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, grouped by 1 category

Bar (Row)
A B C — Price
Sideways layout means readable labels

Dot Plot
A B C

Benchmark Bar
A B C — Budget

Bar (Column)
$ $$ $$$ Class
Histogram. Boxes help convey the underlying bins

Bar (Column)
1 2 3 Month
Increasing values move horizontally. So use Column, not Row

Area
A — 1 2 3
Adds continuity to x-axis.

Line
A — 1 2 3
A non-zero y-axis base may be less misleading here

... by 2 categories

Bar Table X,Y,Z,...
A B C — X Y Z
Compare X to Y to Z, 'Small multiples'. Please use this more

Bar Table X,Y, Delta
A B C — X Y Delta
Comparisons are slow. Plot critical Deltas explicitly

Mirror Bar
A B C — X Y
Compare X to Y, leverages human symmetry perception

2D Size
Class F B — $ $$ $$$ Price Bracket — Price
2D Bubble

Bar Table
A B — 1 2 3
Compare a metric across an ordered category

Slopegraph
A B C — 1 2
With two values, slope encodes delta

Dual Axis
Price / Distance — 1 2 3
Use (below) instead. Crossings here are salient + meaningless

Lines
A B C — 1 2 3
Getting spaghetti? Split into subset or Line-Table (below)

Interleaved Bar
A B C — X Y Z
Interleaves two categories into one spatial dimension. Typically better to use Bar Table (above) instead

Benchmarks Bar
A B C — Xs Ys
Compare X to Y. Fancier version called a 'Bullet graph'

2D Heat
Class F B — $ $$ $$$ Price Bracket — Price
2D Histogram. Similar in spirit to a bar table, but ordered cats.

Bar Line Table
Price / Distance — 1 2 3
Now one is continuous-er

Line Table
A B C — 1 2 3
Trends visible, but use Lines (below) to compare heights

Part-to-Whole, grouped by 1 category

Pie
A B C
Screams 'Percentages!'

Stacked Bar (Row)
A B C
More precise and flex, but less screaming

Stacked Bar (Col)
A B C
Now I'm standing

Waterfalls are vertical stacked bars that narrate financial values in a (typically) artificially imposed ordering across fantasy-time

Waterfall
A B C

These lines are identical, with equal Y separation at each X slice, but it doesn't look that way!

Beware of an illusion for these: seeing differences (lines), or category values (stacked area) can be difficult and even misleading

... by 2 categories

MultiPie
X Y Z — A B C
Please don't... (not recommended)

Stacked Bars (R)
A B C — X Y Z
...Use this instead

Stacked bars but now with with X, Y, Z info. Here XYZ might be absolute values of a market, ABC are company % market shares

[Mari]Mekko
A B C — X Y Z

Stacked Bars (C)
A B C — X Y Z
Horizontal flow implies an ordering

... with lines
A B C — X Y Z
Added lines suggest continuity, help depict changes

No legends. Instead, directly label actual values — A B C

Stacked area
A B C — 1 2 3
Now it's definitely continuous

... by hierarchies

Let's zoom in here. Use different colors. Global at top or left.

Breakout Bar
A B C — A1 A2 A3

Treemap
A B C — B1 B2 B3
Hierarchy, ~3 levels max of bento boxes going all Inception within other bentos. Size+Color code different metrics. Typically misused. 95% sure you actually wanted a Bar Table (above)

Metrics: relationships to other metrics

Scatter
Price — Month
An elegant graph, from a civilized age

Connected Scatter
Price — Distance
A scatterplot, connected into a journey over time

Parallel Coordinates
A B C — Price Time Month
Beyond 2 perpendicular Cartesian axes, Parallel format allows more axes

Look at this number.
Just look at it.

Dot Array

Dot Array %

43%
Huge Number

Icon Array (ISOTYPE)

Icon Array %

Connecting Lines imply continuous data
Bars / **Lines**
USA Dutch / USA Dutch
Height
Same data, ask people, "What do you see?"
"Dutch people are taller than Americans"
"People get taller as they get more Dutch"
Zacks & Tversky, 1997

Map
Space / Space
Maps and Roslings share the same DNA Color = Flight Time Size = Price

Hans Rosling Scatter
Distance — Month
Watch Rosling's TED talk. Take XY scatter and adds two more metrics (color and size), and then moves in time

Rosling Comet
Distance — Month
Show two or more X+Y history values for comparison over time

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