

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

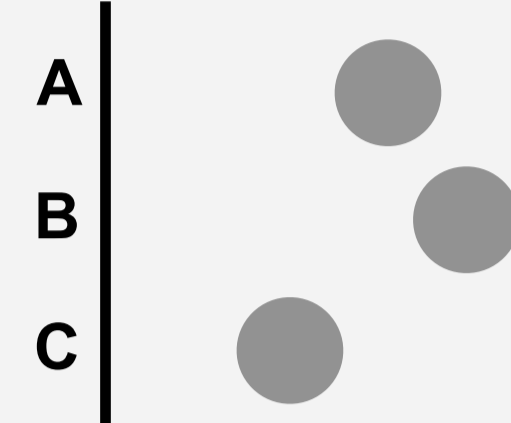
Metric, grouped by 1 category

Bar (Row)

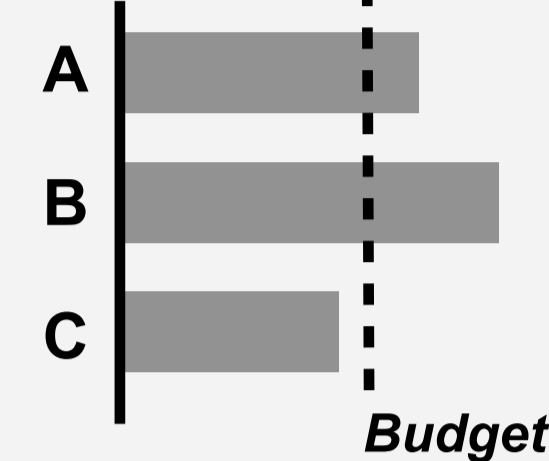


Sideways layout means readable labels

Dot Plot



Benchmark Bar

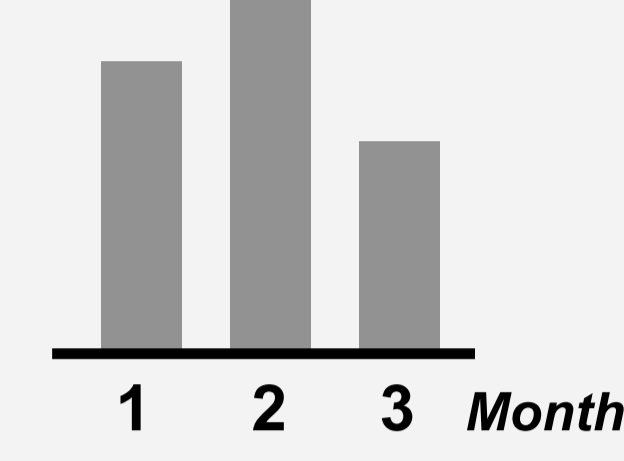


Bar (Column)



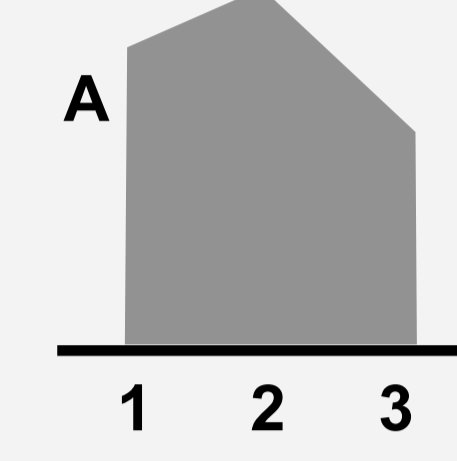
Histogram. Boxes help convey the underlying bins

Bar (Column)



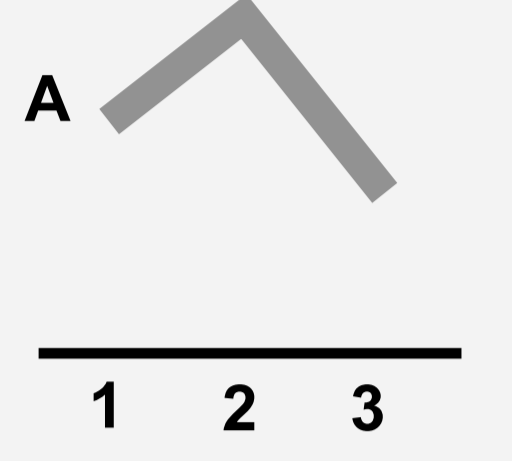
Increasing values move horizontally. So use Column, not Row

Area



Adds continuity to x-axis.

