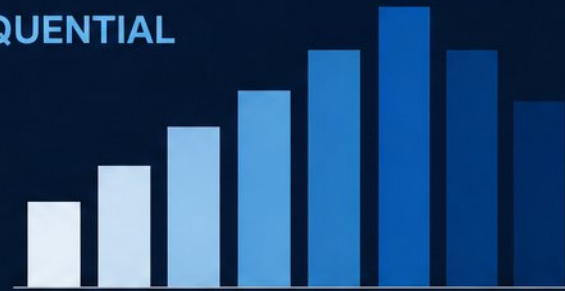


Quick-reference guide: data question → chart type

Using Color Effectively

- Sequential, diverging, and categorical palettes for different data types
- Choose colorblind-safe combinations to ensure accessibility
- Use color to highlight key insights, not to decorate
- Limit palette size to reduce visual clutter and confusion

SEQUENTIAL



DIVERGING



CATEGORICAL



Simplifying Chart Elements



- Remove gridlines, borders, 3D effects, and extra labels



- Use direct labels instead of separate legends



- Write titles that explain the key takeaway

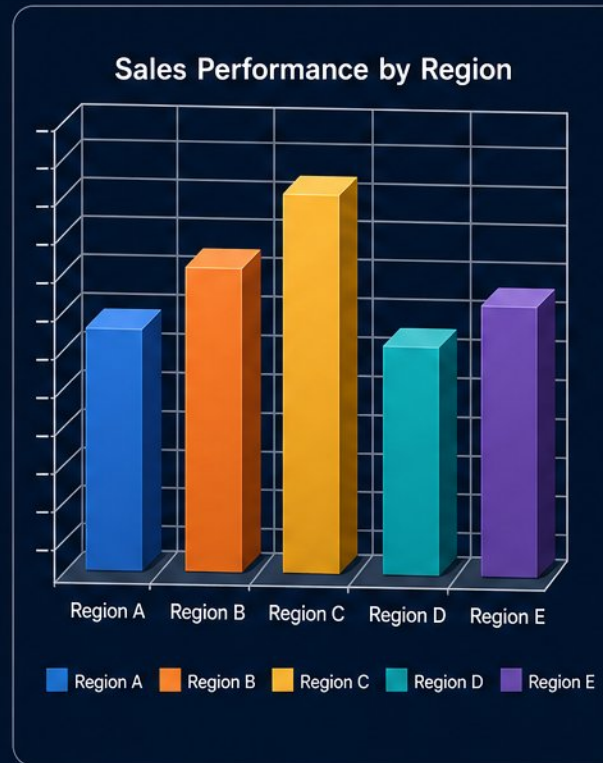


- Let white space guide attention

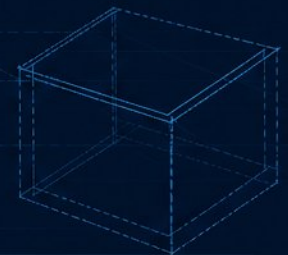


- Apply Gestalt principles: proximity, similarity, and closure

BEFORE Cluttered



