THE UNIVERSITY of EDINBURGH
Centre for Data, Culture & Society

What if the standard just isn't enough? Custom data vis with D3

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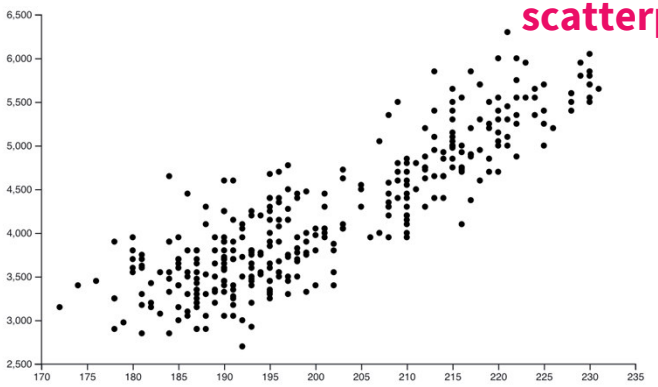
Schedule

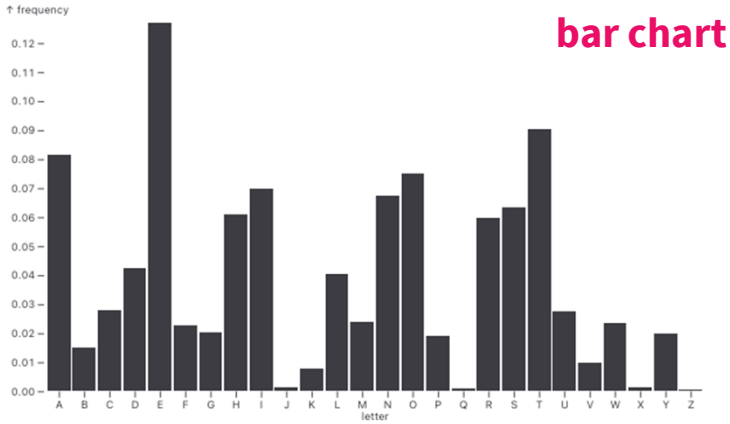
15:30	Welcome Introduction to custom data visualizations
15:50	Sketching Exercise
16:00	Observable & D3 Live Demo
16:10	Coding Session: Implement your custom visualizations!
17:00	Closing