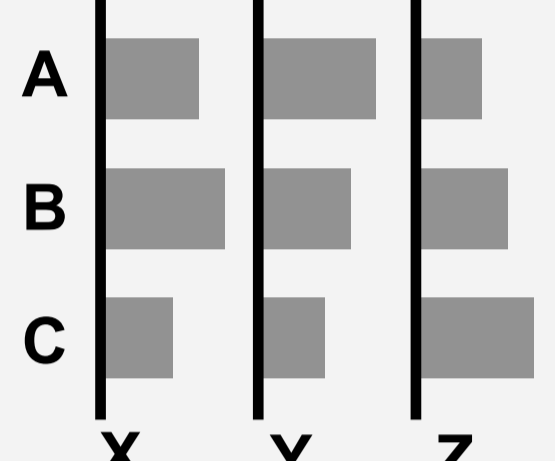
Line



A non-zero y-axis base may be less misleading here

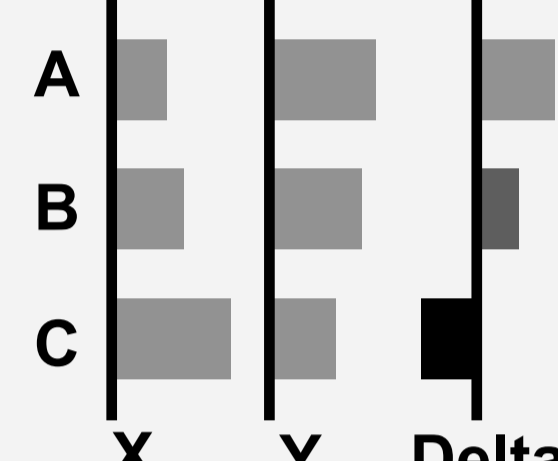
Metric, grouped by 2 categories

Bar Table X,Y,Z,...



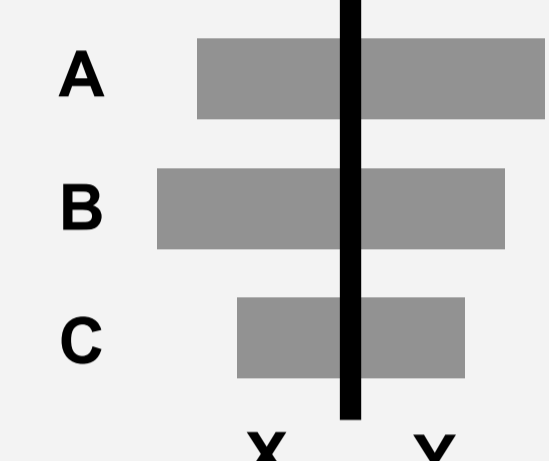
Compare X to Y to Z, 'Small multiples'. Please use this more

Bar Table X,Y, Delta



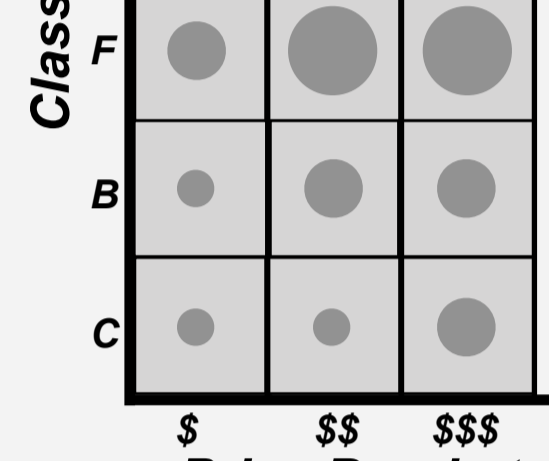
Comparisons are slow. Plot critical Deltas explicitly

Mirror Bar



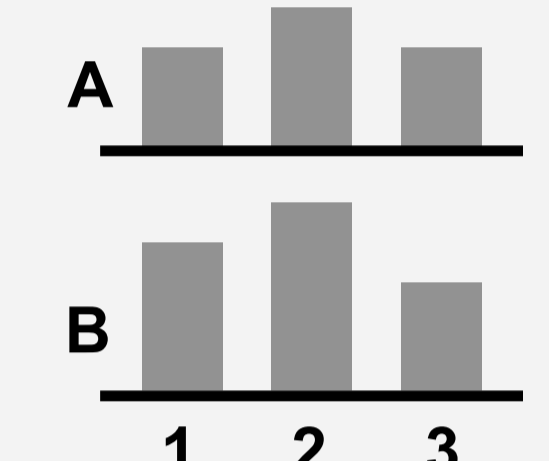
Compare X to Y, leverages human symmetry perception