AFTER Simplified



Telling a Story with Data

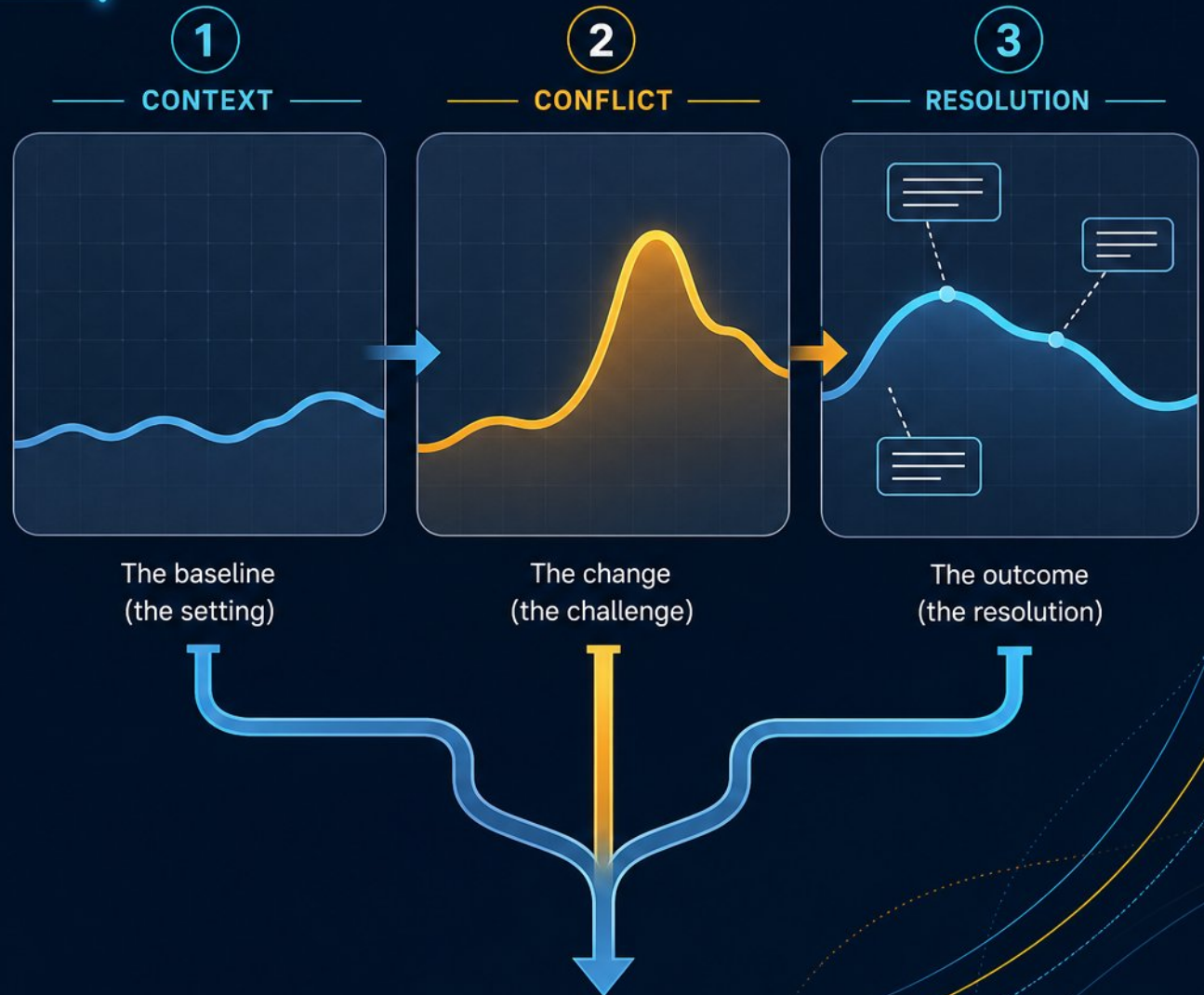
- Shape a narrative arc: context, conflict, resolution

- Use annotations to explain peaks and turning points

- Sequence visual elements to guide attention step by step

- Direct focus with highlighting and contrast

- Show before/after examples from analyst reports



Common Visualization Pitfalls



- Misleading axes and truncated scales distort comparisons



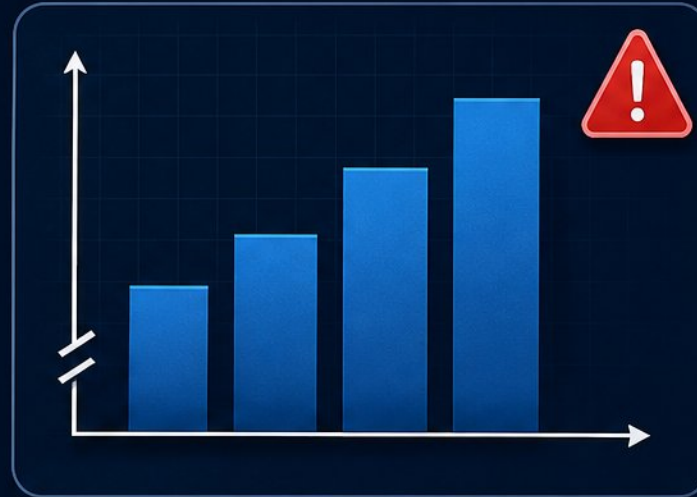
- Overuse of dual axes obscures the true relationship



- Complex chart types reduce clarity for broad audiences



- Chart type manipulation misrepresents underlying data



Ethics and Accuracy in Visualization



- Recognize misleading patterns: truncated axes, inverted scales, cherry-picked data