Chart Types & Conventions

scatterplot

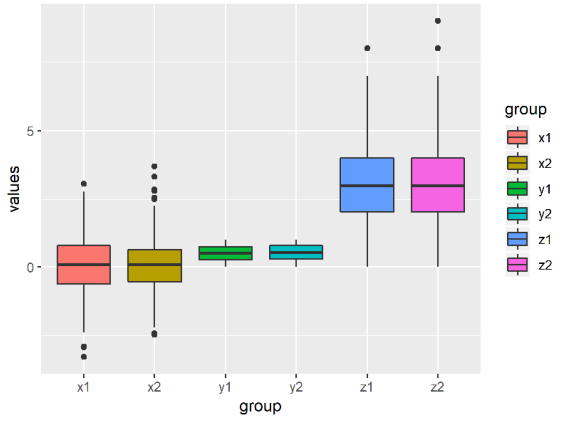


bar chart

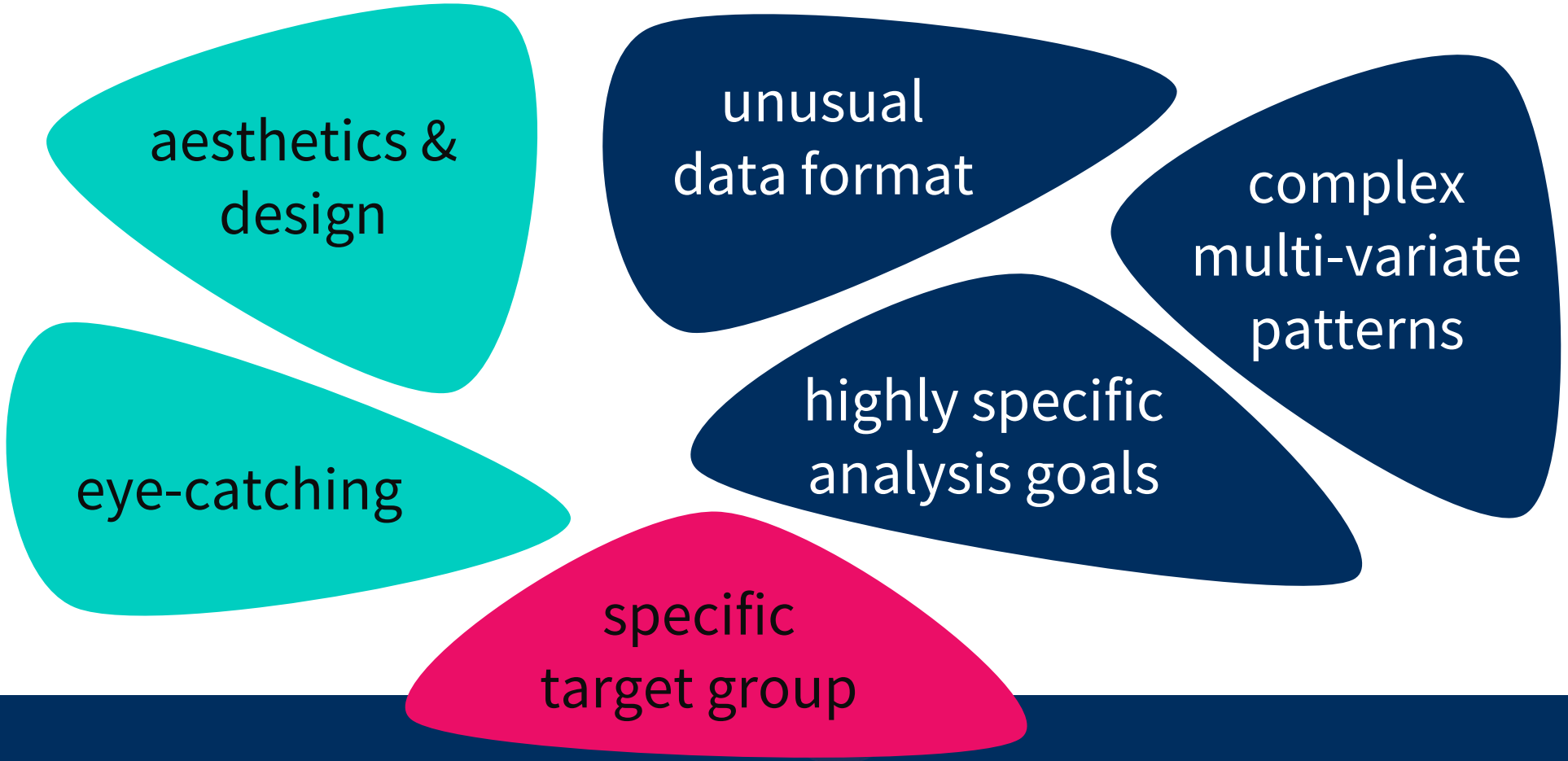


line chart

box plot



But sometimes, a standard chart just won't do



How to think about charts like a visualization designer (or at least, one small aspect of it)

