Chart types and core charts

CEU

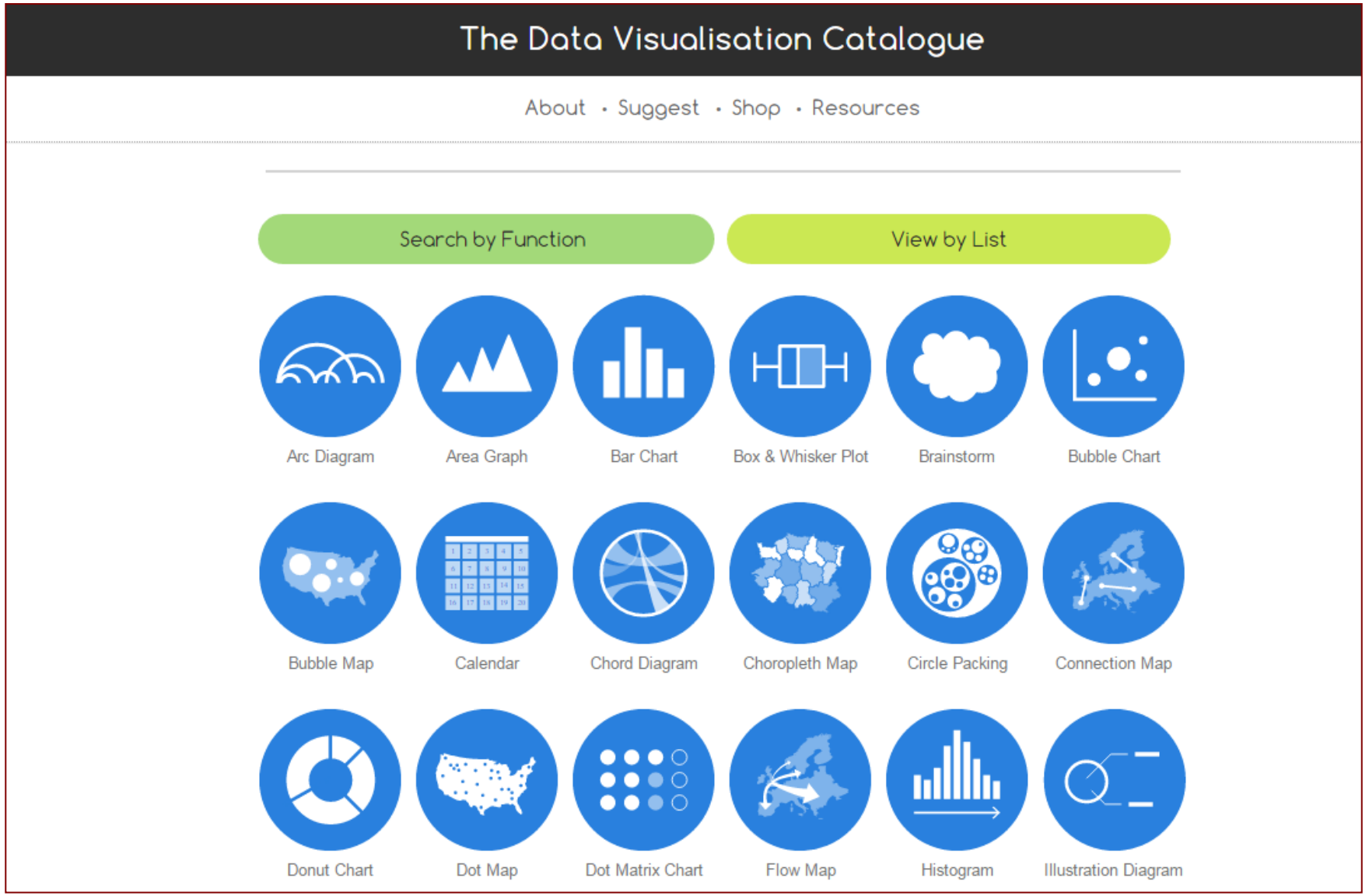
BI Consulting

Chart types

BI Consulting

Chart types

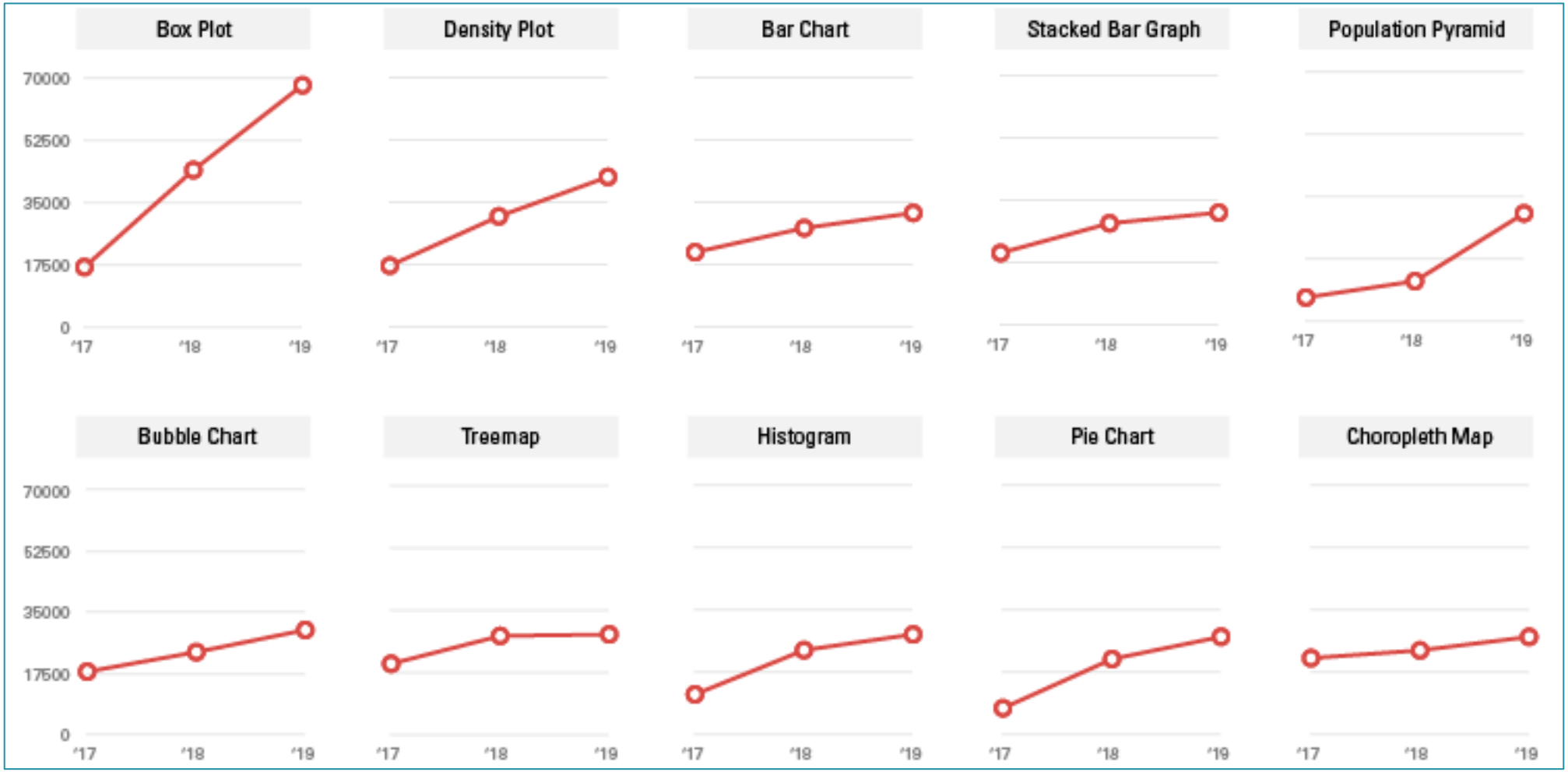
How many chart types do we know?



www.datavizcatalogue.com

Search by Function | View by List

Top 10 Charts in 2019



datavizcatalogue.com/blog/top-10-charts-in-2019/

The 4 chart segments

Core Charts

Common Charts

Rare Charts

Risky charts

Core Charts

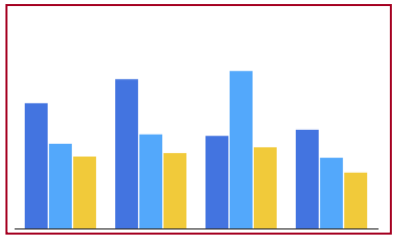
BI Consulting

Core charts

What are the core charts?

Bar charts

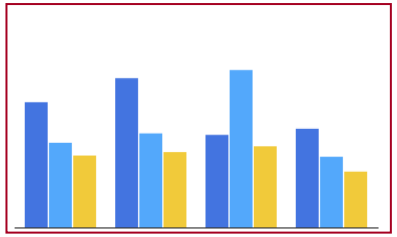
Bar charts



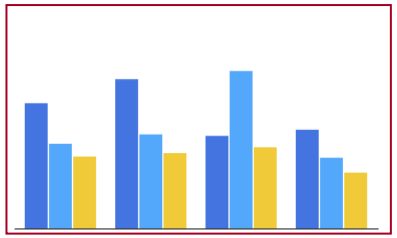
- Bar charts use a categorical (discrete) main variable and one or more numerical variables
  - Show the total Sales by Product category
  - Show the Plan vs Budget by Department
- Each categorical value shown as a separate bar and the lenght of bar encodes the numerical variable
- Bar charts have many use cases and variations

Bar charts

- Bar chart use cases
  - Time series
  - Ranking
  - Comparison
  - Proportion of parts (Whole-to-part)
  - Dispersion

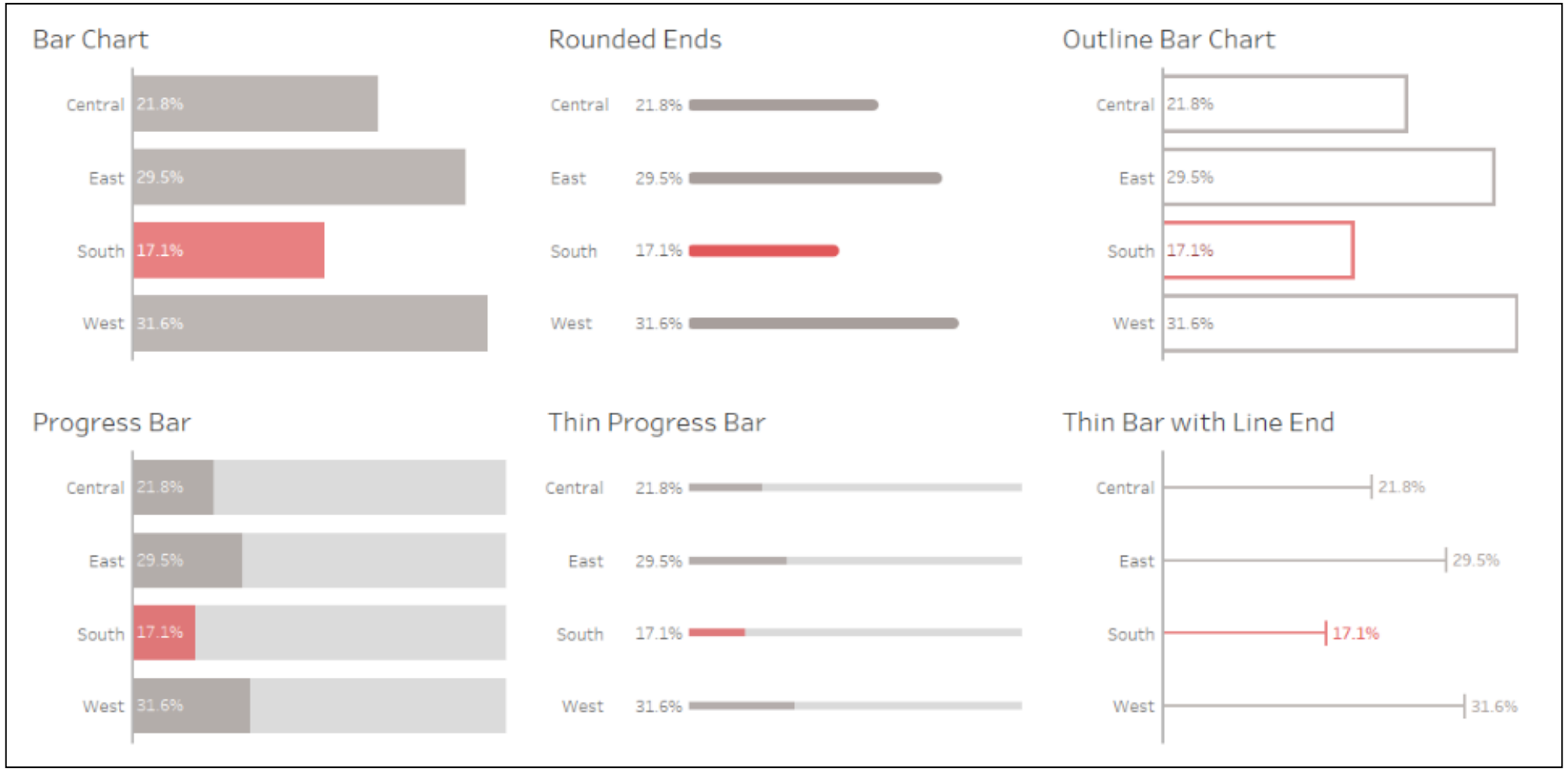


Bar charts



- Bar chart variations
  - Standard bar chart (single category and measure)
  - Grouped bar chart (multiple category/measure side by side)
  - Cumulative (stacked) bar chart
  - 100% cumulative (stacked)

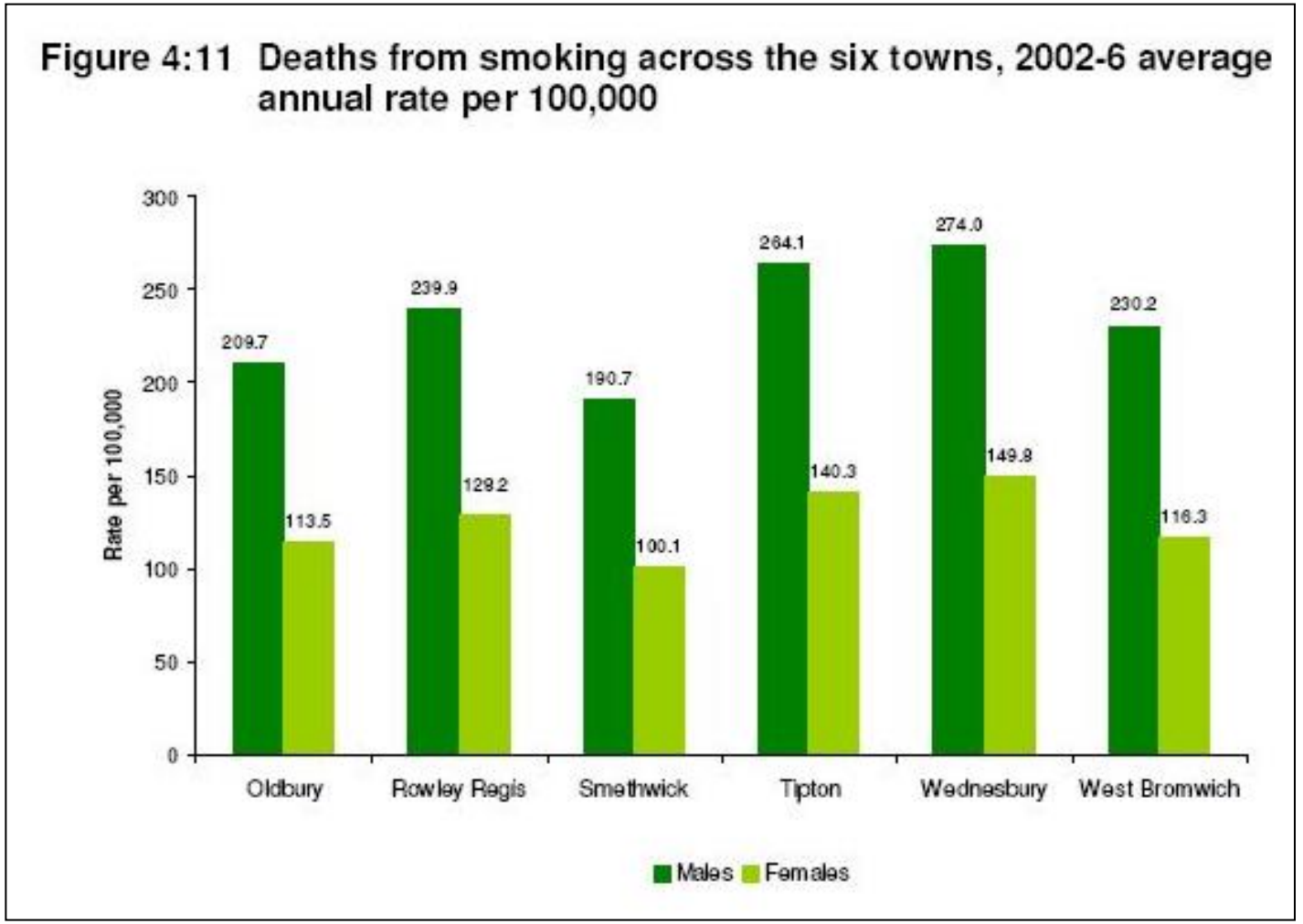
Bar chart visual variations



www.dataplusscience.com/BarHopping.html


KUKRI
HSBC

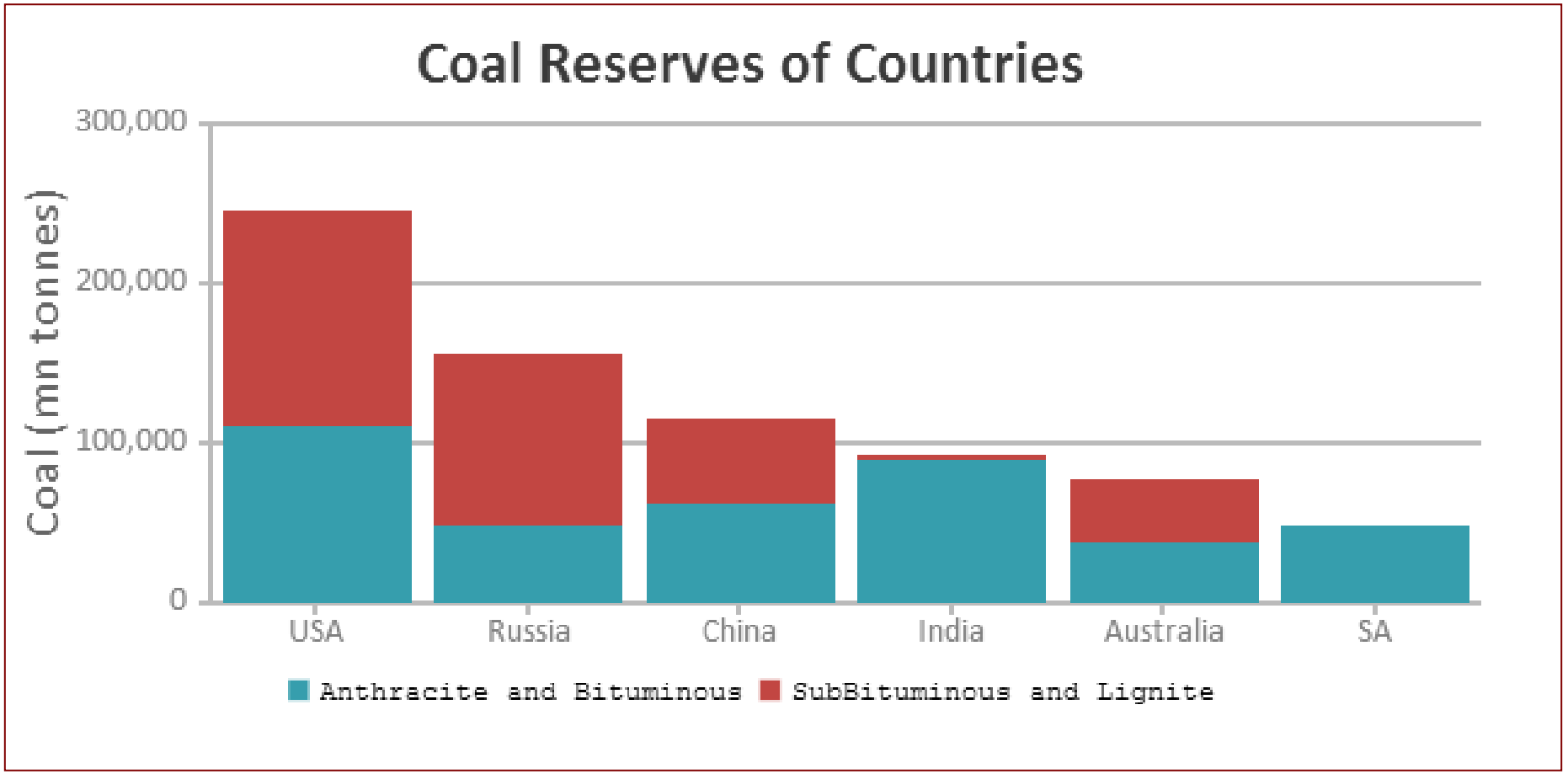
What chart is it?