2D Size



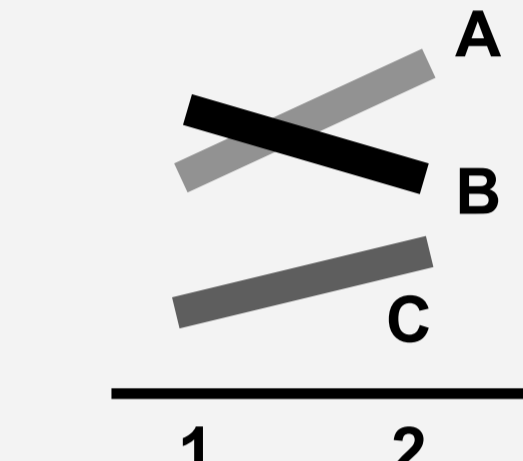
2D Bubble

Bar Table



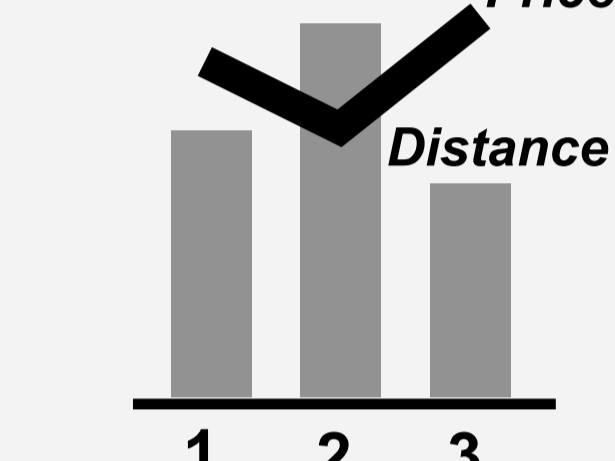
Compare a metric across an ordered category

Slopegraph



With two values, slope encodes delta

Dual Axis



Use (below) instead. Crossings here are salient + meaningless

Lines



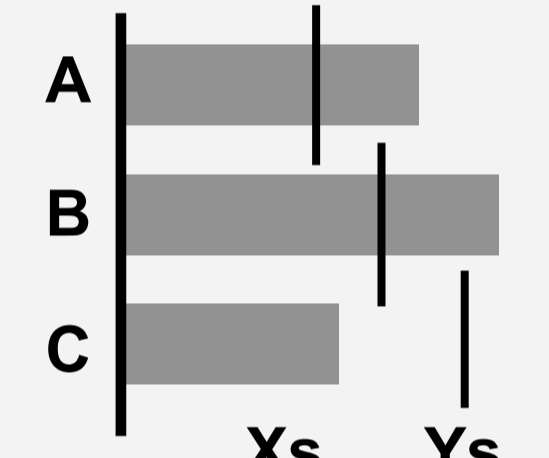
Getting spaghetti? Split into subset or Line-Table (below)

Interleaved Bar



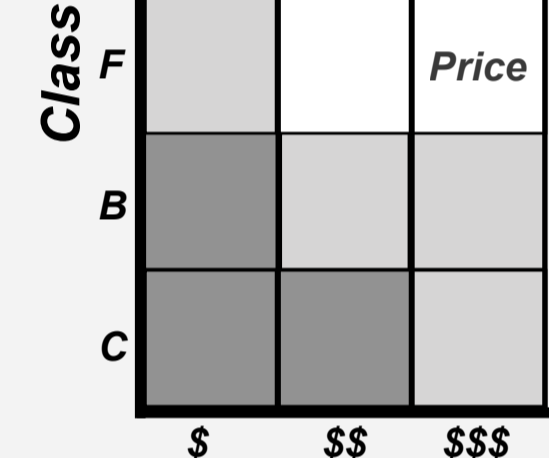
Interleaves two categories into one spatial dimension. Typically better to use Bar Table (above) instead

Benchmarks Bar



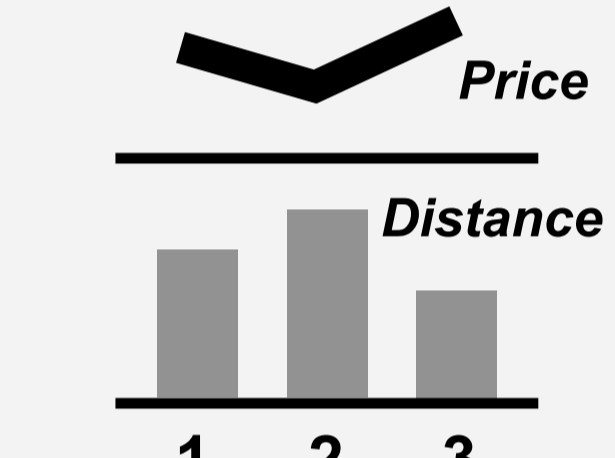
Compare X to Y. Fancier version called a 'Bullet graph'

2D Heat



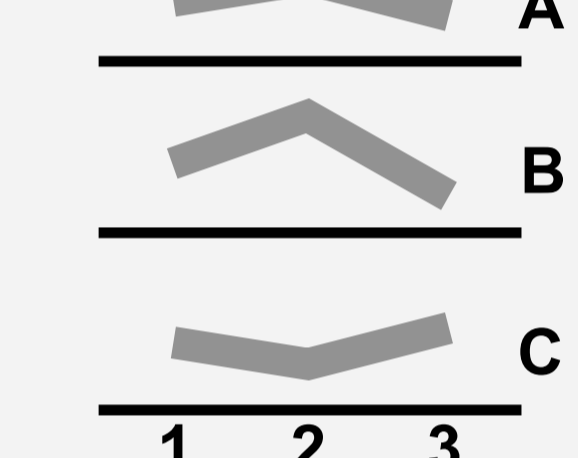
2D Histogram. Similar in spirit to a bar table, but ordered cats.

