

Which Visualization?

A Quick Reference

You have the following data (sample):

Discrete Categories,
Ordered categories,
and Continuous Metrics

Here's how to plot them

Categories		Ordered Cats		Continuous Metrics			
City	Airline	Class	PriceBracket	Month	Distance	FlightTime	Price
Alphaville	XeroTrip	Coach	\$	1	300	120	250
Betastan	YoloFly	Business	\$\$	2	500	185	1,525
Chicago	ZeusAir	First	\$\$\$	3	650	240	4,023
...

Discrete Categories

Ordered Categories

Continuous Metrics

Metric, binned by 1 category

- Bar (Row)**: Rows allow readable labels, while columns awkwardly turn text.
- Lollipop**: More focus on the positions of tops. Fun factor +1.
- Dot Plot**: A non-zero y-axis base may be less misleading here.

Metric, binned by 2 categories

- Bar (Column)**: Histogram. Boxes help convey the underlying bins.
- Bar (Column)**: Time moves horizontally. So use Column, not Row.
- Area**: Adds continuity to x-axis.
- Line**: A non-zero y-axis base may be less misleading here.

Metric, binned by 2 categories

- Bar Table X,Y,Z,...**: Compare X to Y to Z, 'Small multiples'. Please use this more.
- Bar Table X,Y, Delta**: Comparisons are slow. Plot critical Deltas explicitly.
- Mirror Bar**: Compare X to Y, leverages human symmetry perception.
- 2D Heat**: 2D Histogram. Similar in spirit to a bar table, but ordered cats + color encoding.
- Bar Table**: Compare a metric across an ordered category.
- Bar Line Table**: Now one is continuous-er.
- Line Table**: Trends visible, but use Lines (below) to compare heights.
- Benchmark Bar**: Compare X to a benchmark.
- Benchmarks Bar**: Compare X to Y. Fancier version called a 'Bullet graph'.
- Interleaved Bar**: Interleaves two categories into one spatial dimension. Typically better to use Bar Table (above) instead.
- Slopegraph**: With two values, slope encodes delta.
- Dual Axis**: Use (above) instead. Crossings here are salient, but meaningless.
- Lines**: Compare many. Getting spaghetti? Split into subset or Line-Table (above).

Part-to-Whole, binned by 1 category

- Pie**: Screams 'Percentages!'.
- Stacked Bar (Row)**: More precise and flex, but less screaming.
- Stacked Bar (Col)**: Now I'm standing.
- Waterfall**: Waterfalls are vertical stacked bars that narrate financial values in a (typically) artificially imposed ordering across fantasy-time.

Metric, binned by 2 categories

- MultiPie**: Please don't... (not recommended).
- Stacked Bars (R)**: ...Use this instead.
- [Mari]Mekko**: Stacked bars but now with X, Y, Z info. Here XYZ might be absolute values of a market, ABC are company % market shares.
- Stacked Bars (C)**: Horizontal flow implies an ordering.
- ... with lines**: Added lines suggest continuity, help depict changes.
- Stacked area**: Now it's definitely continuous.

Metric, binned by hierarchies

- Breakout Bar**: Let's zoom in here. Use different colors. Global at top or left.
- Treemap**: Hierarchy, ~3 levels max of bento boxes going all Inception within other bentos. Size+Color better code different metrics. Typically misused. 95% sure you actually wanted a Bar Table (above).

Look at this number. Just look at it.

43% Huge Number

Metrics: relationships to other metrics

- Dot Array**:
- Dot Array %**:
- Icon Array (ISOTYPE)**:
- Icon Array %**:
- Connecting Lines**: imply continuous data.
- Scatter**: An elegant graph, from a civilized age.
- Connected Scatter**: A scatterplot, connected into a journey over time.
- Parallel Coordinates**: Beyond 2 perpendicular Cartesian axes, Parallel format allows more axes.
- Map**: Maps and Roslings share the same DNA. Color = Flight Time. Size = Price.
- Hans Rosling Scatter**: Watch Rosling's TED talk. Take XY scatter and adds two more metrics (color and size), and then moves in time.
- Rosling Comet**: Show two or more X+Y history values for comparison over time.

Same data, ask people, "What do you see?"

USA Dutch: "Dutch people are taller than Americans"

USA Dutch: "People get taller as they get more Dutch"

Zacks & Tversky, 1997