Grouped bar chart – Towns and Gender
Comparison within groups / categories

Illustration: www.improving-visualisation.org

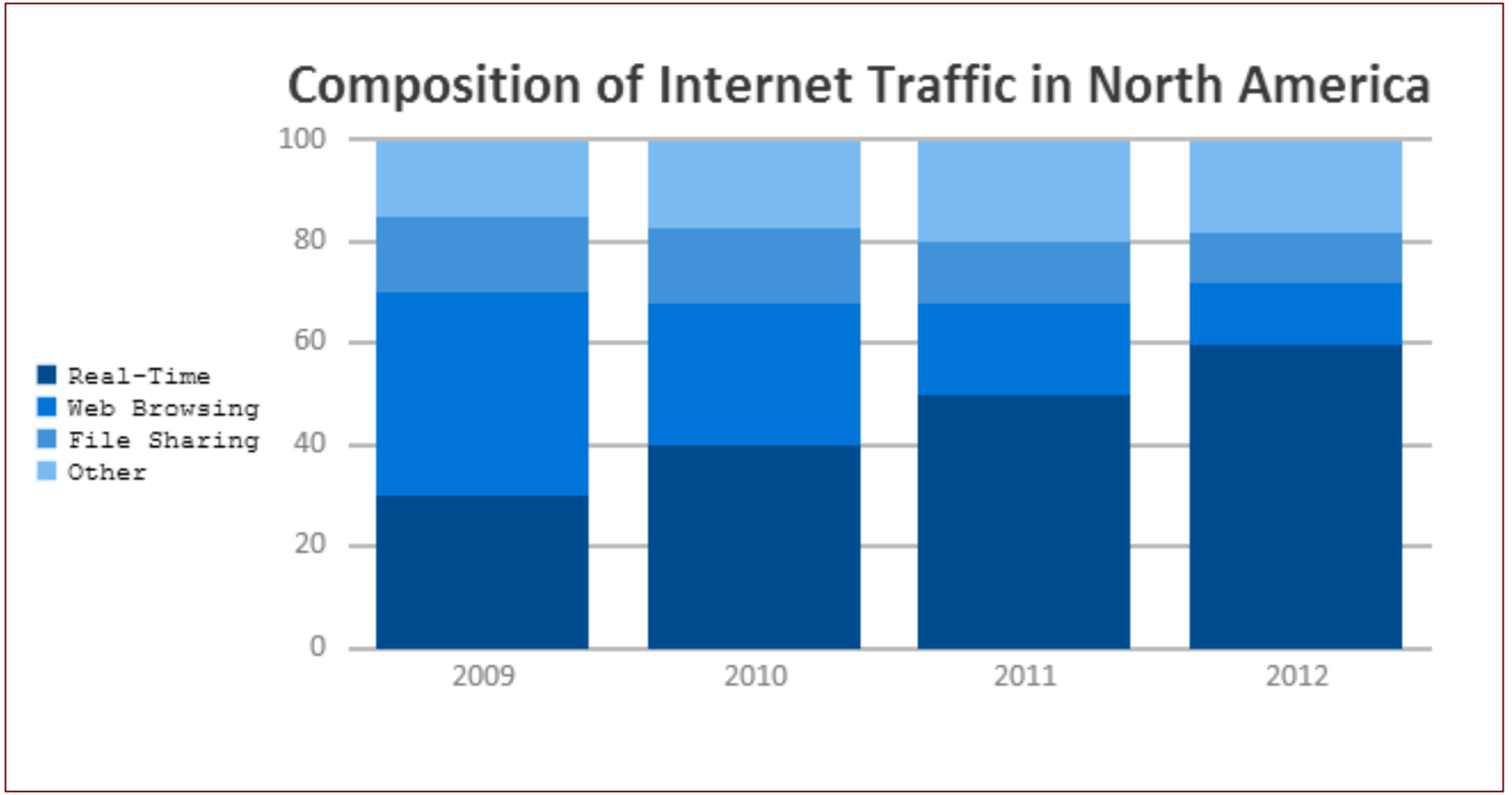
What chart is it?



Stacked bar with ordered categorial axis

Illustration : canvasjs.com

What chart is it?

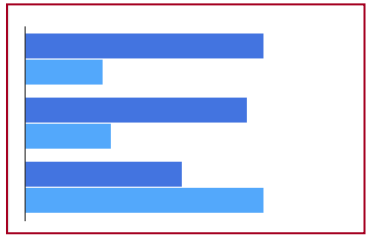


100% stacked bar chart showing whole-to-part ratios

Illustration : canvasjs.com

Horizontal bar chart

Horizontal bar chart



- Use cases are similar to vertical, except:
  - Ranking
  - Proportion of parts
  - Comparison
  - Dispersion
  - ~~Time series~~
- Text labeling is easier
  - Text labels are naturally horizontal
  - Displays often are wider than tall

Horizontal bar chart

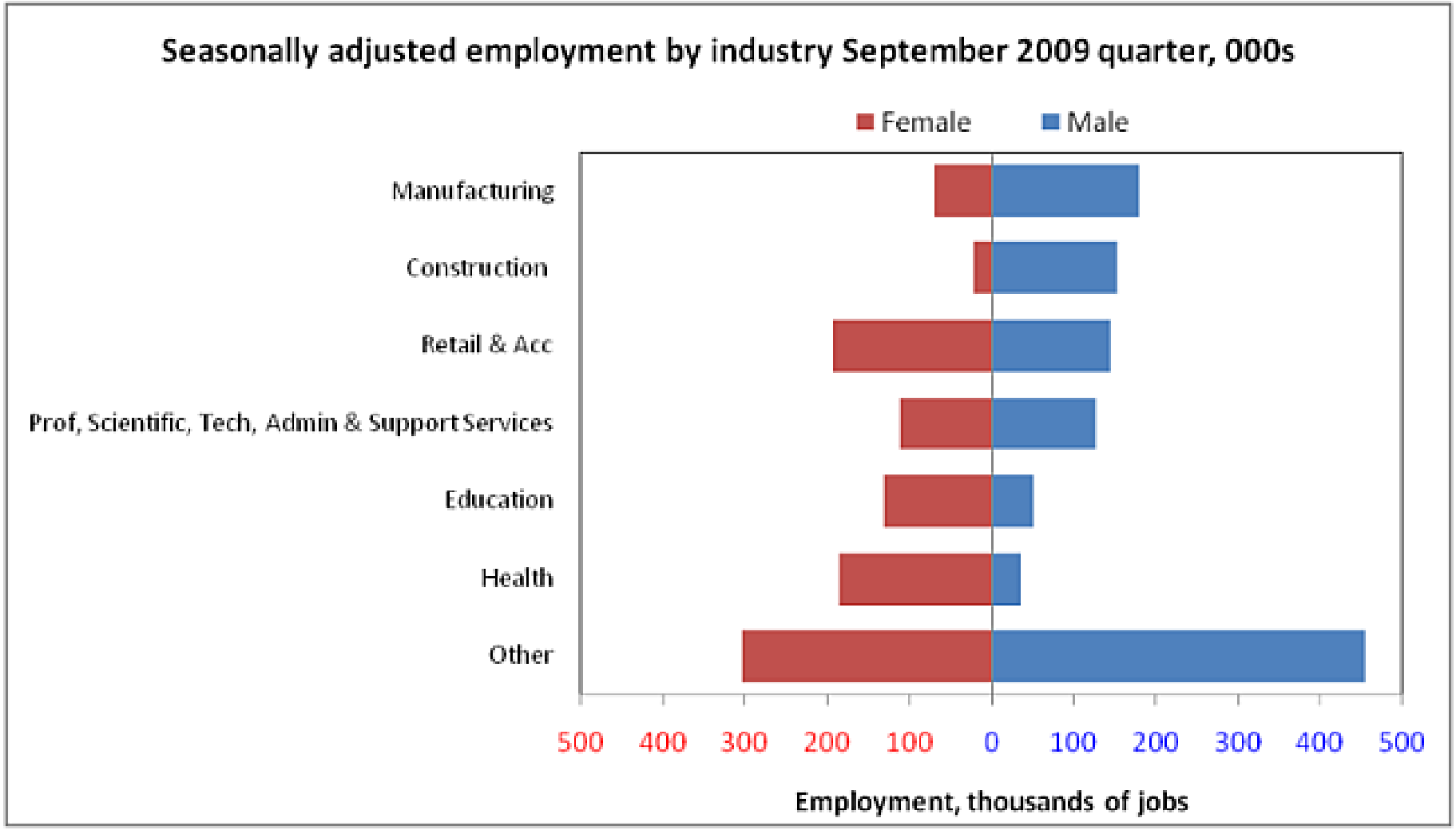
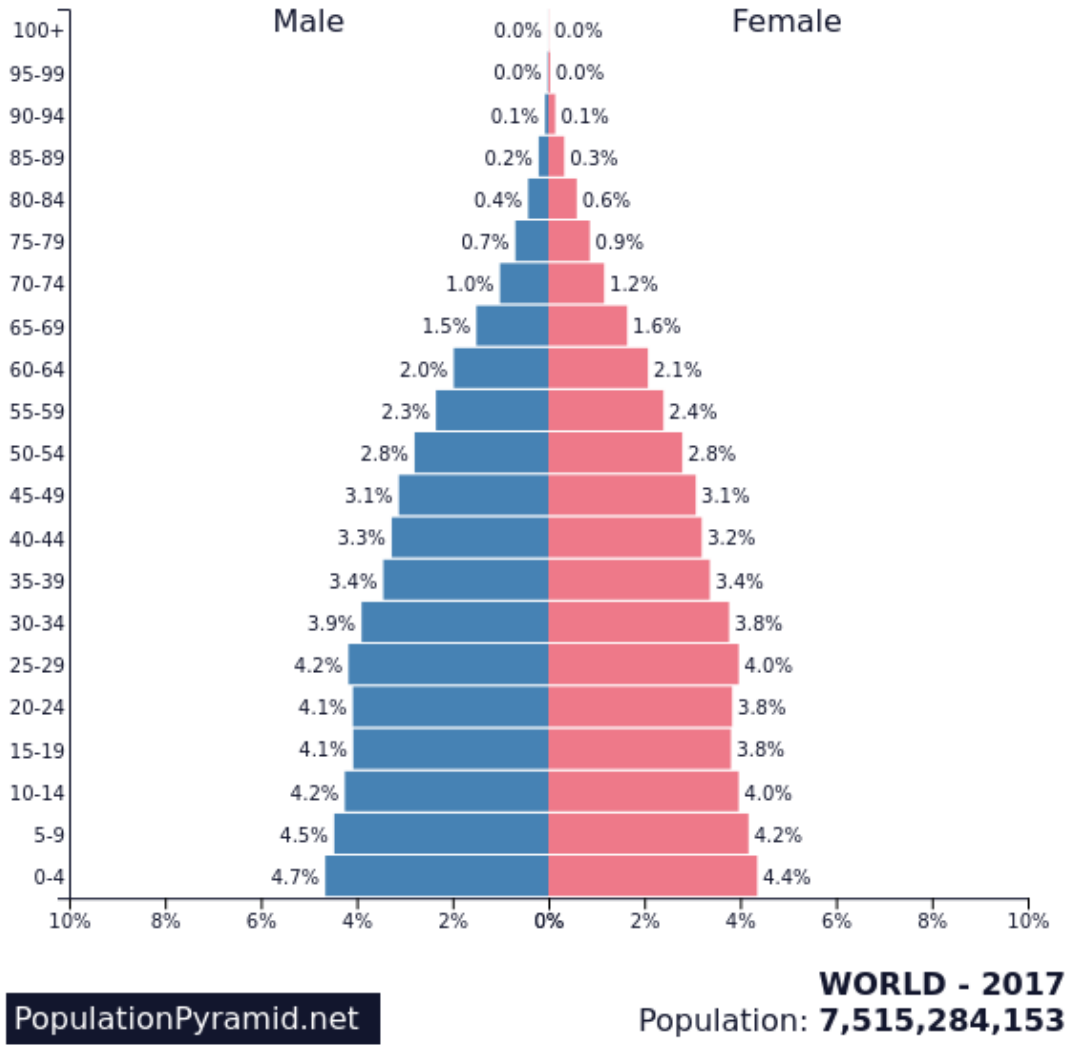


Illustration: Google

Horizontal bar chart



Bar chart best practices


KUKRI
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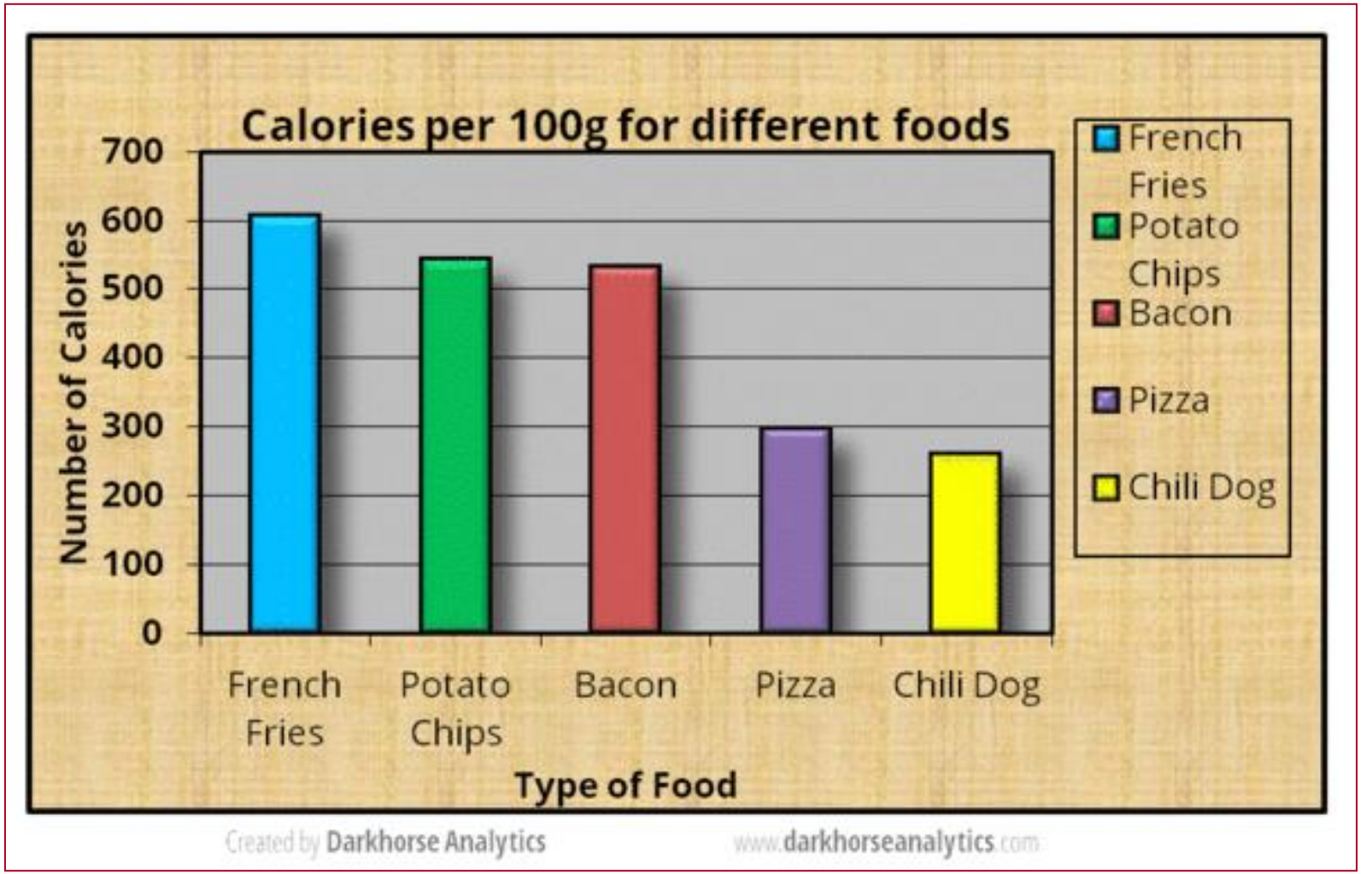
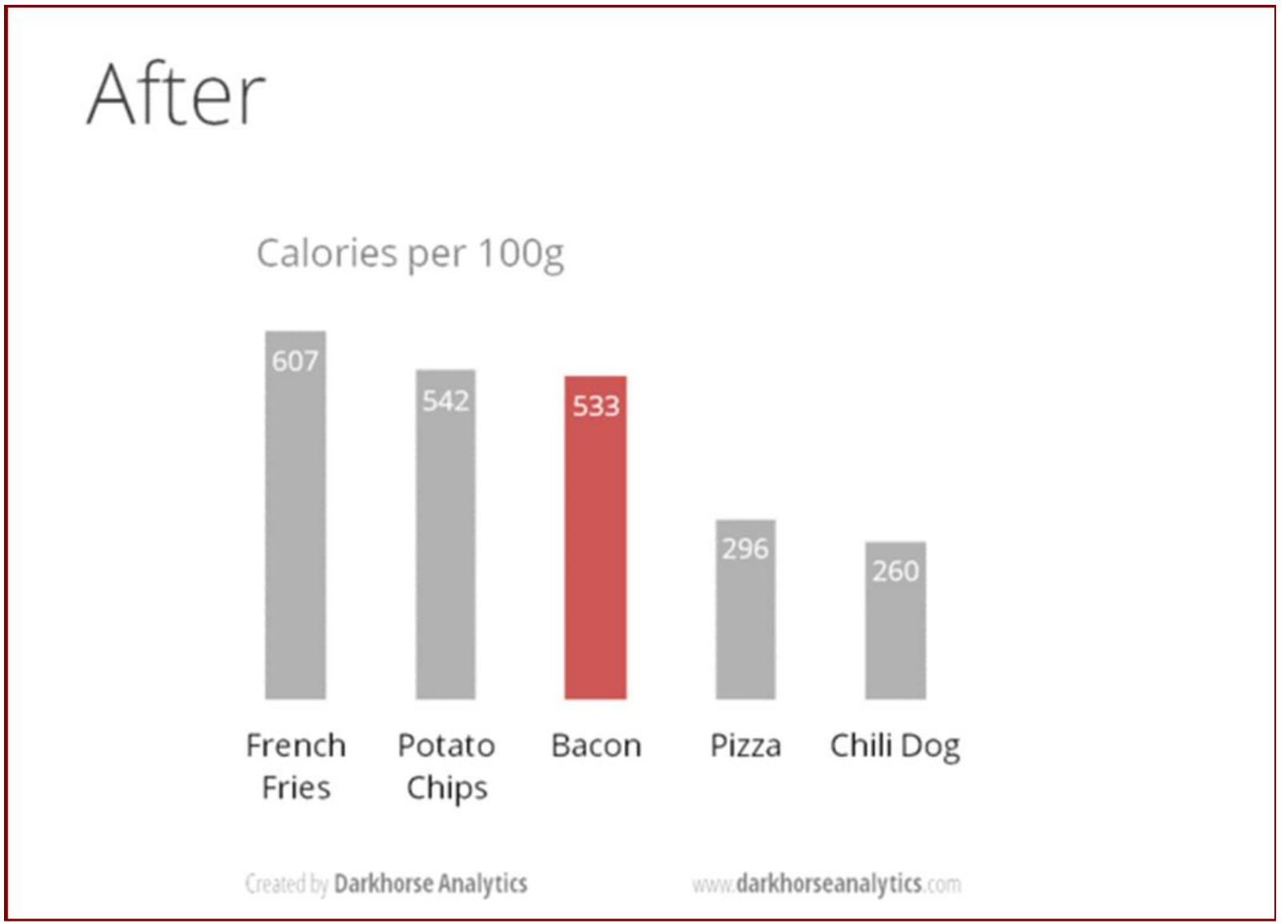