Bar Line Table



Now one is continuous-er

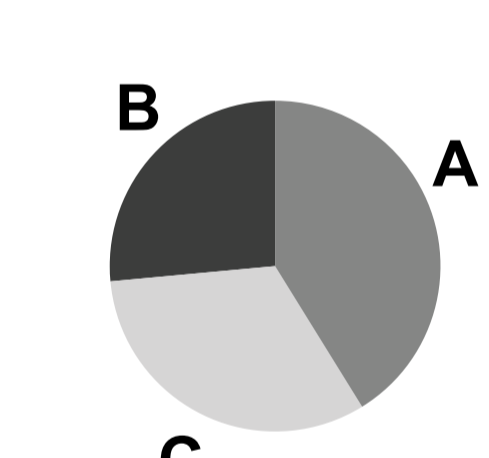
Line Table



Trends visible, but use Lines (below) to compare heights

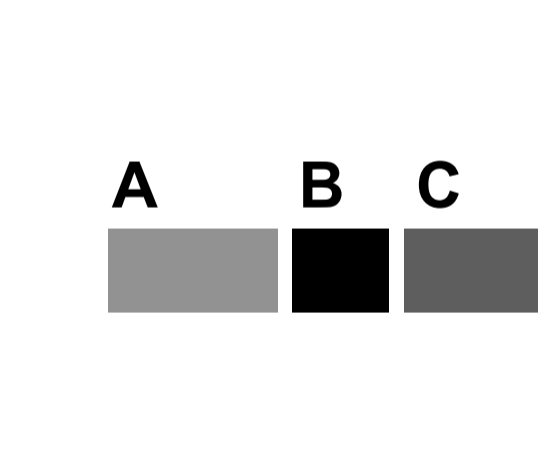
Part-to-Whole, grouped by 1 category

Pie



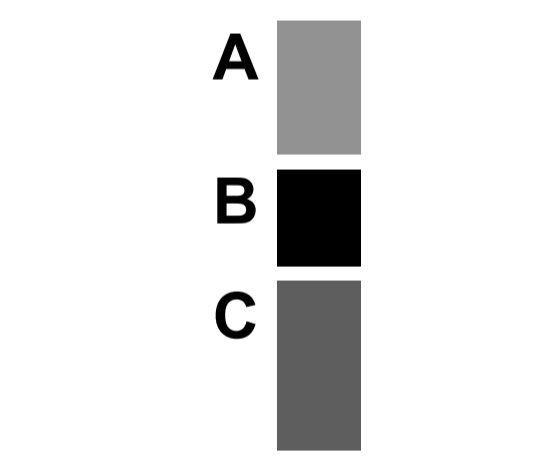
Screams 'Percentages!'

Stacked Bar (Row)



More precise and flex, but less screaming

Stacked Bar (Col)

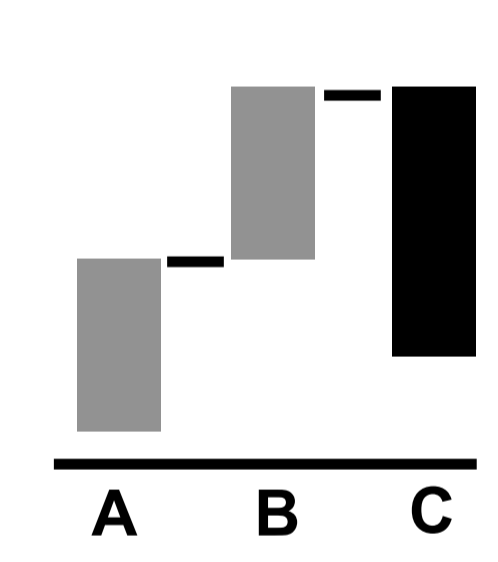


Now I'm standing

Waterfall

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

Waterfall

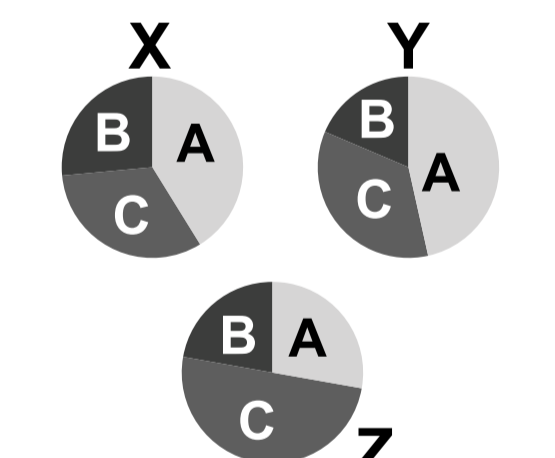


These lines are identical, with equal Y separation at each X slice, but it doesn't look that way!