- Use honest visual encoding: no exaggerated effects or hidden baselines



- Provide full context: labels, sources, and timeframes without distortion



- Build trust by choosing clarity over persuasion



- Apply ethical standards consistently across reports and dashboards



Tools for Creating Dashboards and Reports



- Popular tools: Tableau, Power BI, Google Looker Studio, Excel



- Choose based on audience, data source, and interactivity needs



- Basic workflow: clean data, build visuals, publish dashboard



- Match tool complexity to user skill and report purpose



A Simple Workflow for Planning a Chart



- Start with a clear question before selecting any chart



- Define the audience, core message, and required data



- Sketch a rough draft to validate the visual approach



- Iterate based on feedback for clarity and accuracy

Critiquing and Improving Visualizations



- Reusable checklist for evaluating data visualizations



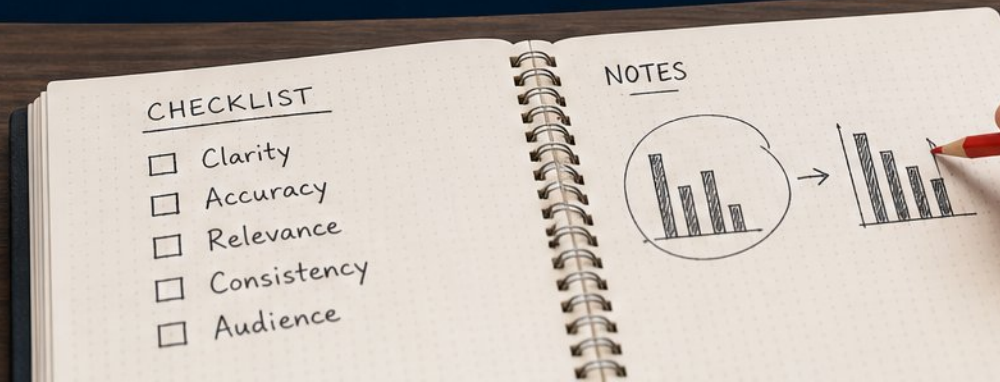
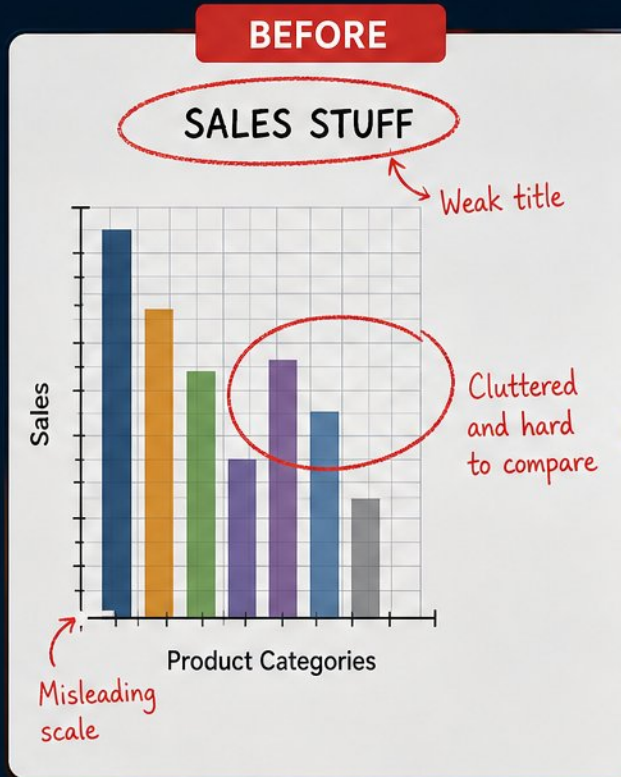
- Before-and-after examples of improved charts



- Practical critique exercise with peer feedback



- Focus on clarity, accuracy, and audience understanding



Next Steps and Skill Development



Apply the chart selection framework to daily reporting tasks



Redesign one existing chart using decluttering and color principles



Critique three public dashboards with the provided checklist



Practice storytelling with annotations and a clear narrative arc

PRACTICE

CRITIQUE

PUBLISH

PersonWise.

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Scan the code or click anywhere to watch this course live, with voice Q&A

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