Calories per 100g for different foods
Number of Calories
700
600
500
400
300
200
100
0
French Fries
Potato Chips
Bacon
Pizza
Chili Dog
Type of Food
French Fries
Potato Chips
Bacon
Pizza
Chili Dog
Created by Darkhorse Analytics
www.darkhorseanalytics.com

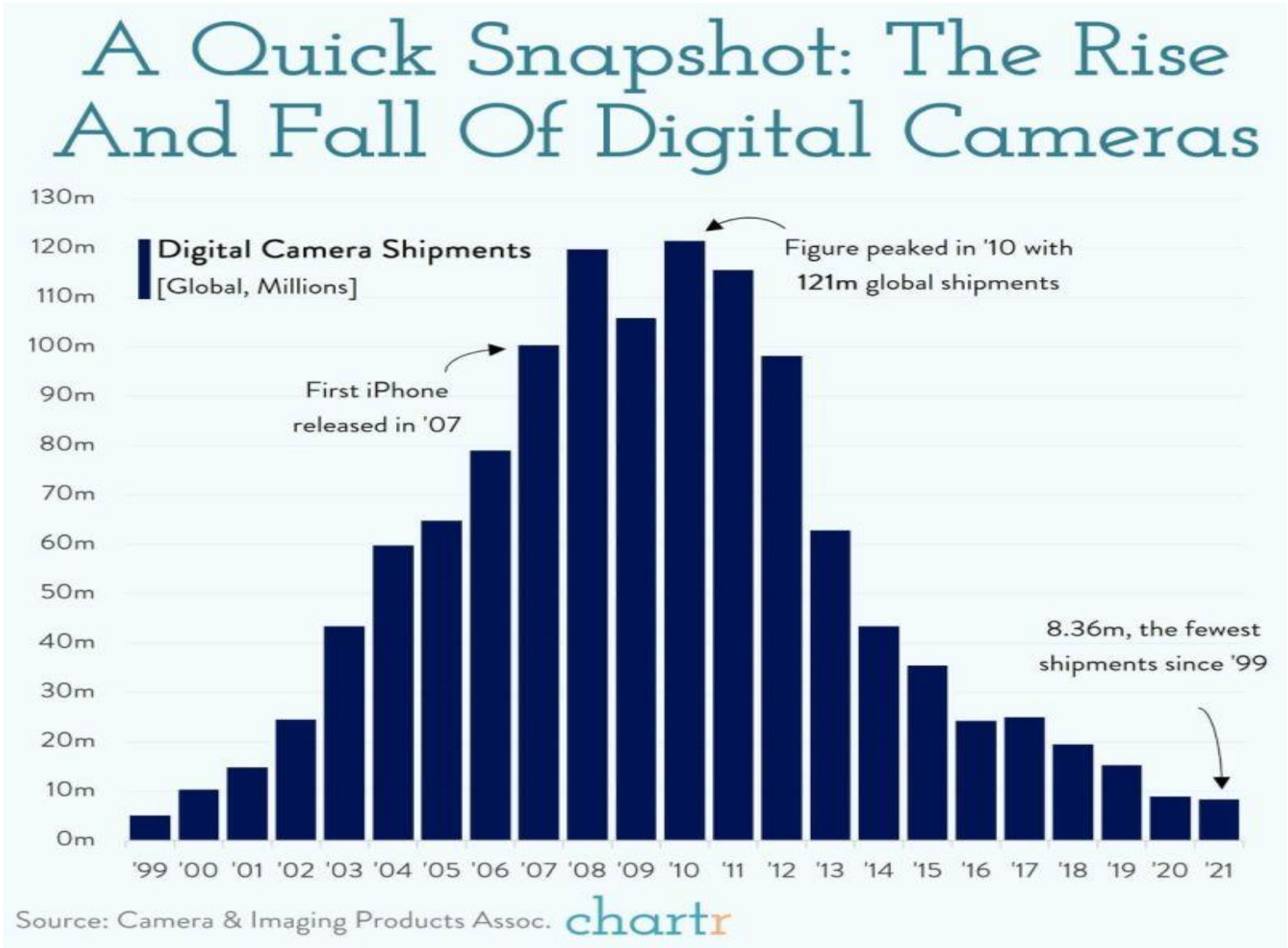
darkhorseanalytics.com/blog/data-looks-better-naked

After



darkhorseanalytics.com/blog/data-looks-better-naked

Provide context

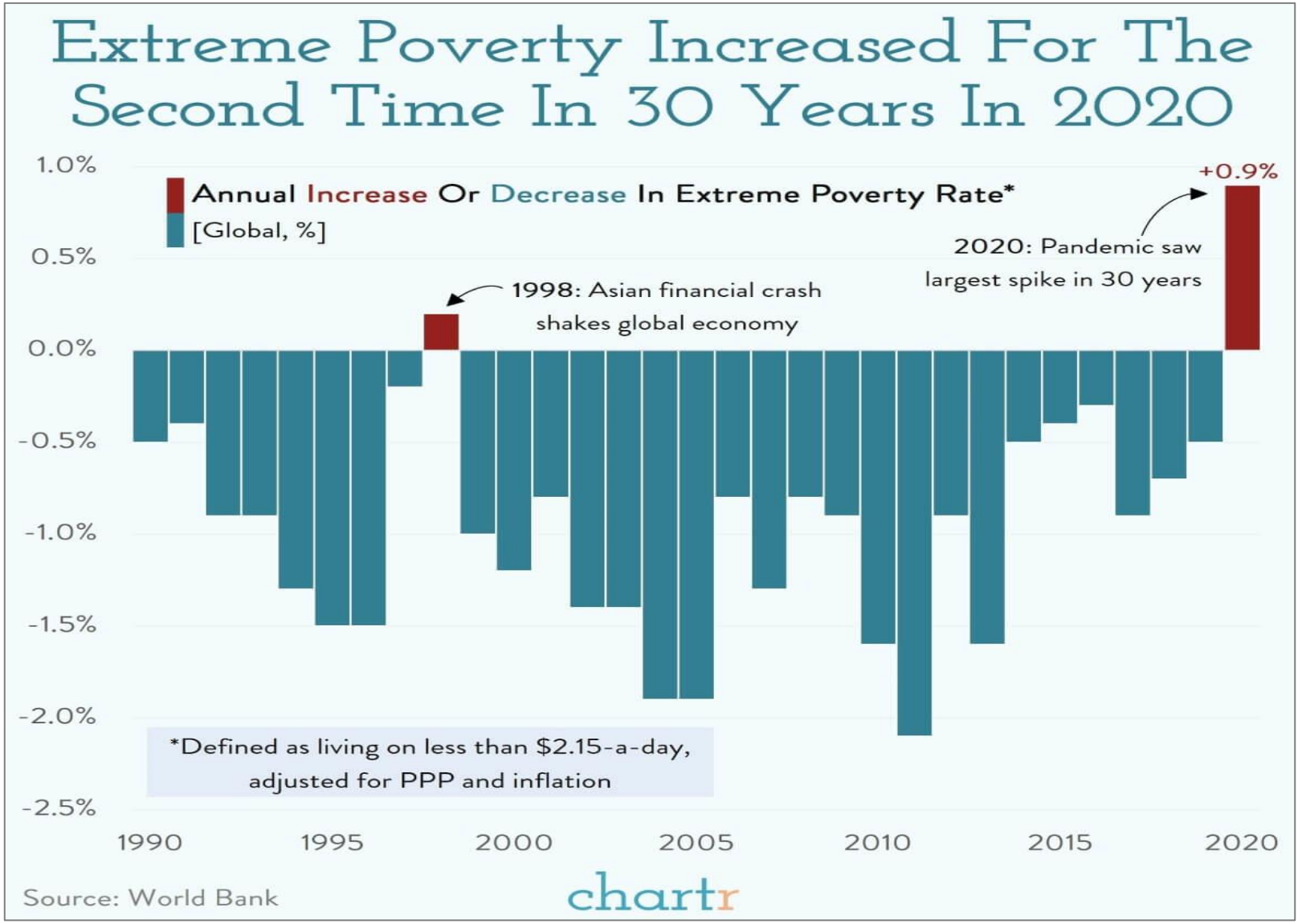


https://www.chartr.co/stories/2022-10-14-2-rise-and-fall-of-digital-cameras

Never truncate the Y axis

https://chartio.com/learn/charts/bar-chart-complete-guide/

Visualize the change



https://www.chartr.co/stories/2022-10-07-2-extreme-poverty-rate

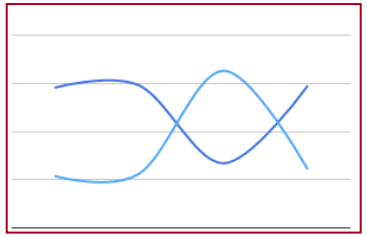
Best practices for bar charts

- Sensible formatting
  - Reduce clutter
  - Direct labelling of data points
- Provide context
  - Title and subtitle
  - Axis and data labels
  - Annotations
- Never truncate the Y axis
  - Visualize the change
- Order the X axis by Y values
  - Except when natural order exists, e.g monthly data series

Line charts

Line chart

- Line chart use cases
  - Time series
  - Trends evolution
  - Interaction of several variables over time
- Variations
  - Classic line chart
  - Step Chart
  - Jump Chart



Classic line chart

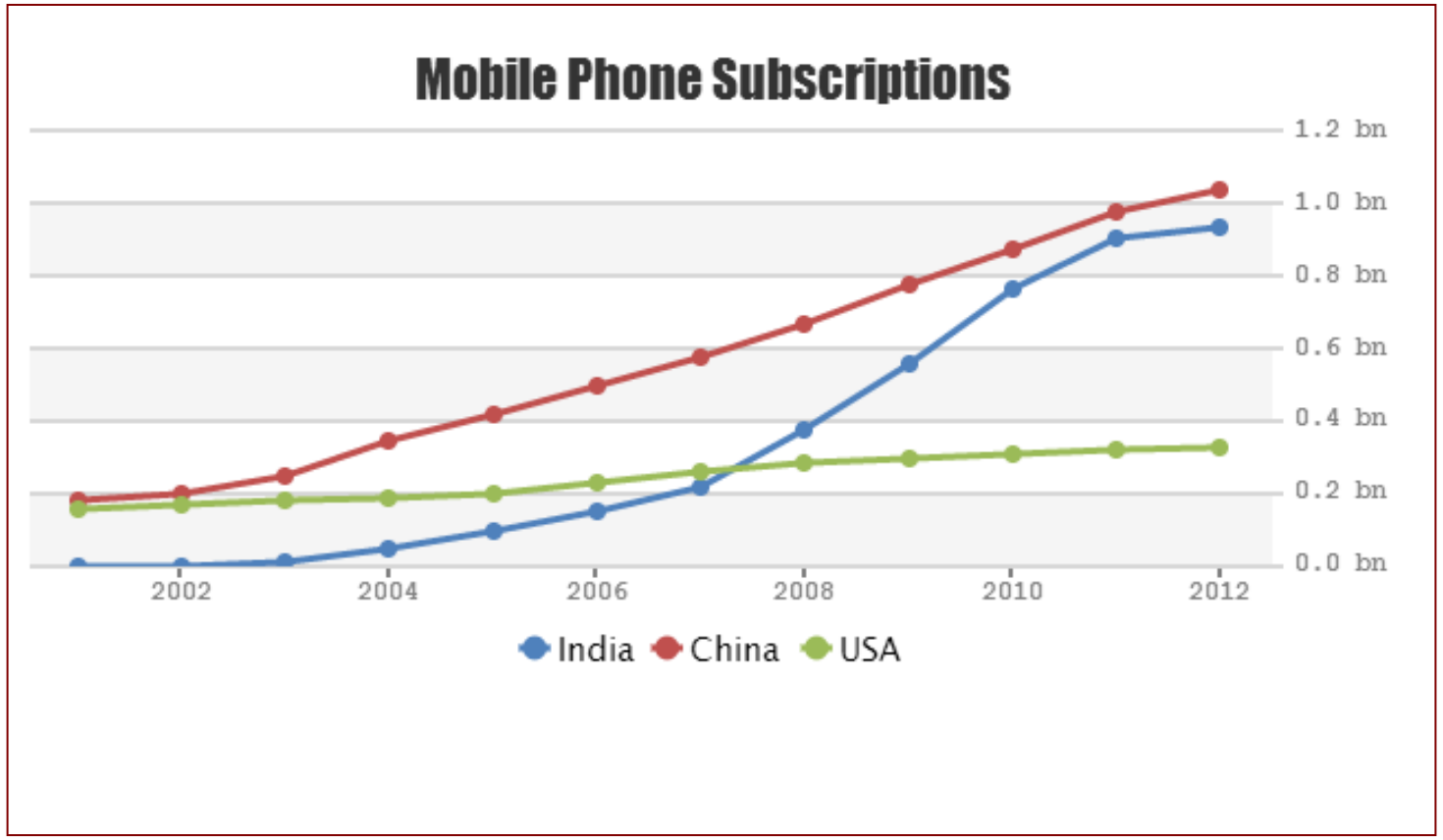
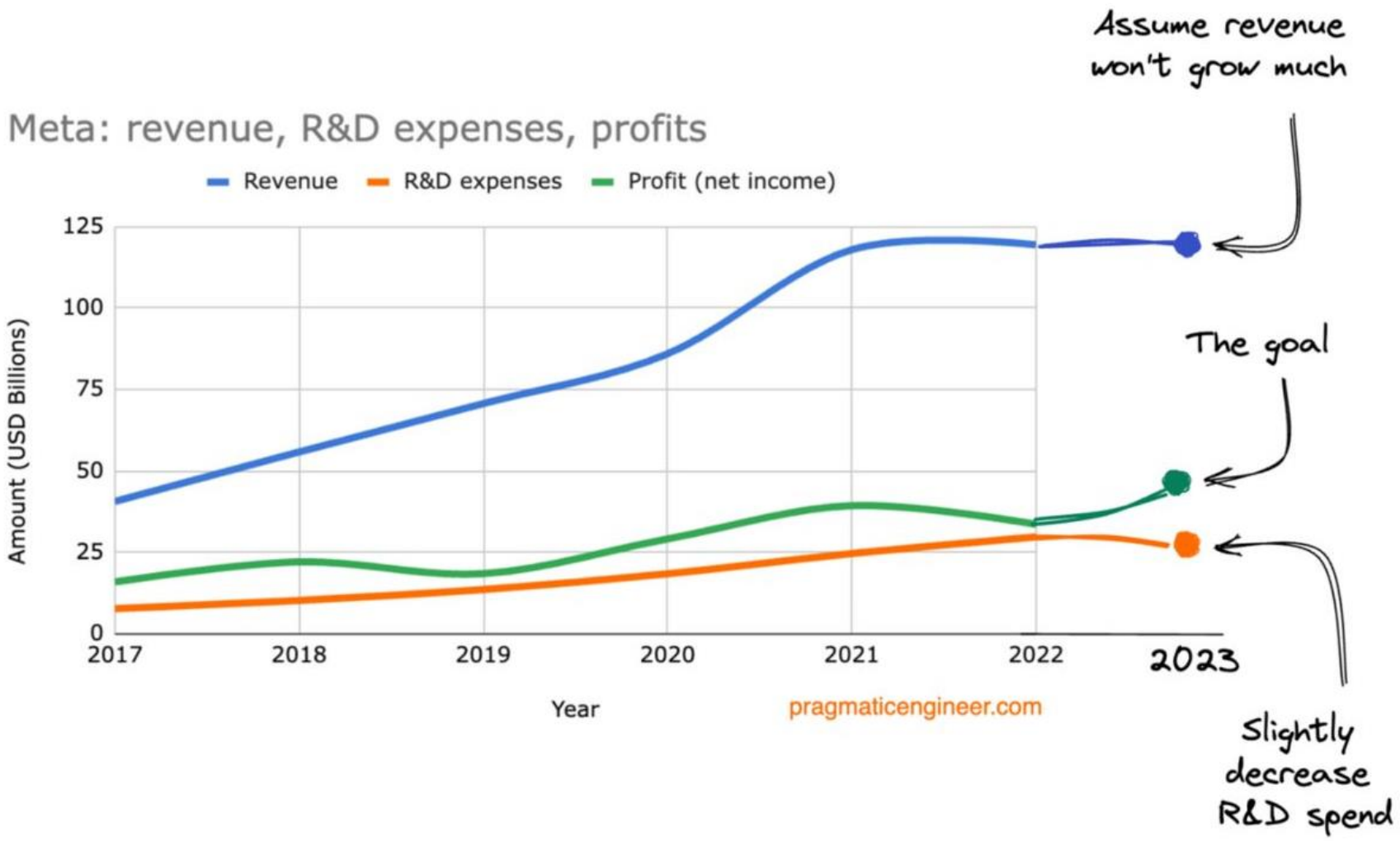


Illustration : Google

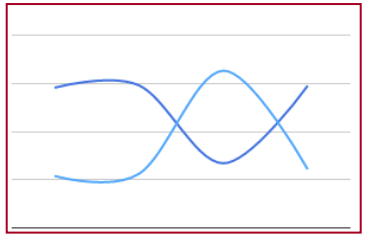
Classic line chart



https://www.linkedin.com/feed/update/urn:li:activity:6985227052022931457/

Line chart variations

Line chart variations



- The standard line chart imply continuous change between the data points
- This is true and valid in many cases
  - Temperature charts or stock exchange price charts do represent continuous changes
- But there are exceptions, when change events are infrequent and irregular
  - Petrol prices are a good example