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

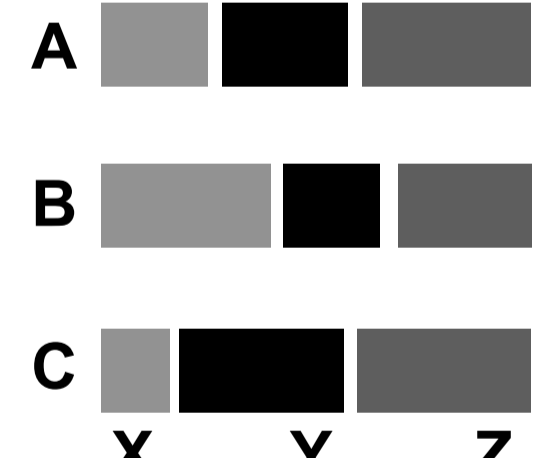
Metric, grouped by 2 categories

MultiPie



Please don't... (not recommended)

Stacked Bars (R)

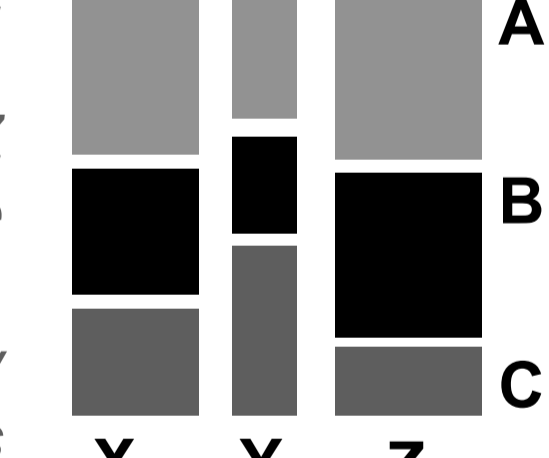


...Use this instead

[Mari]Mekko

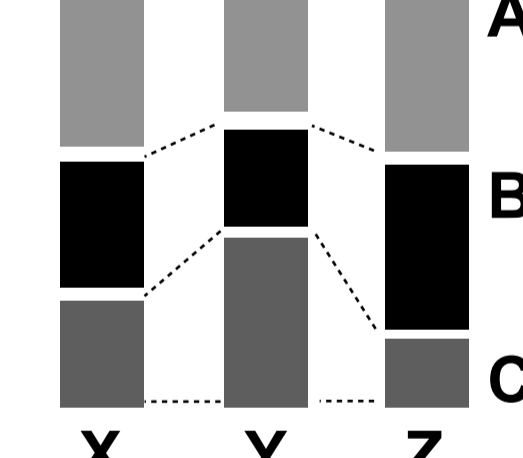
Stacked bars but now with X, Y, Z info. Here XYZ might be absolute values of a market, ABC are company % market shares

Stacked Bars (C)



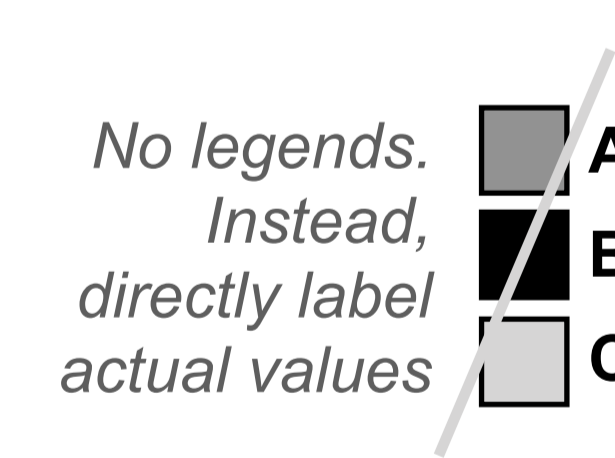
Horizontal flow implies an ordering

... with lines



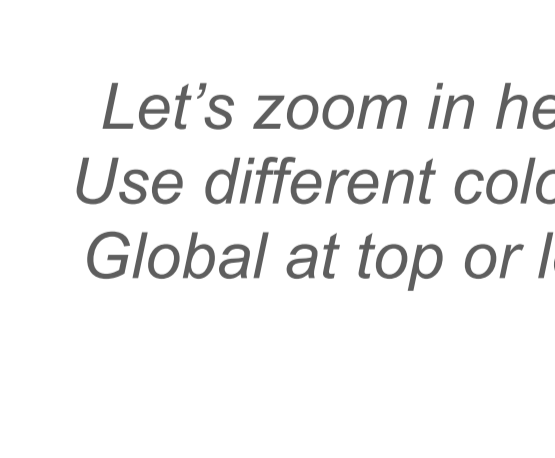
Added lines suggest continuity, help depict changes