Step Chart & Jump Chart

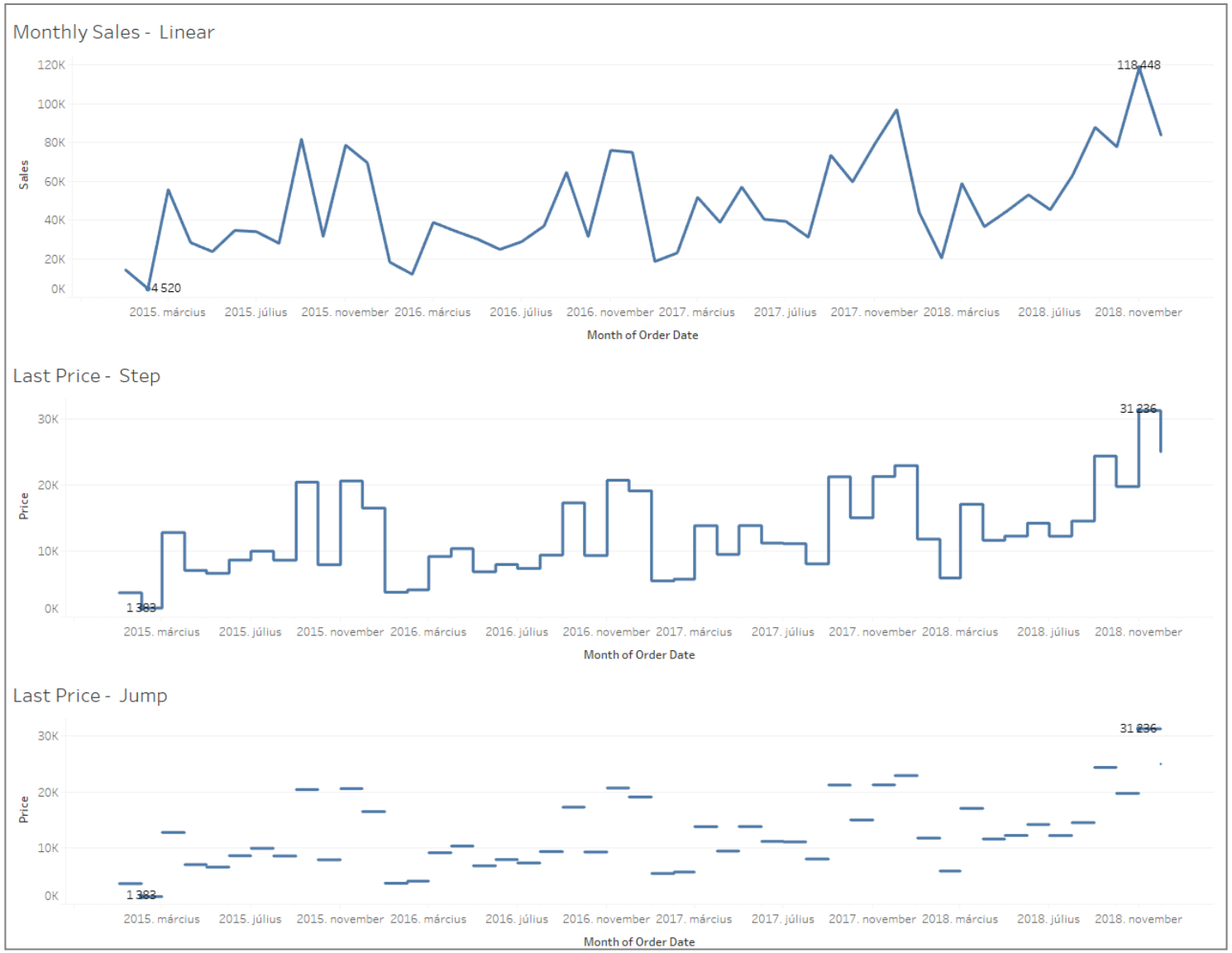


Illustration : Tableau

Step Chart & Jump Chart

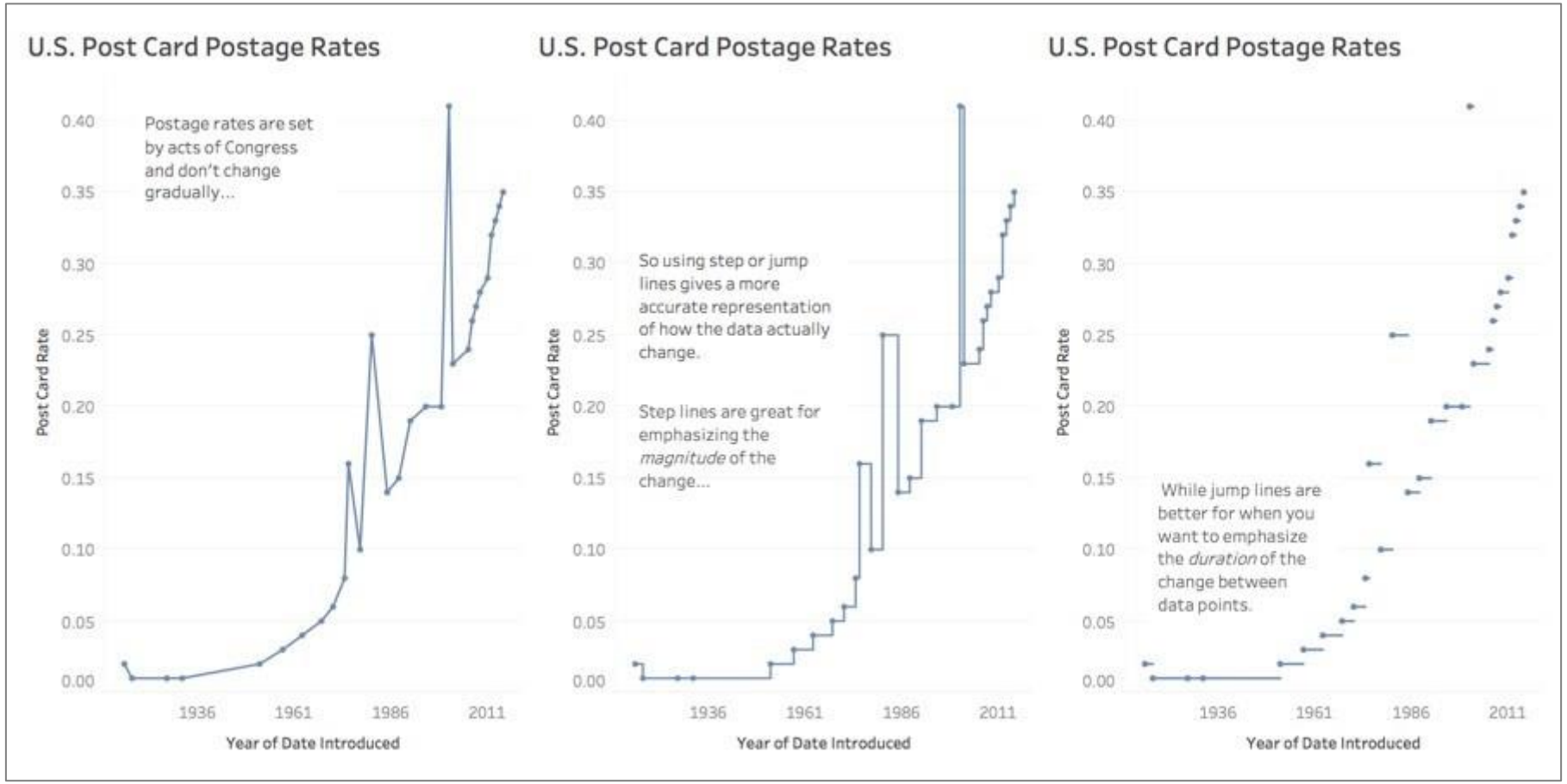


Illustration : Tableau

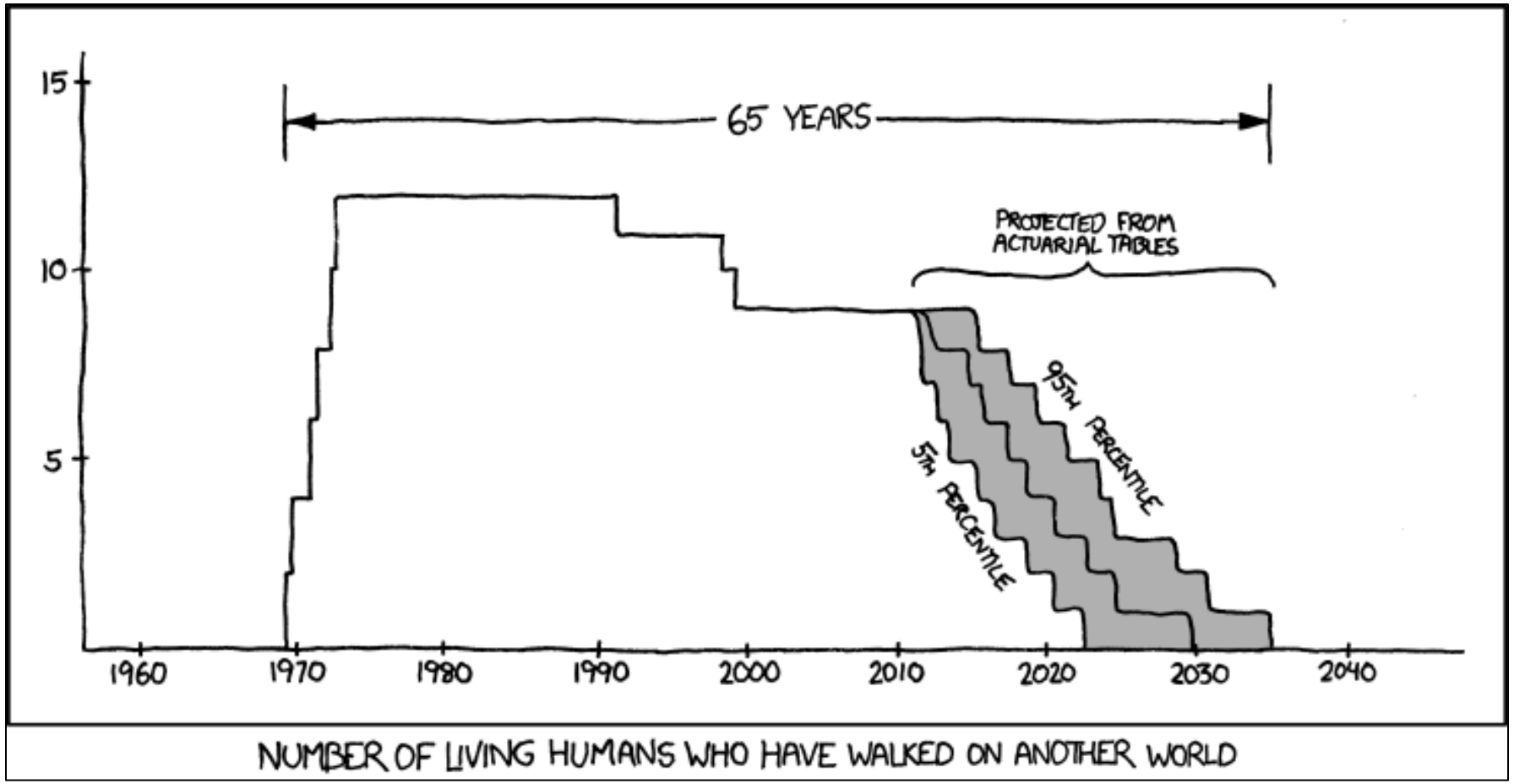
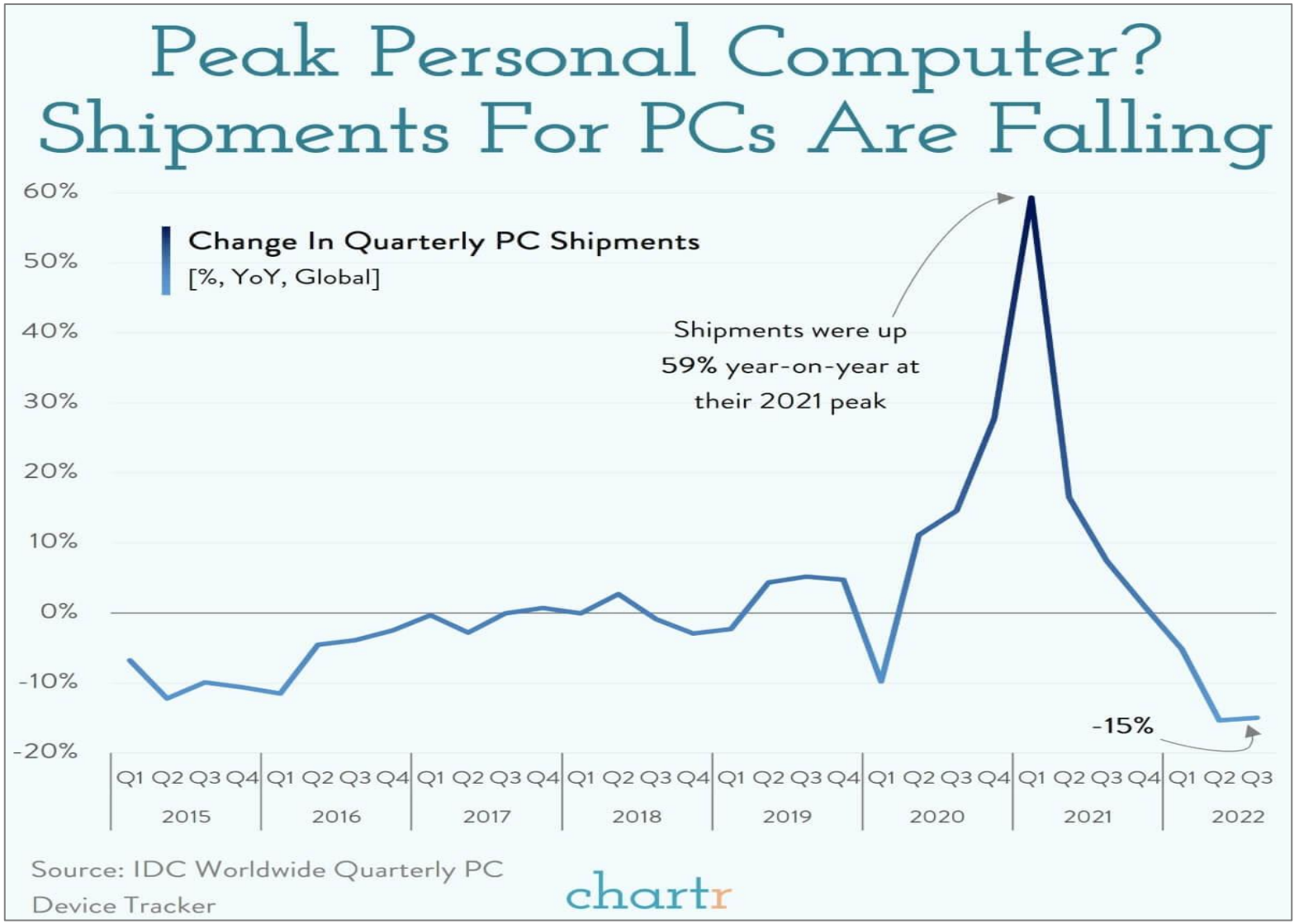


Illustration : xkcd.com/893/

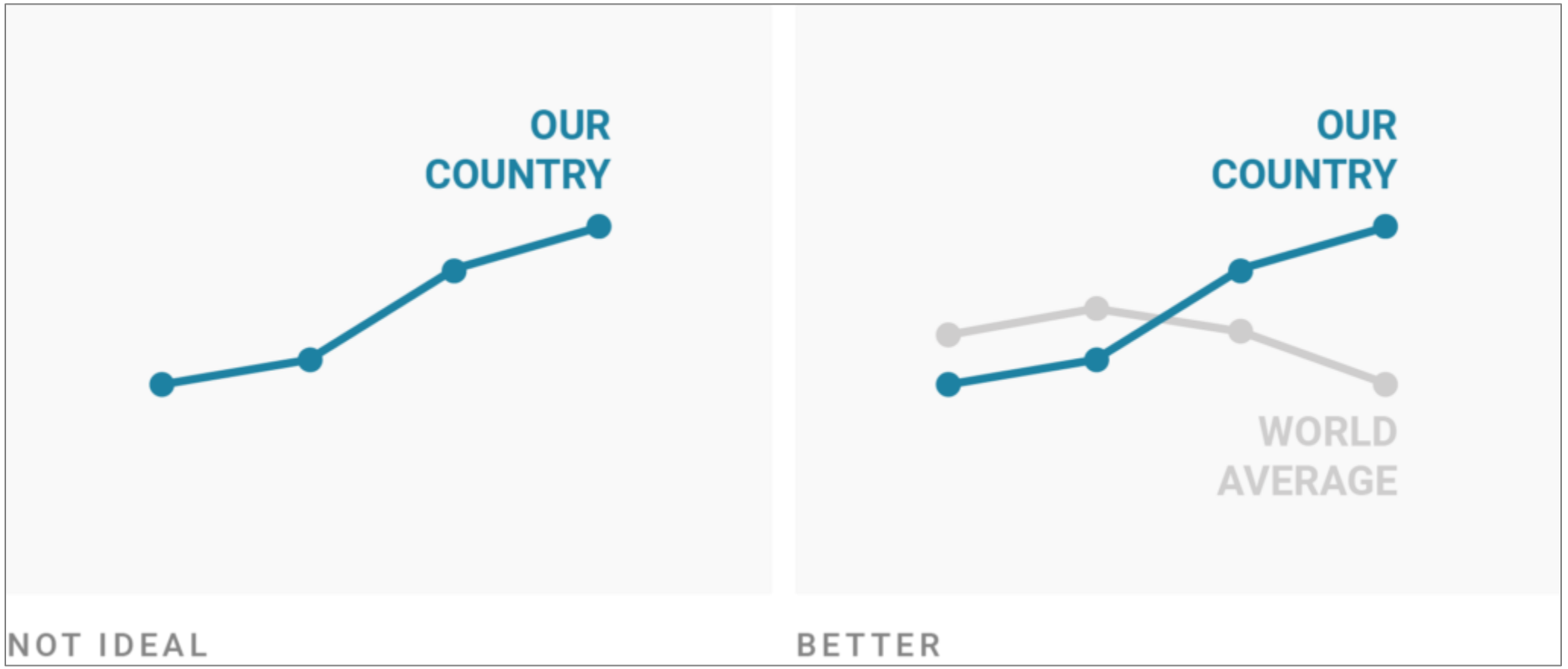
Line chart best practices

Provide context



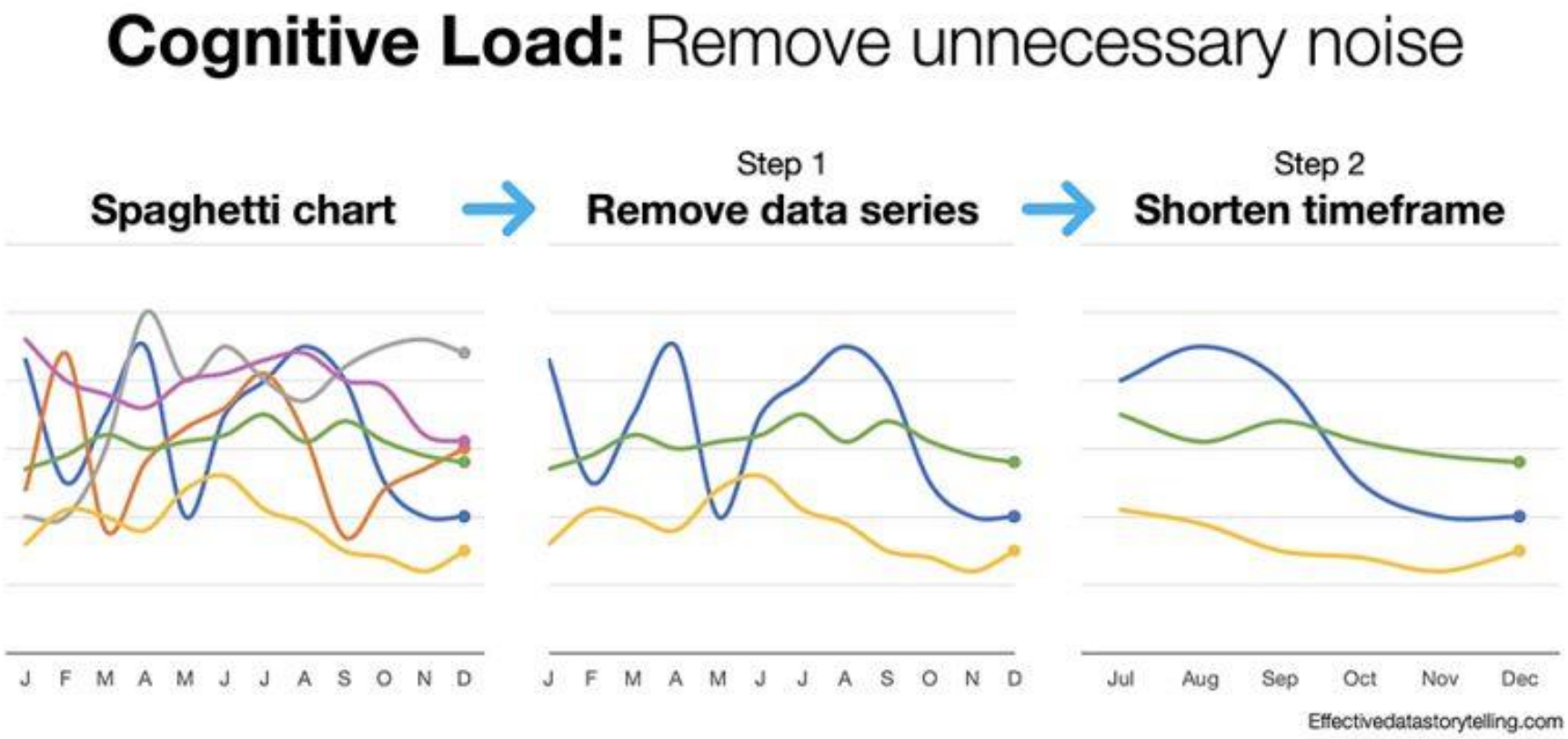
https://www.chartr.co/stories/2022-10-12-2-peak-personal-computer

Add comparison



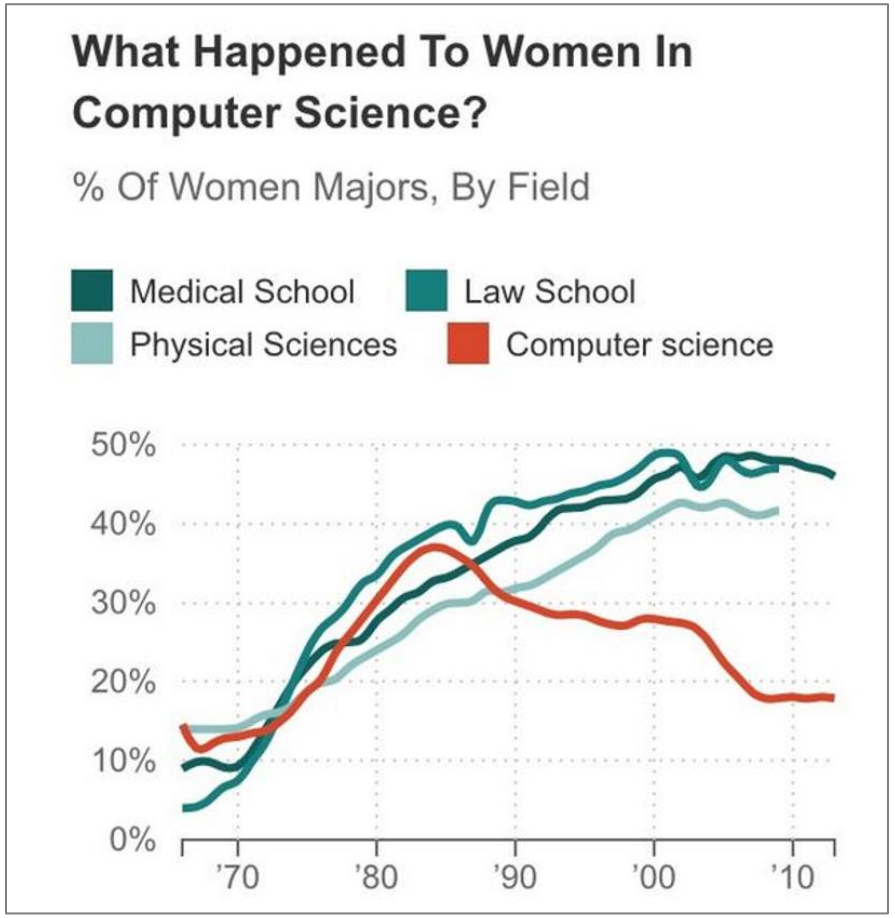
https://blog.datawrapper.de/line-charts/

Focus on the important



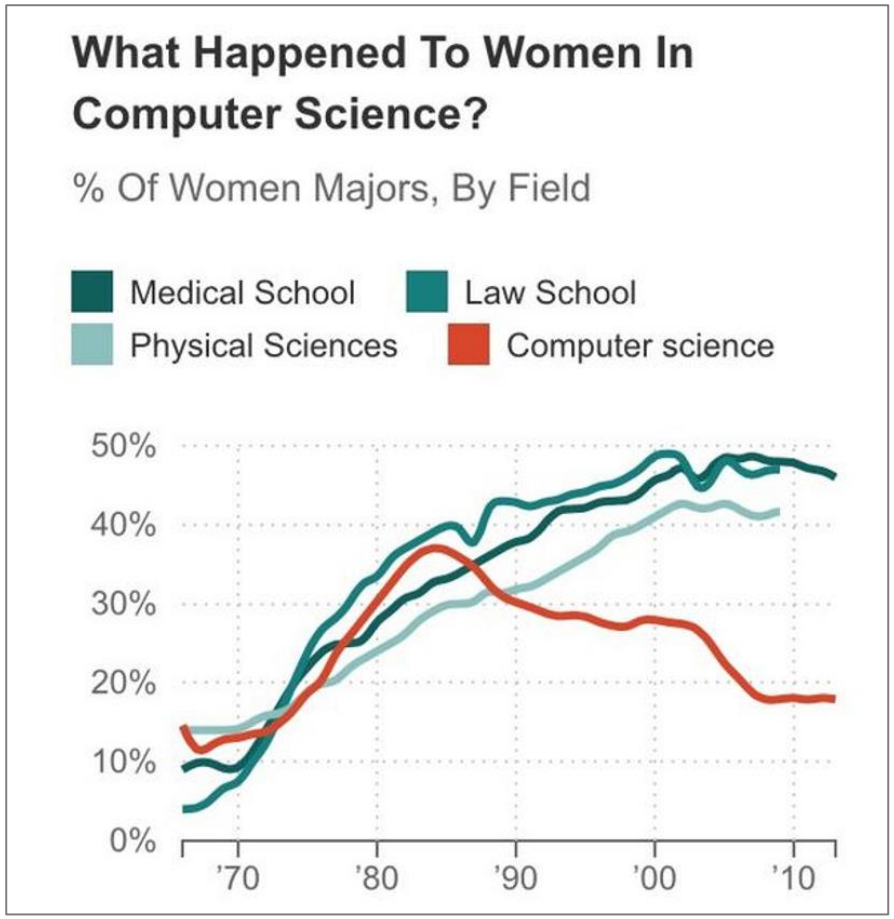
Brent Dykes
https://www.linkedin.com/feed/update/urn:li:activity:6986412883442114560/

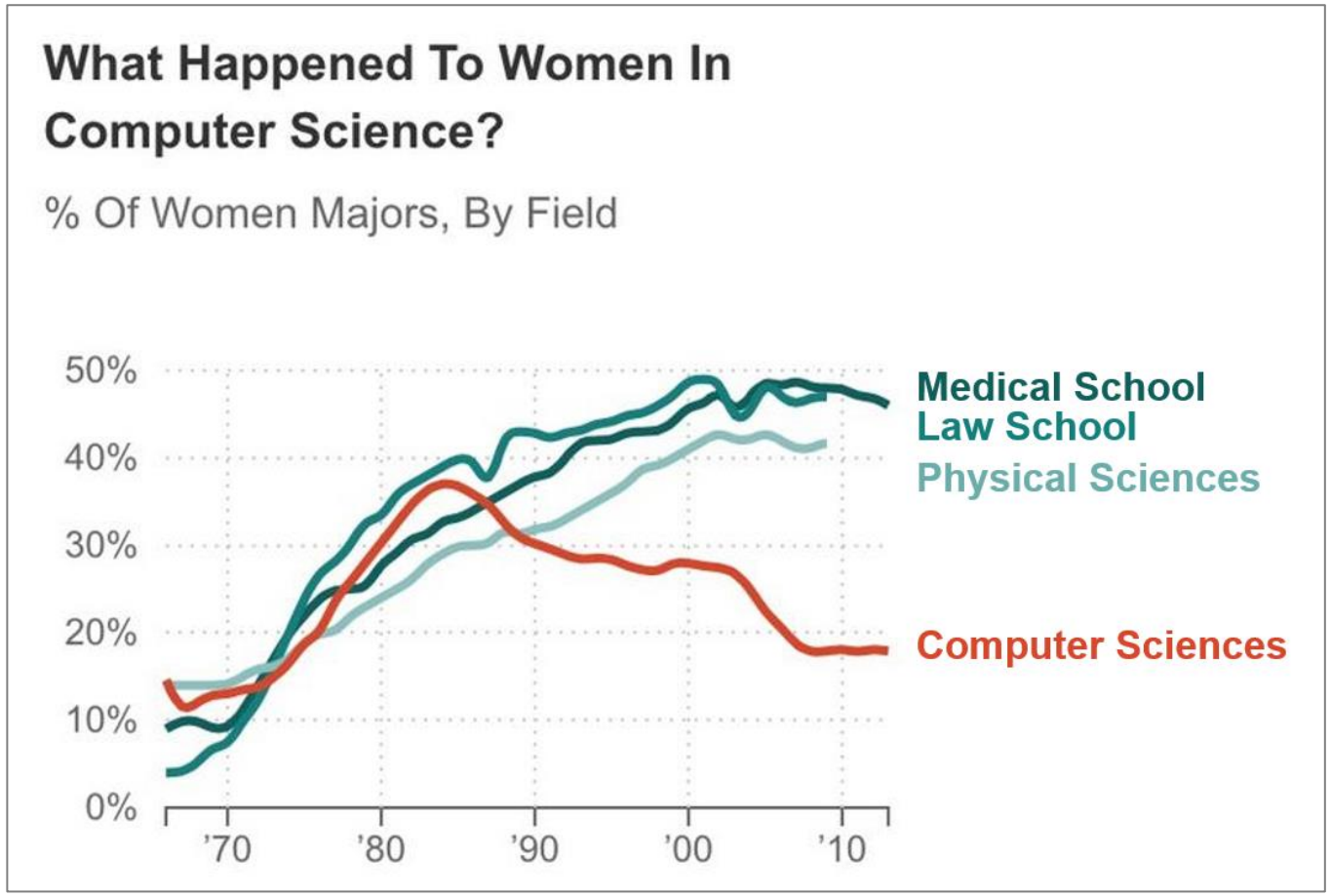
Direct Labeling



https://depictdatastudio.com/directly-labeling-line-graphs/

Direct Labeling

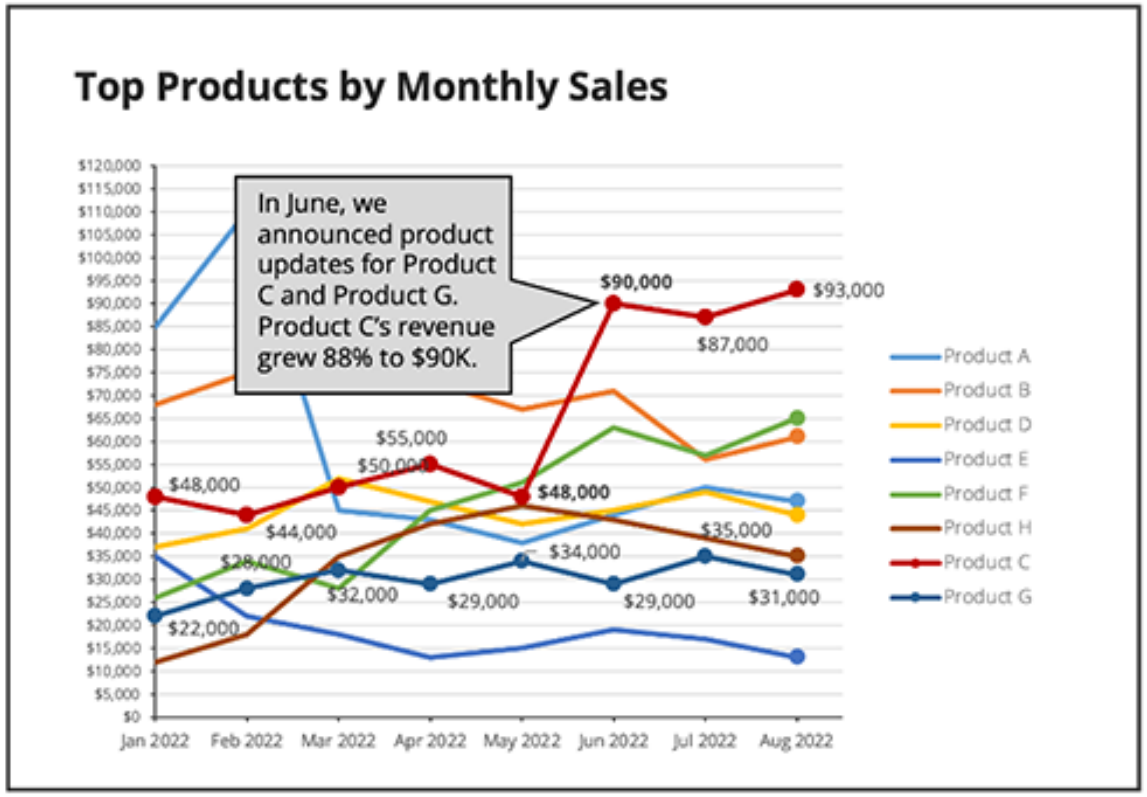




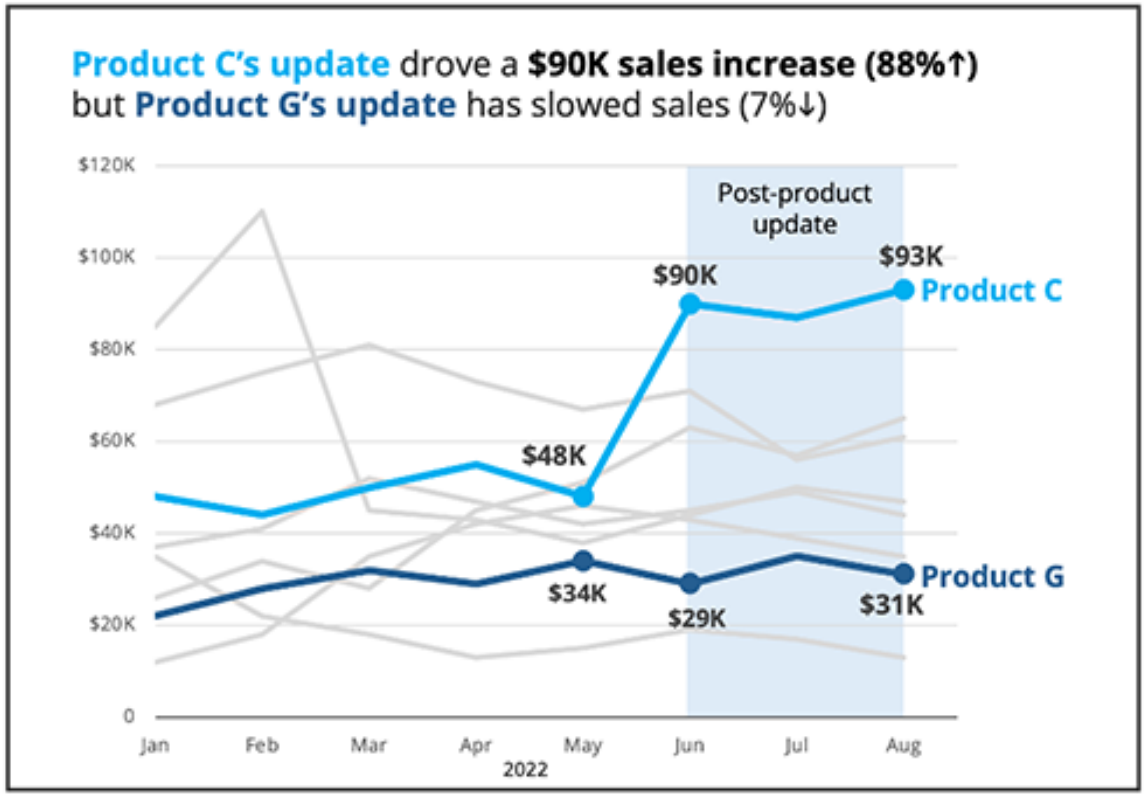
https://depictdatastudio.com/directly-labeling-line-graphs/

Declutter

With Clutter



Without Clutter



Effectivedatastorytelling.com

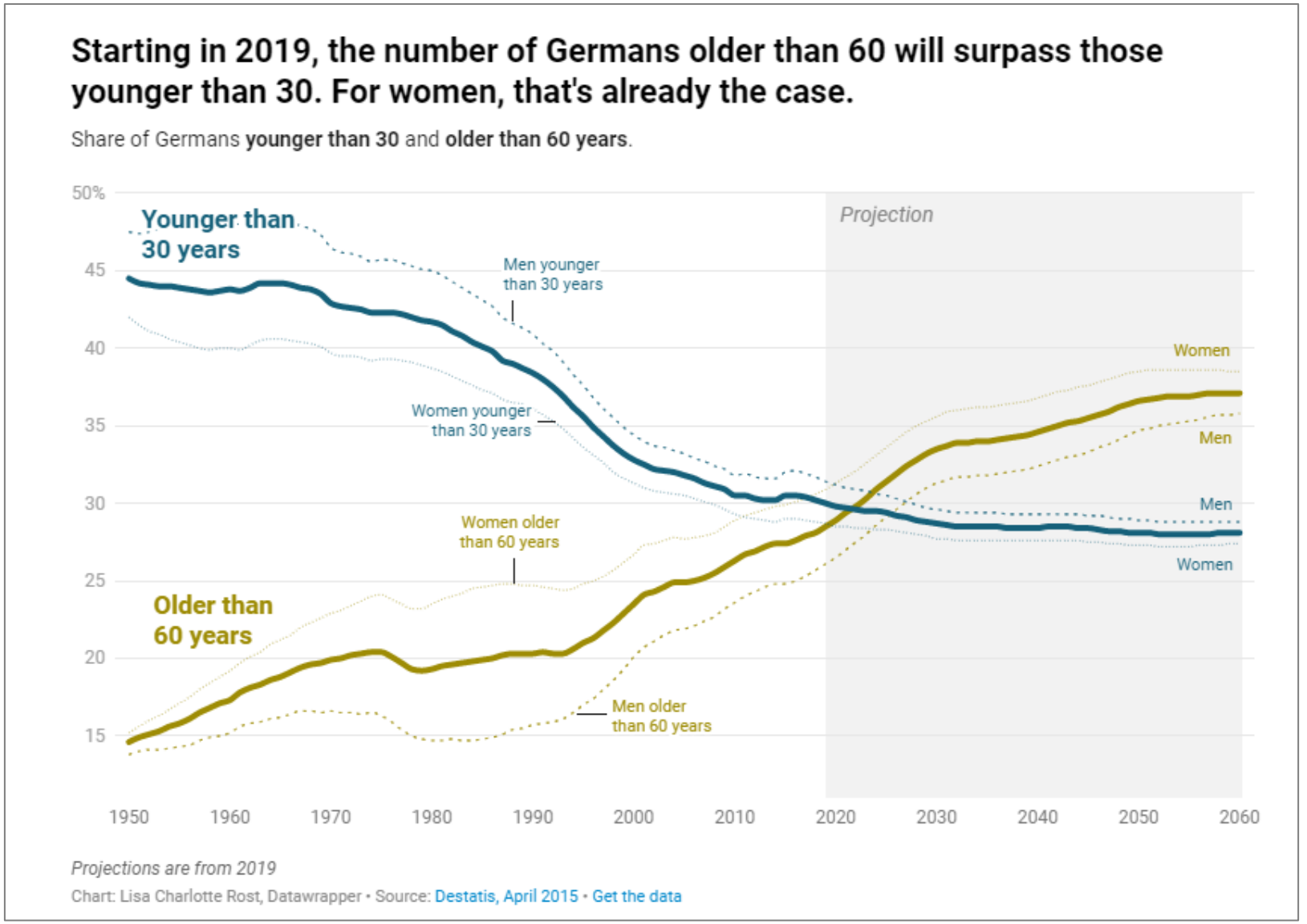
https://www.effectivedatastorytelling.com/post/a-data-storytellers-guide-to-avoiding-clutter

Best practices for line charts

- Sensible formatting
  - Reduce clutter
  - Direct labelling of series
- Provide context
  - Title and subtitle
  - Axis and data labels
  - Annotations
- Add comparison
  - Visualize the change
- Focus on the important