Stacked area



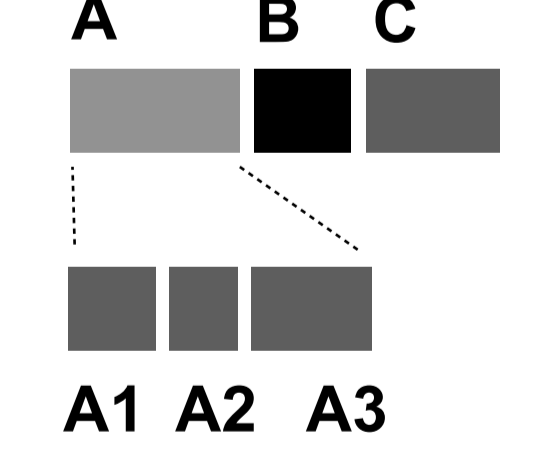
Now it's definitely continuous

Breakout Bar



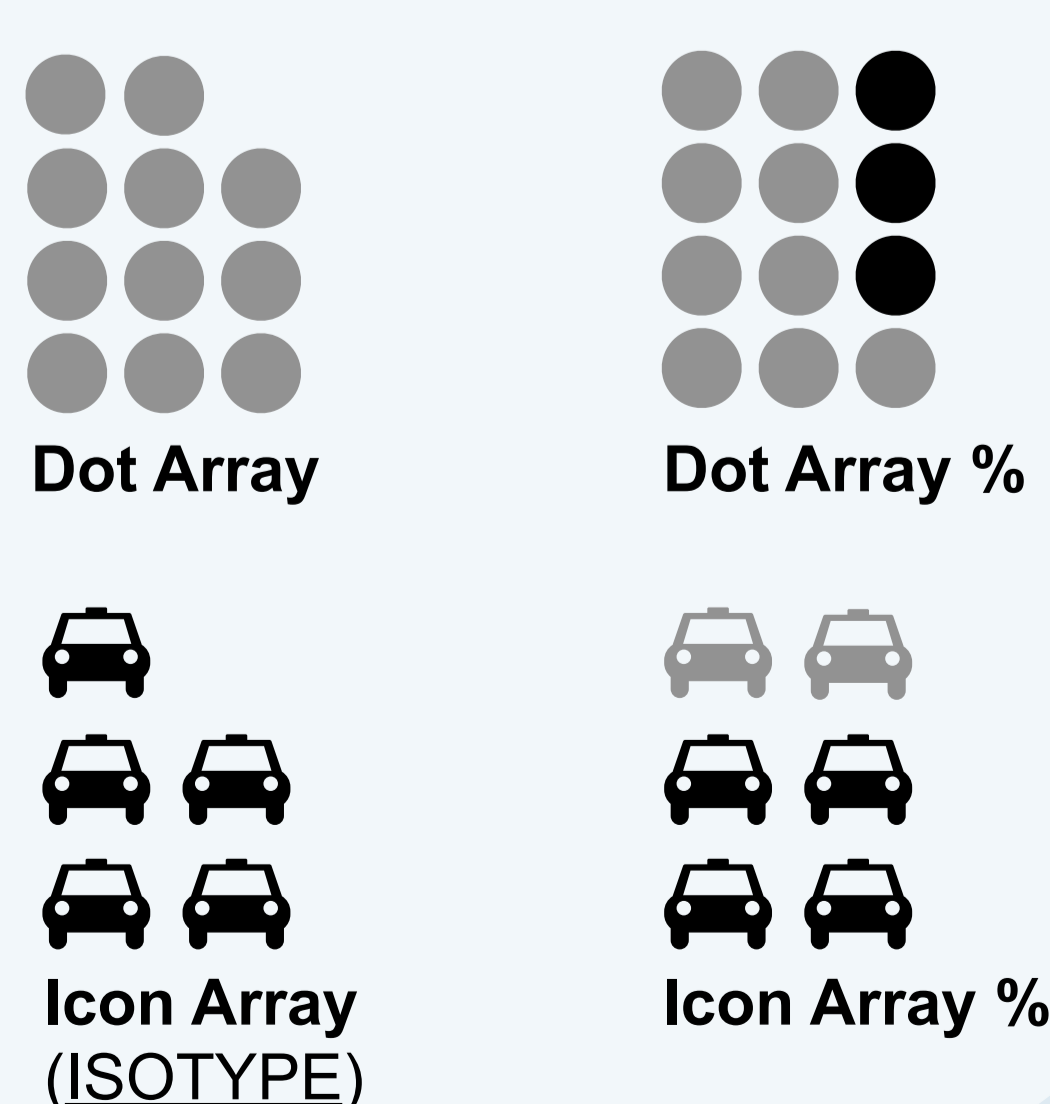
Let's zoom in here. Use different colors. Global at top or left.