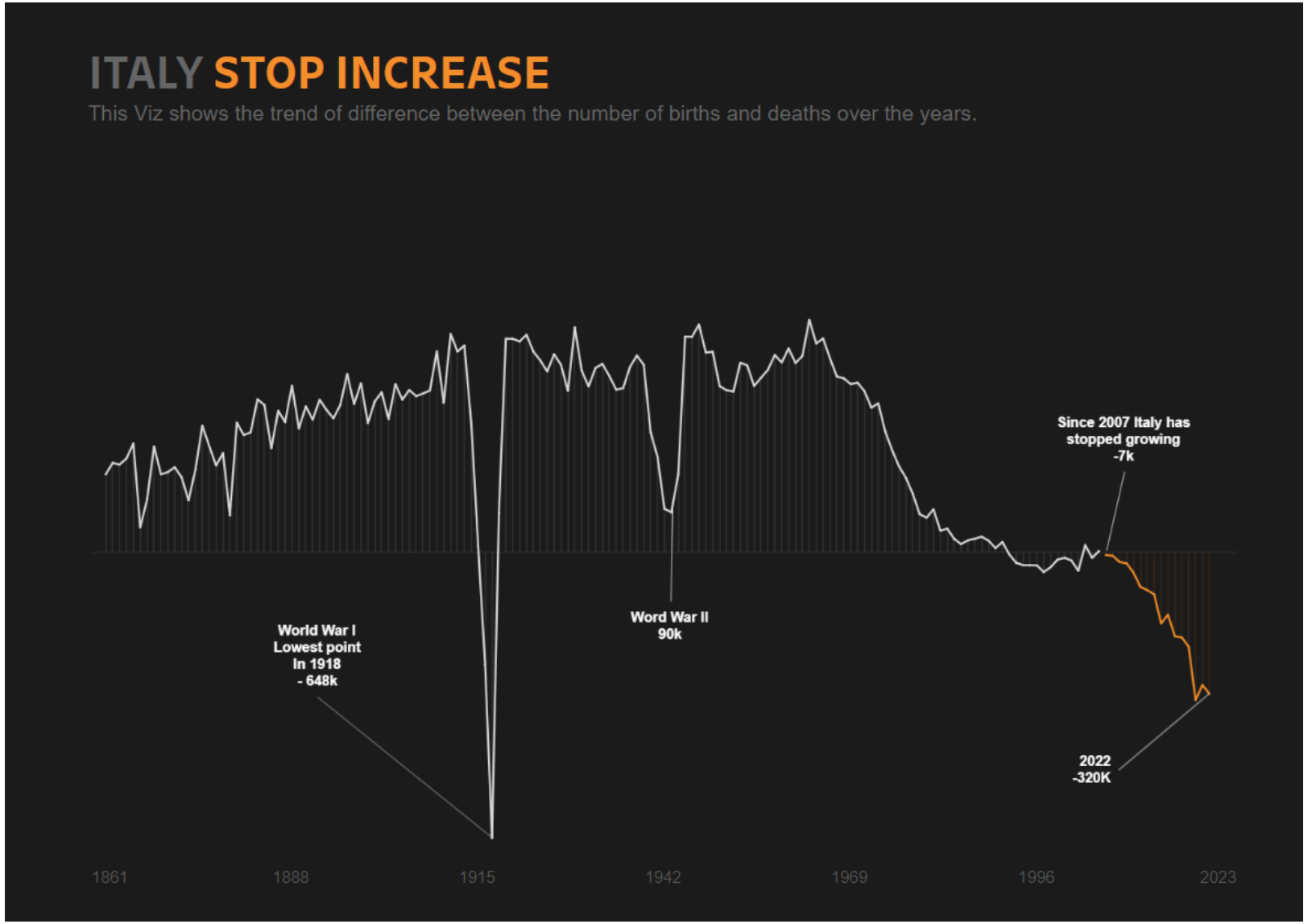
Showcase

Showcase



https://blog.datawrapper.de/line-charts/

Showcase



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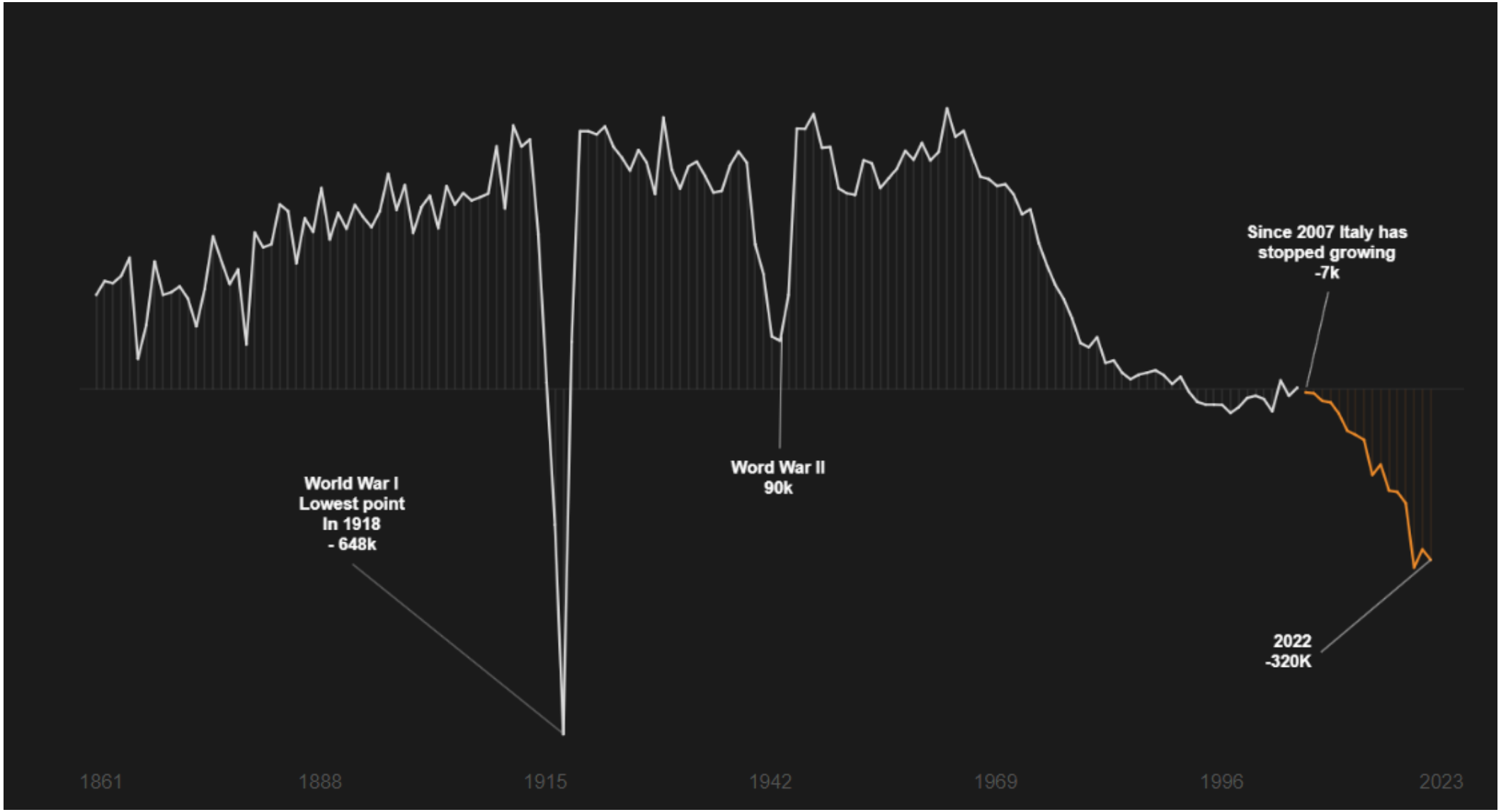
Showcase

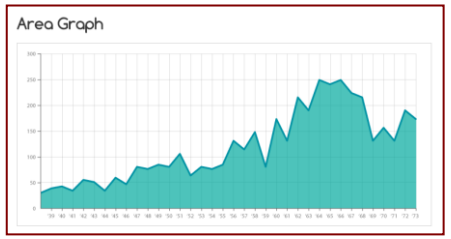


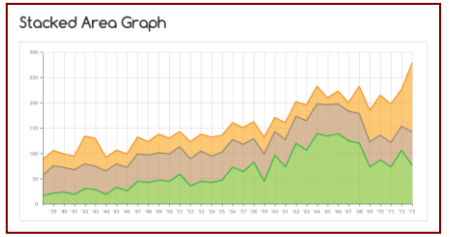
https://public.tableau.com/app/profile/saveriorocchetti/viz/ITALYSTOPINCREASE/ITALYSTOPINCREASE

Area chart

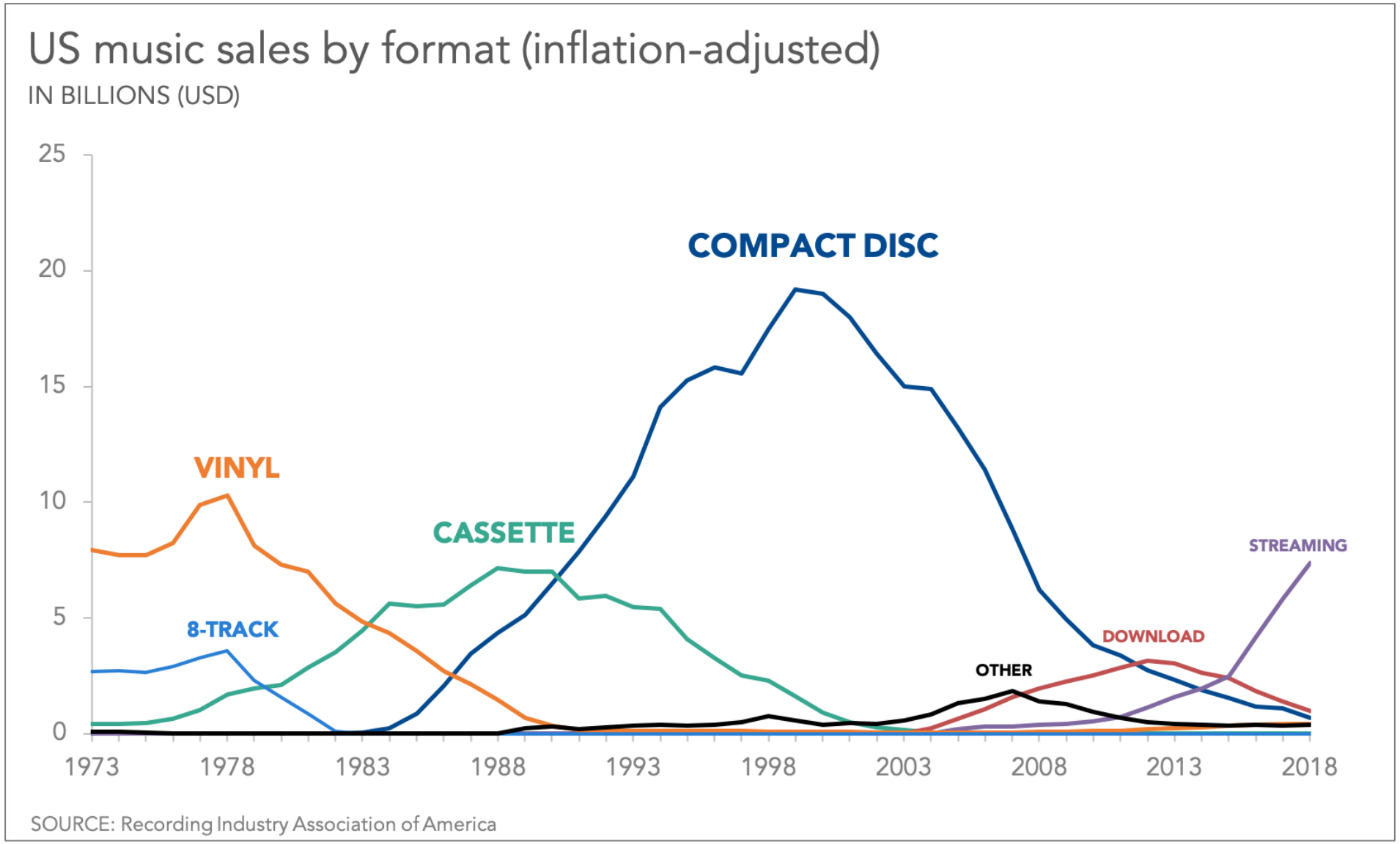
Area Charts

- Special variation of the line chart, focusing on the „volume” of the data instead of the relative change
- Share several properties with line charts
  - Single or multiple data series
  - Standard or stacked representation
- Opacity and ordering can be used to enhance readibility for multiple series



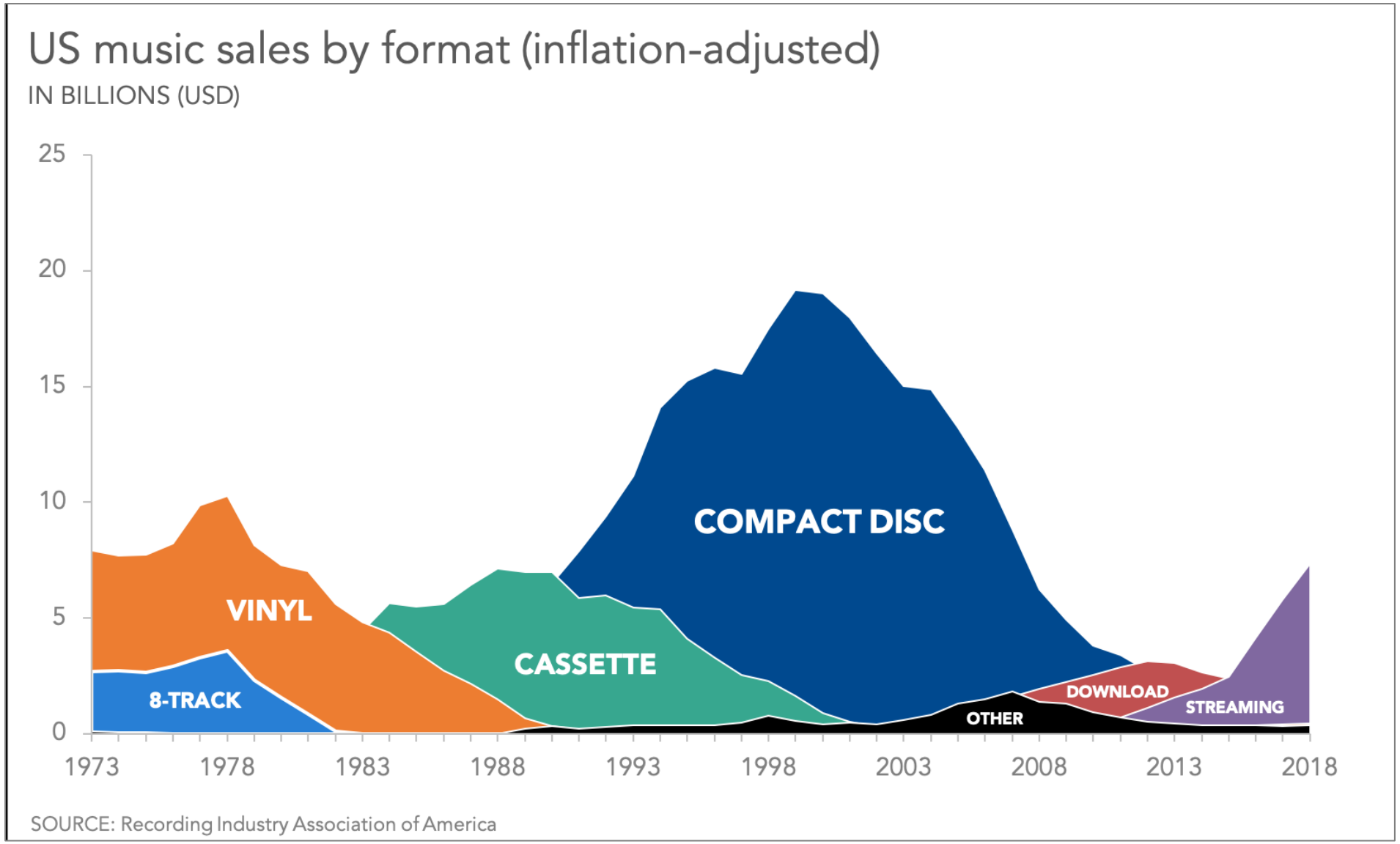


Area Charts



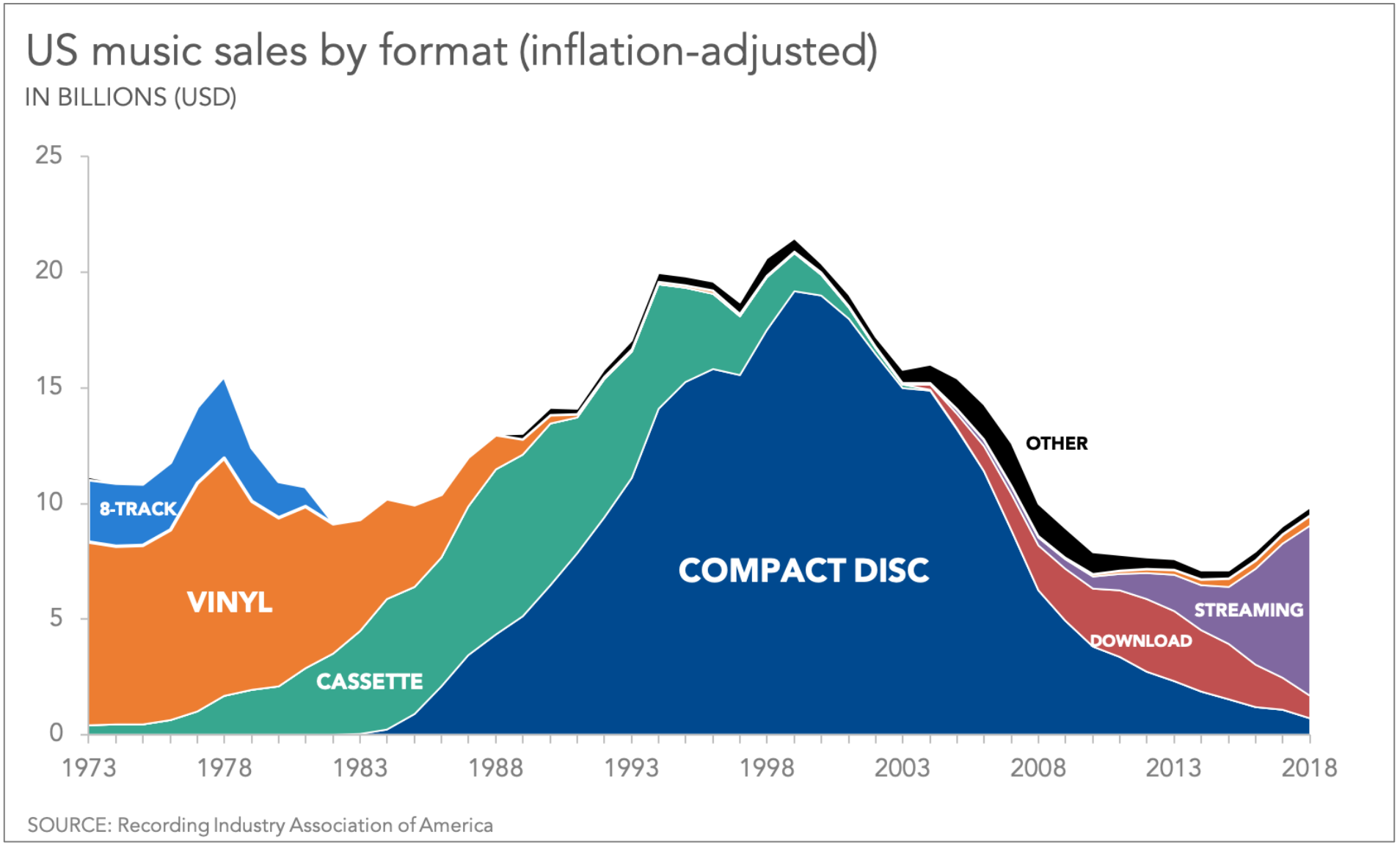
https://www.storytellingwithdata.com/blog/2020/4/9/what-is-an-area-graph

Area Charts



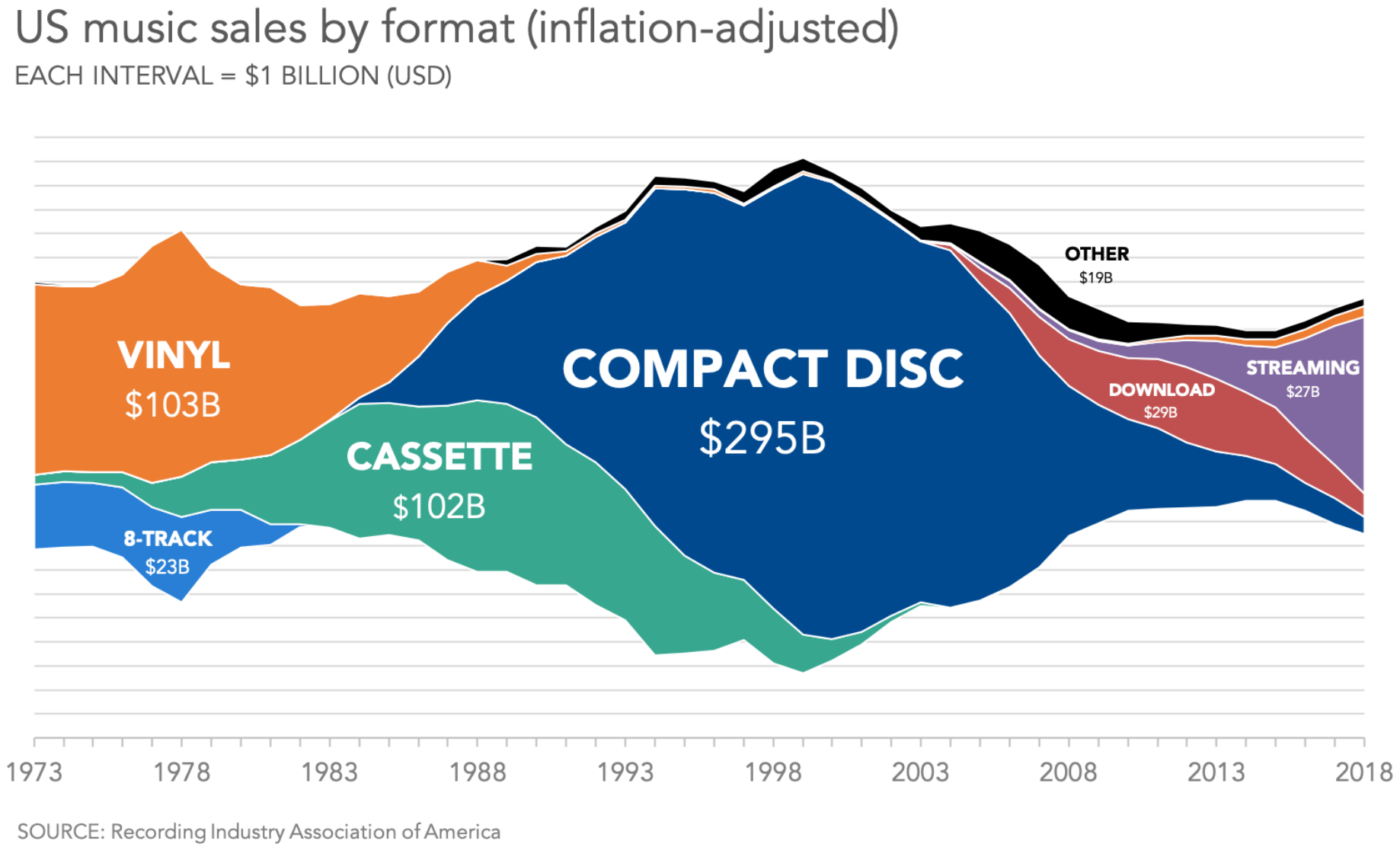
https://www.storytellingwithdata.com/blog/2020/4/9/what-is-an-area-graph

Area Charts - Stacked



https://www.storytellingwithdata.com/blog/2020/4/9/what-is-an-area-graph

Area Charts - Stacked



https://www.storytellingwithdata.com/blog/2020/4/9/what-is-an-area-graph

Stacked Area Chart - Absolute

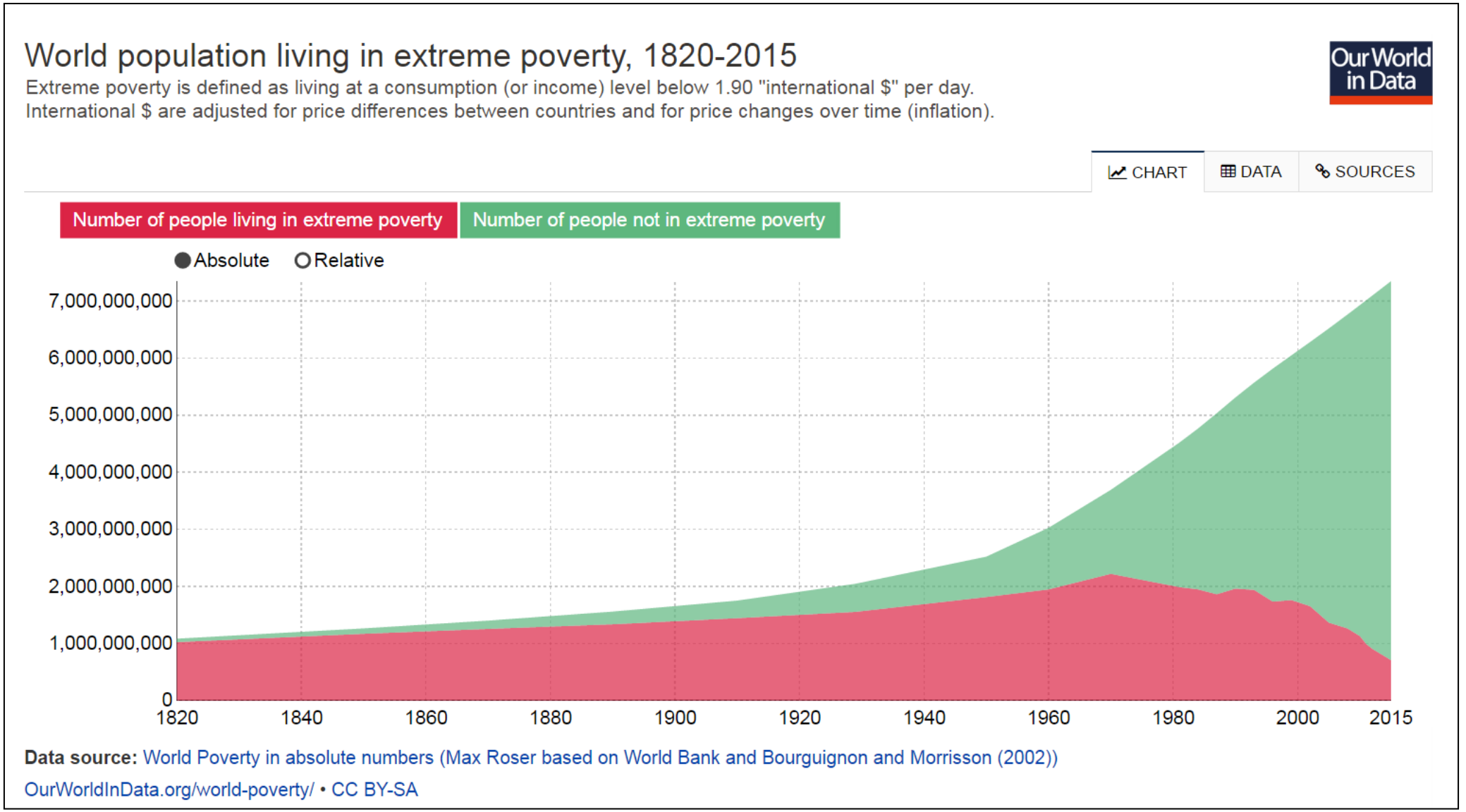


Illustration : ourworldindata.org

100% Stacked Area Chart - Relative

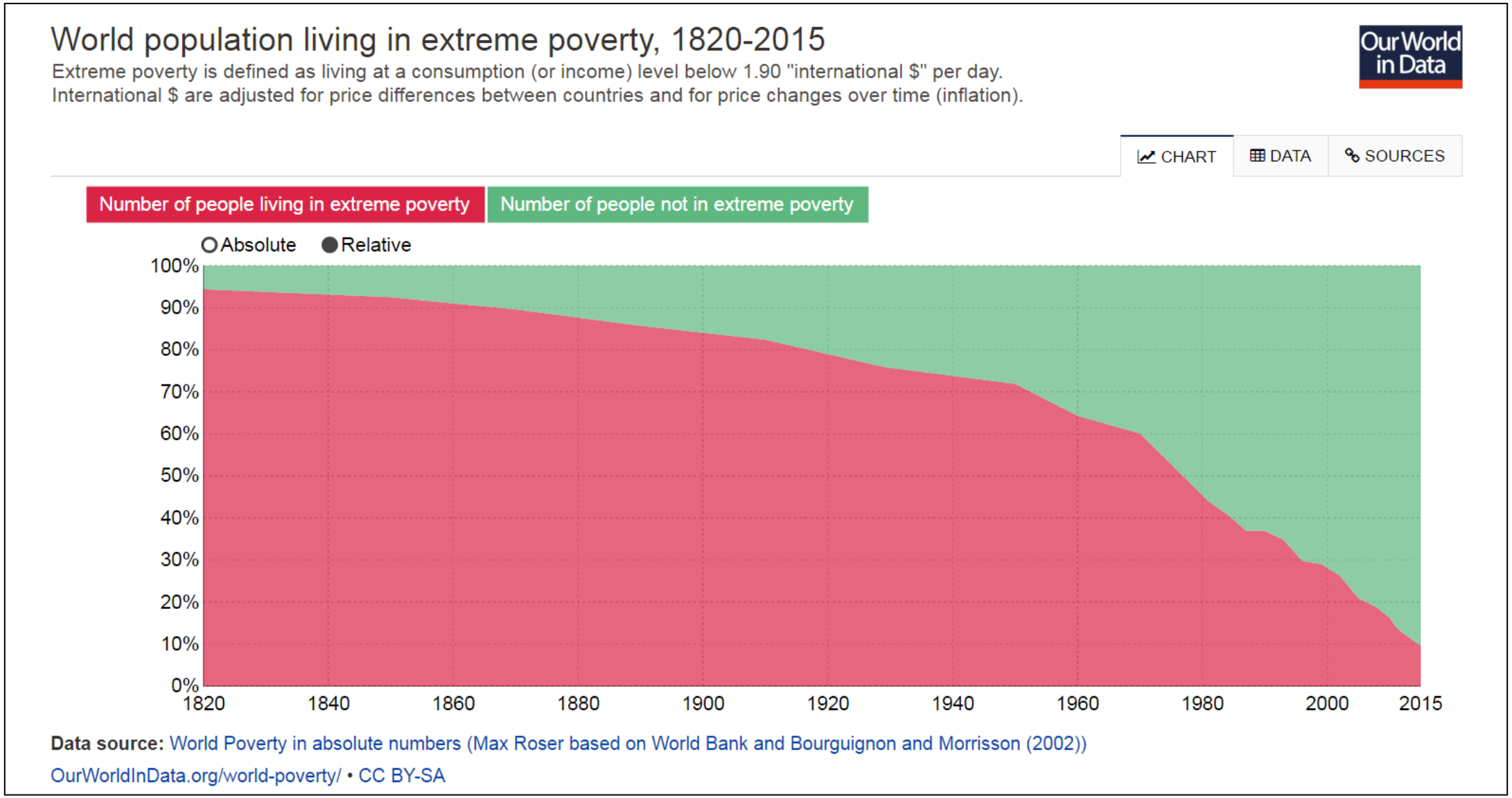
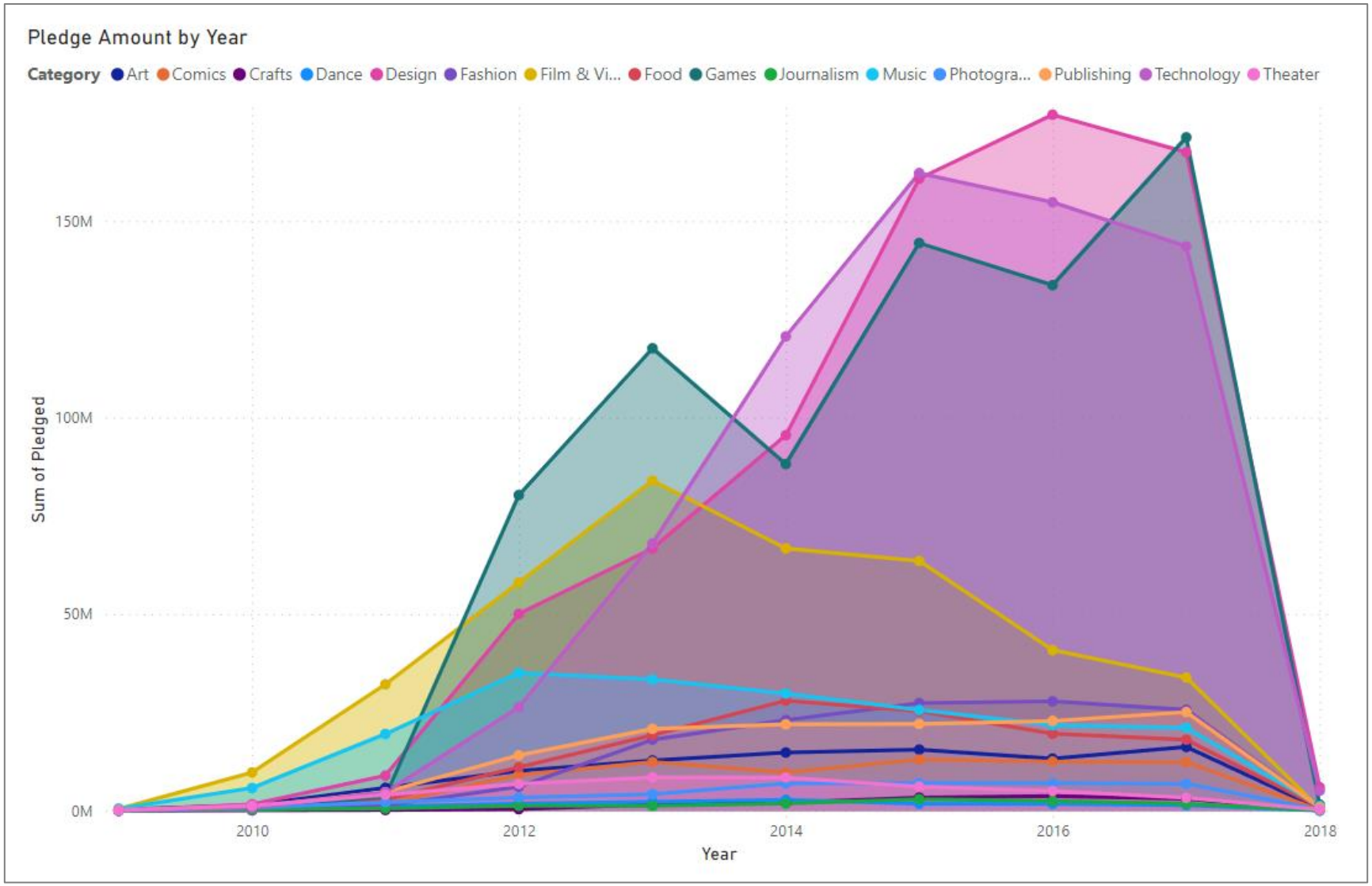


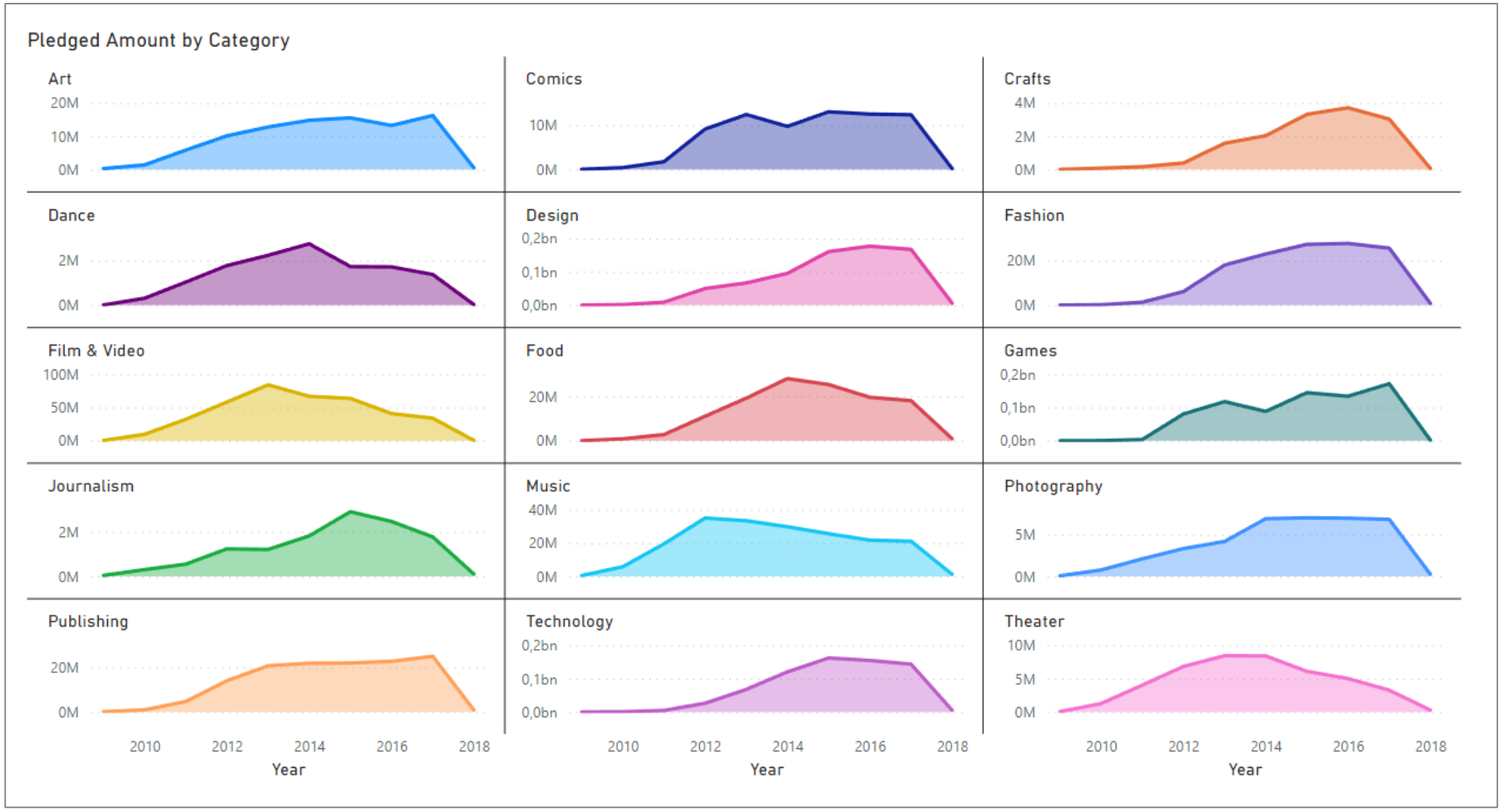
Illustration : ourworldindata.org

Area chart with multiple series



Power BI chart based on the Kickstarter projects dataset

Area chart with multiple series



Power BI chart using small multiples based on the Kickstarter projects dataset

Best practices for area charts

Best practices for area charts

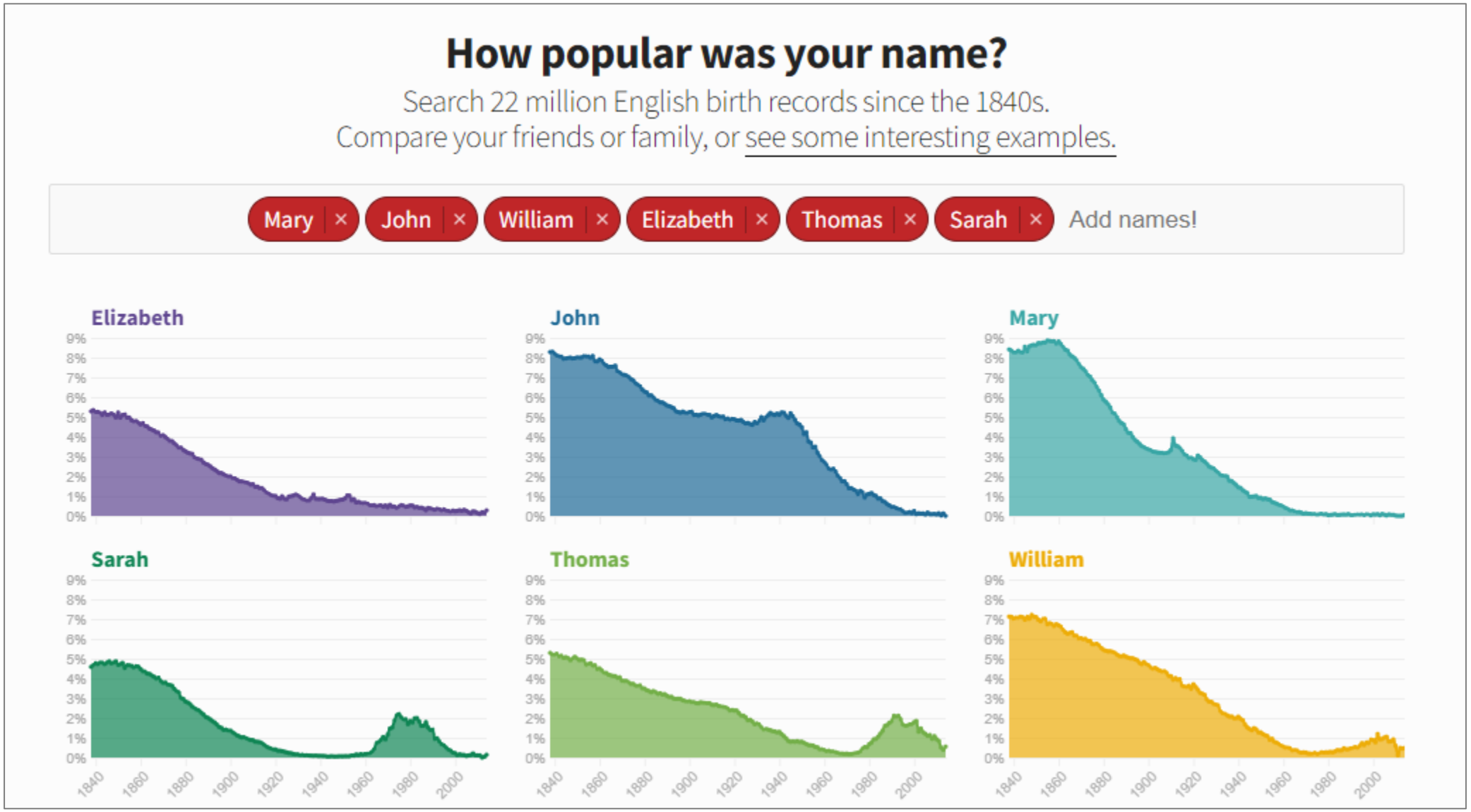
- Effective usages
  - Long time series with many changes
  - Part-to-whole during time, especially when one part is large
  - Multiple series in small multiple format
- Visual best practices
  - Use zero-based y-axis
  - Limit the number of series displayed in the same chart
  - Consider the order series, bring the „main” forward