Treemap



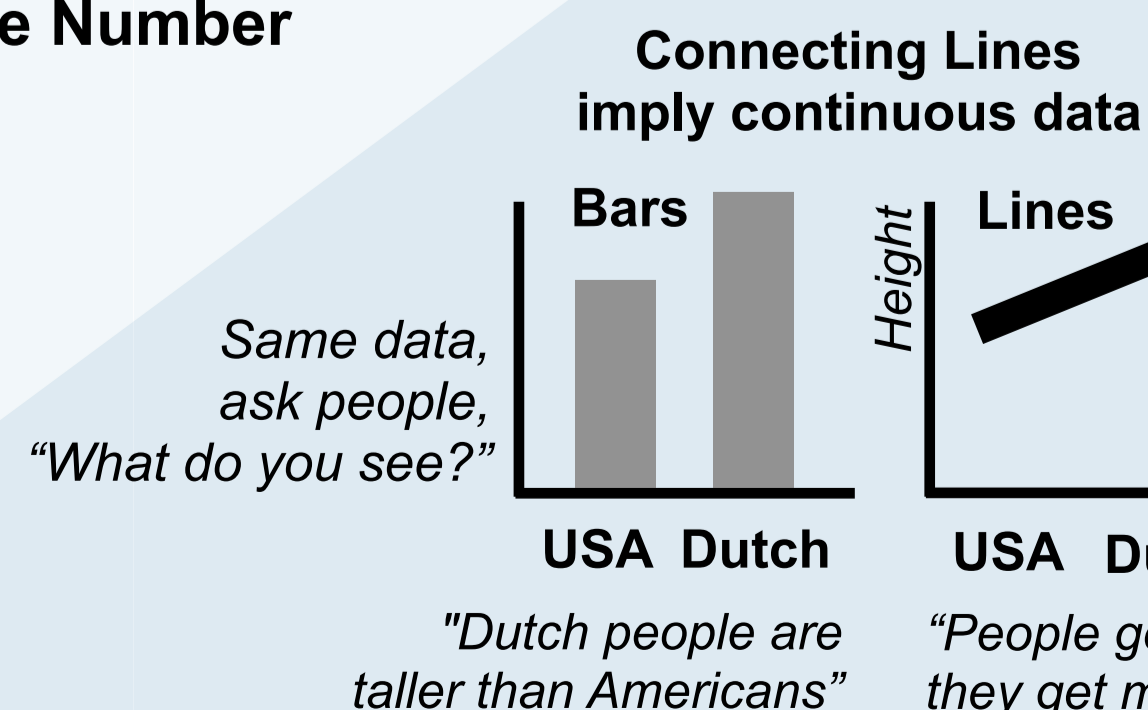
Hierarchy, ~3 levels max of bento boxes going all Inception within other bentos. Size+Color better code different metrics. Typically misused. 95% sure you actually wanted a Bar Table (above)

Look at this number. Just look at it.



43% Huge Number

Connecting Lines imply continuous data



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

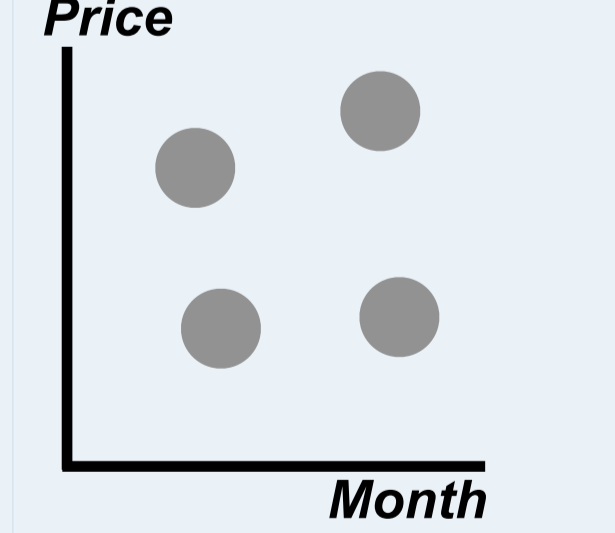
Zacks & Tversky, 1997

"Dutch people are taller than Americans"

"People get taller as they get more Dutch"