Best practices for area charts

- But use with caution
  - Uses lot more „ink” thank line chart
  - Multiple series can be quite confusing
  - Comparison can be hard as areas are hard to judge
  - Does not fit well in dashboards

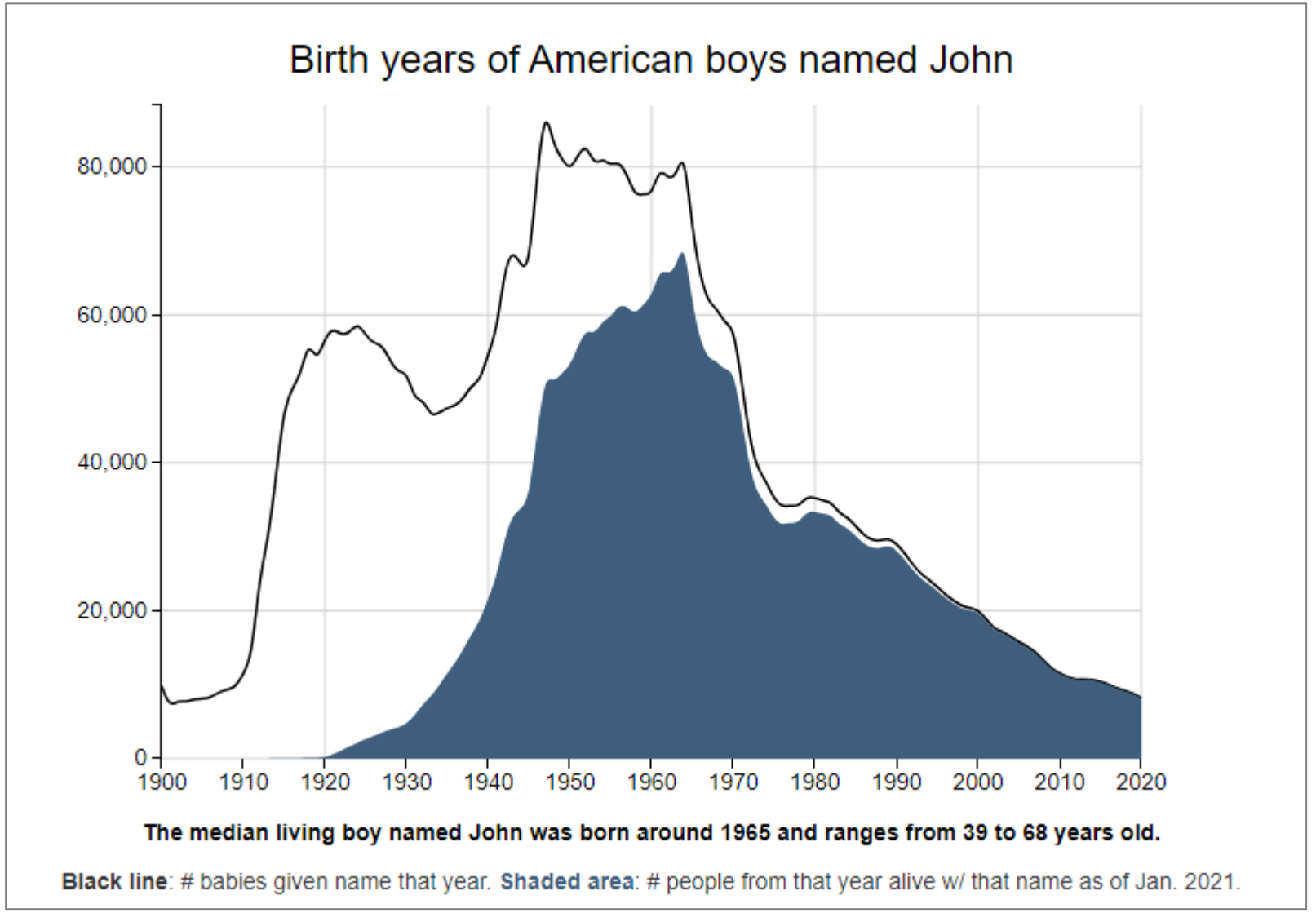
Showcase

Name charts



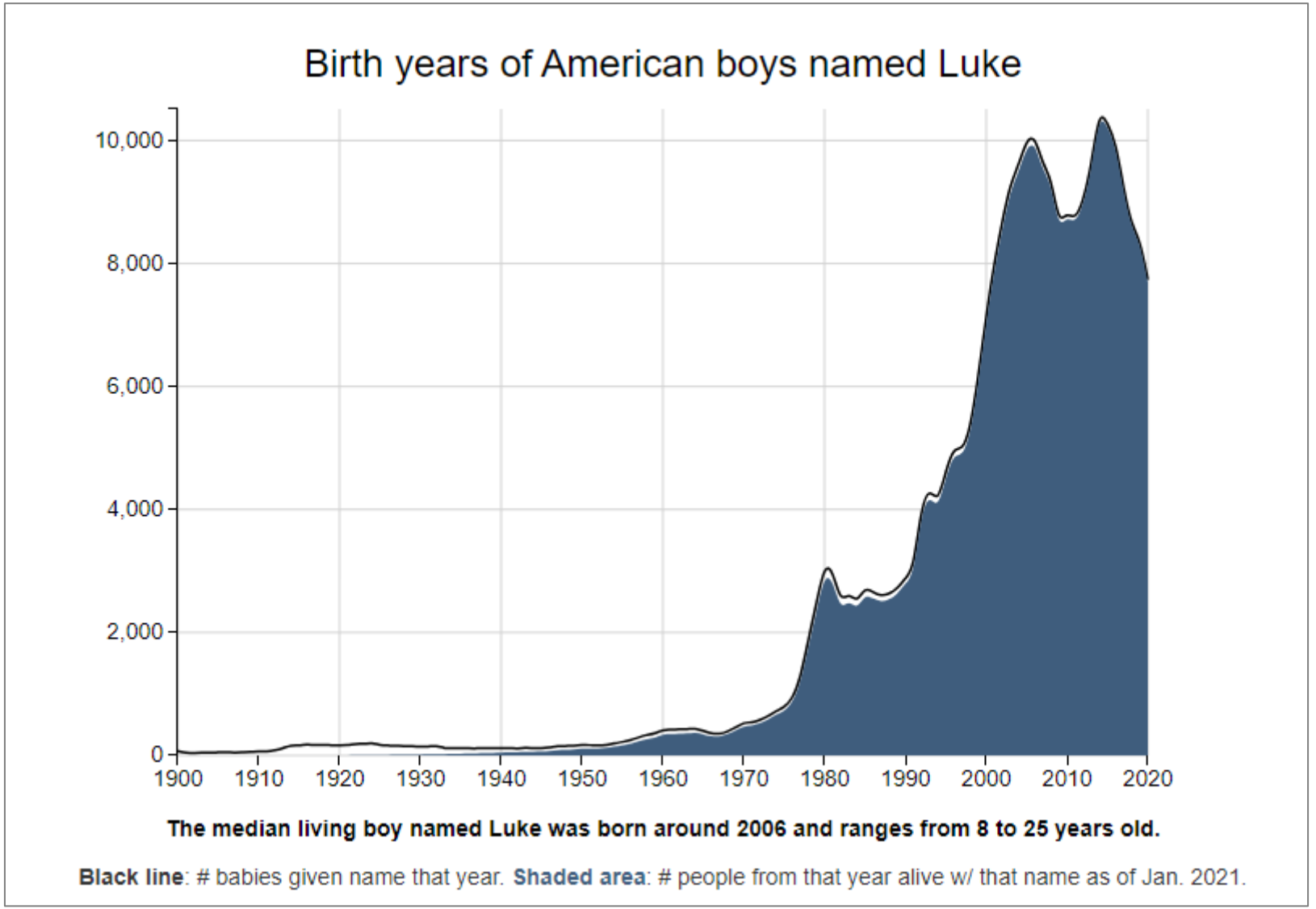
https://demos.flourish.studio/namehistory/?names=Mary,John,William,Elizabeth,Thomas,Sarah#

Name charts



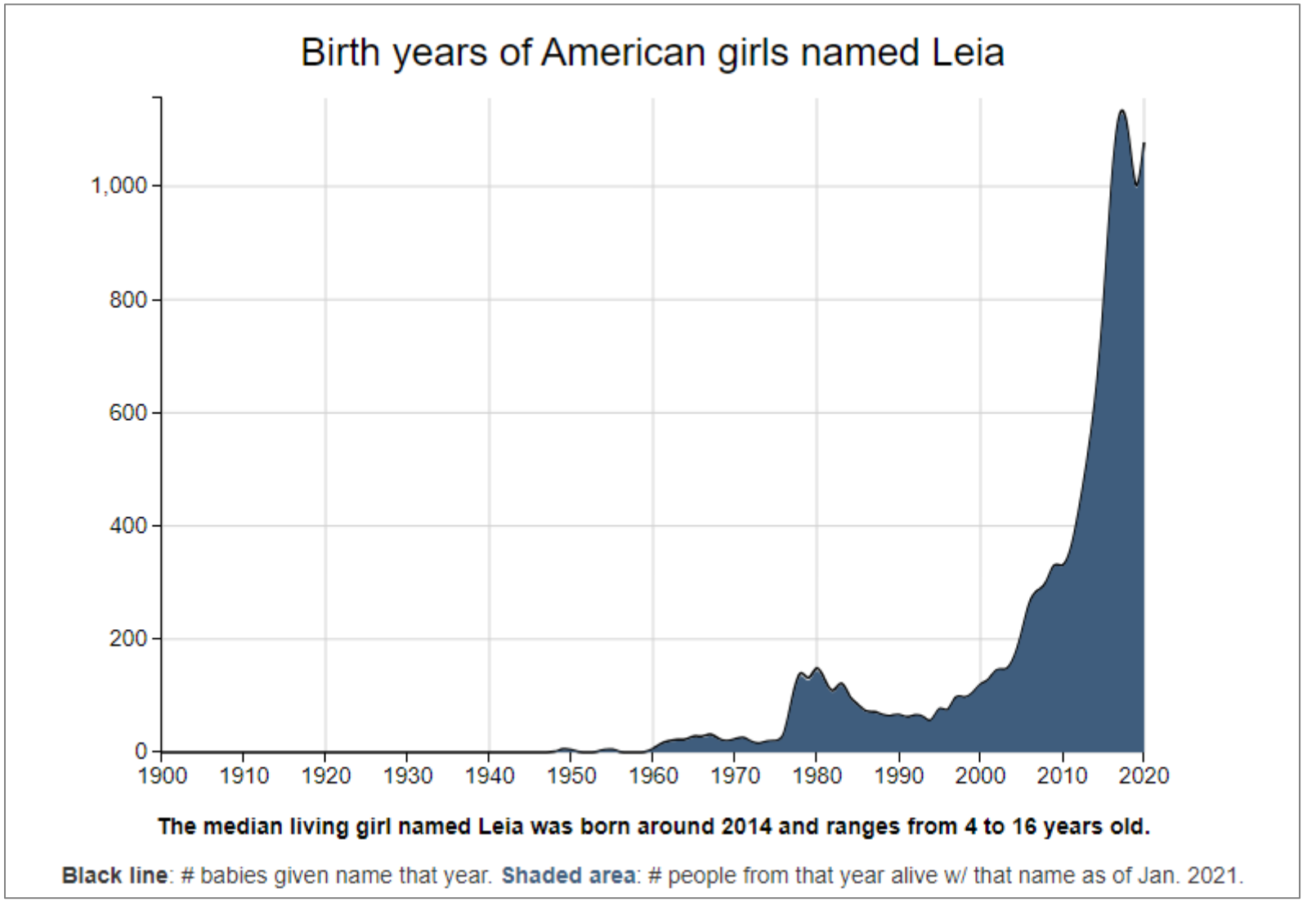
http://randalolson.com/name-age-calculator/index.html?Gender=M&Name=john

Name charts



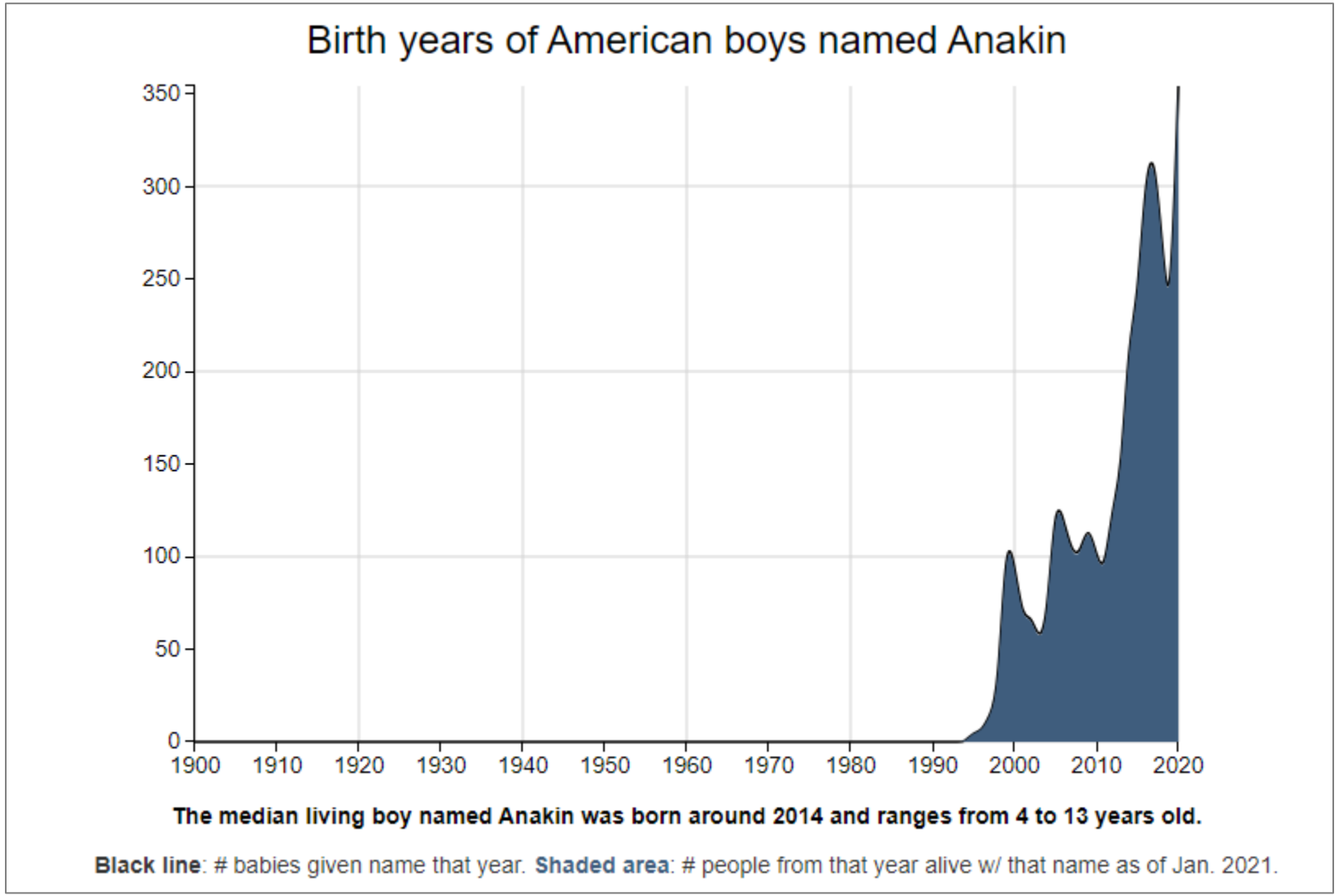
https://randalolson.com/name-age-calculator/

Name charts



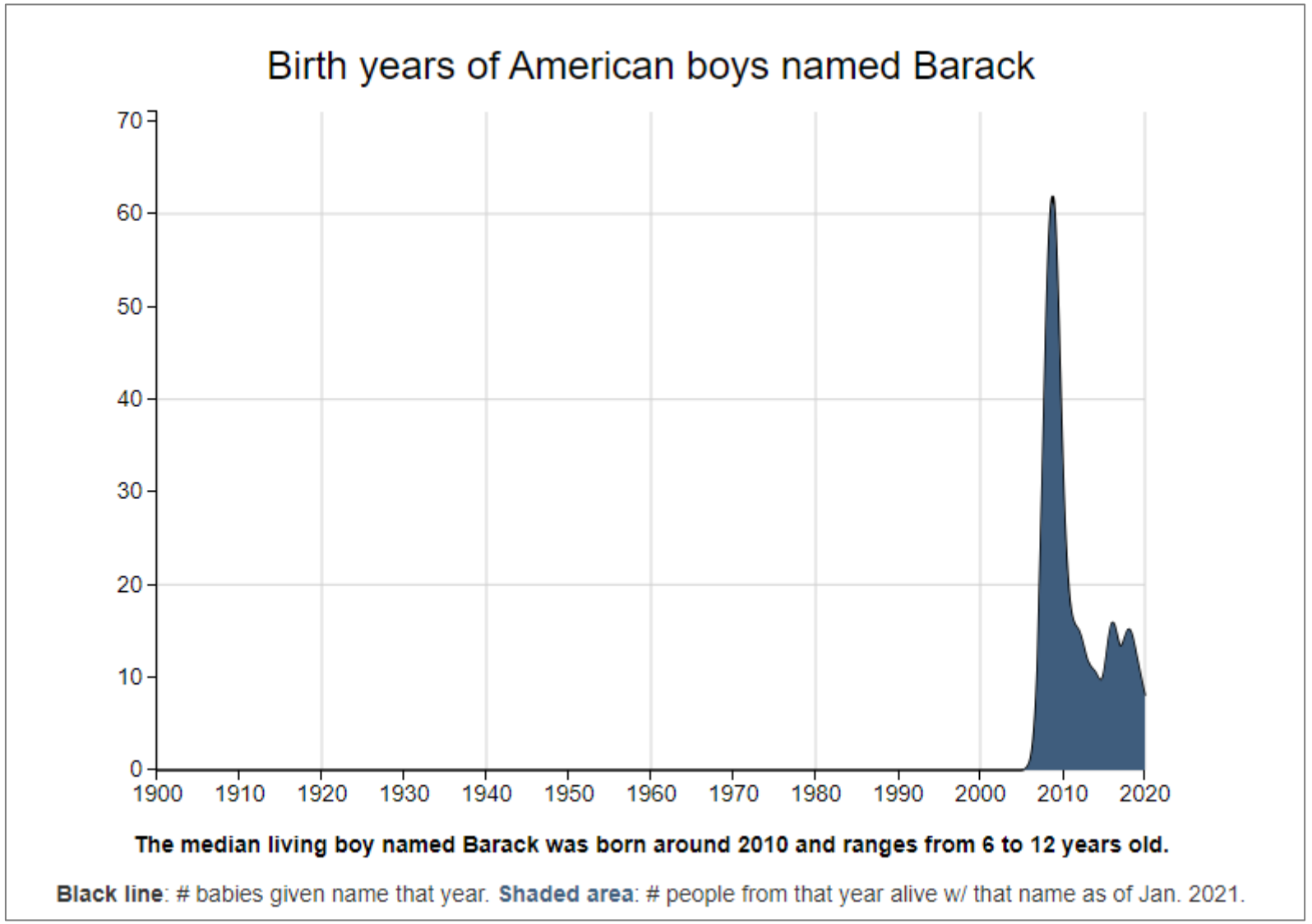
https://randalolson.com/name-age-calculator/

Name charts



https://randalolson.com/name-age-calculator/

Name charts



https://randalolson.com/name-age-calculator/

Thank You