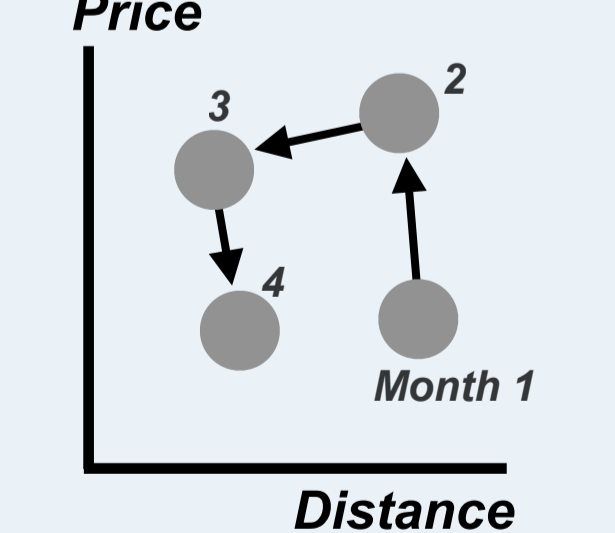
Metrics: relationships to other metrics

Scatter



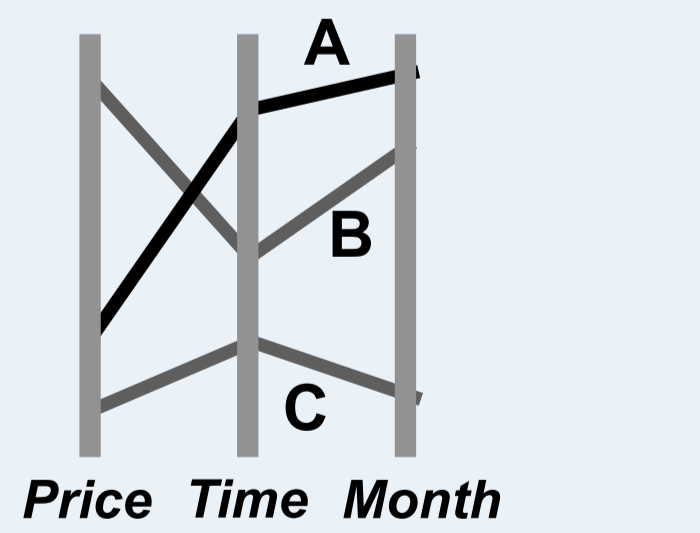
An elegant graph, from a civilized age

Connected Scatter



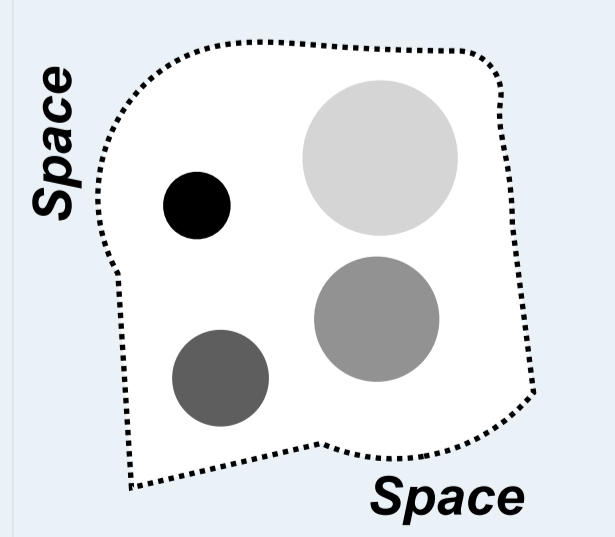
A scatterplot, connected into a journey over time

Parallel Coordinates



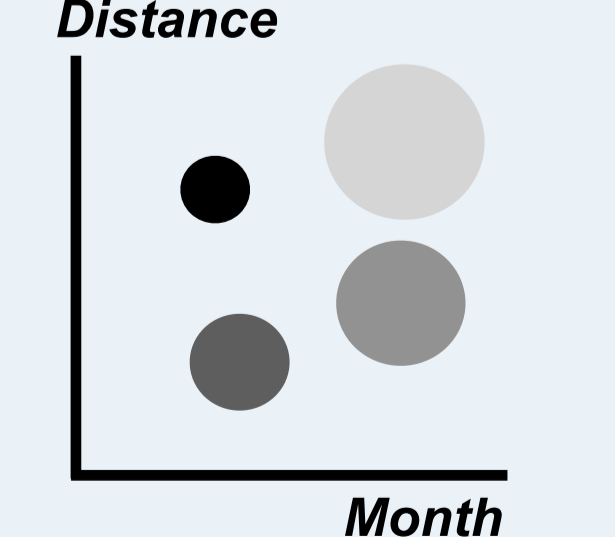
Beyond 2 perpendicular Cartesian axes, Parallel format allows more axes

Map



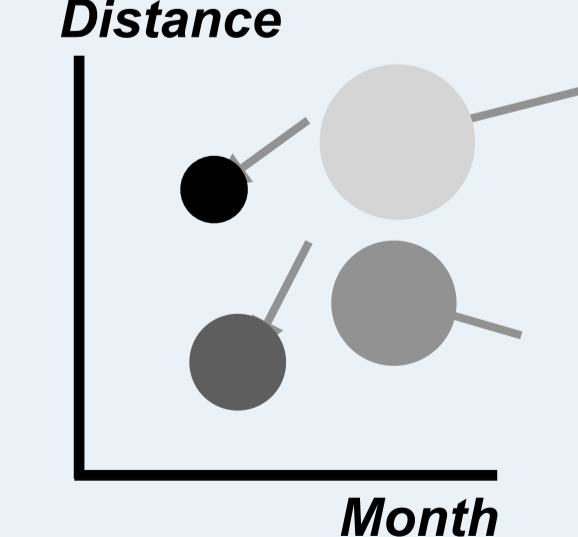
Maps and Roslings share the same DNA Color = Flight Time Size = Price

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