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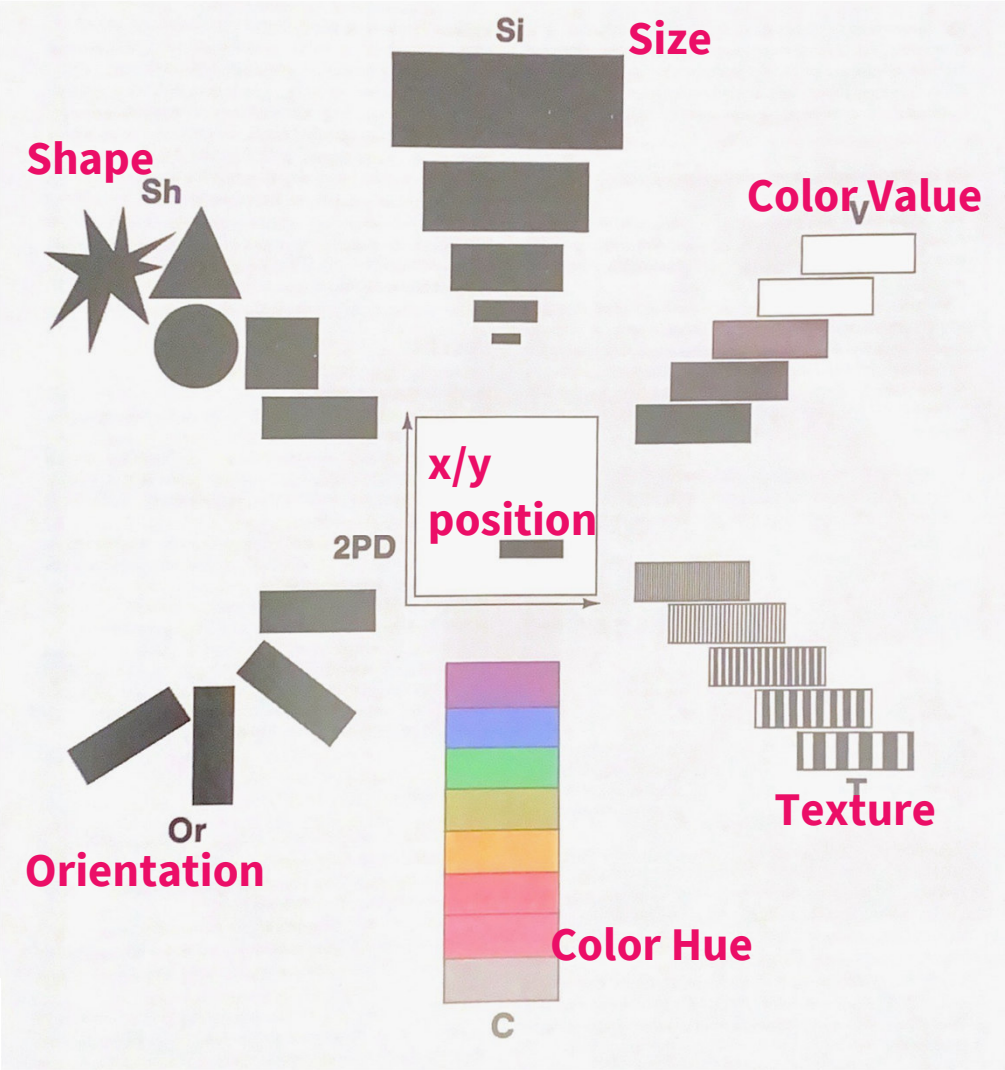
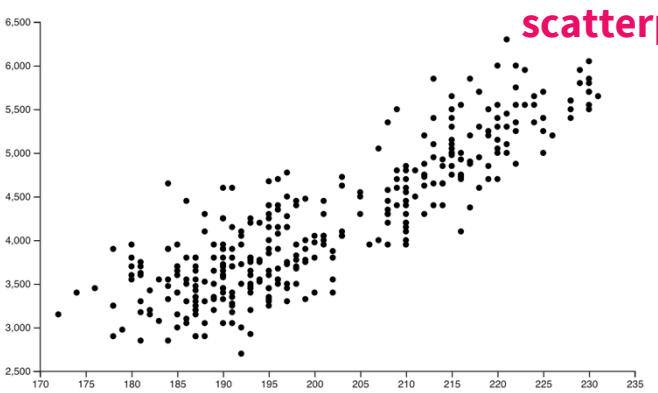
Visual Variables

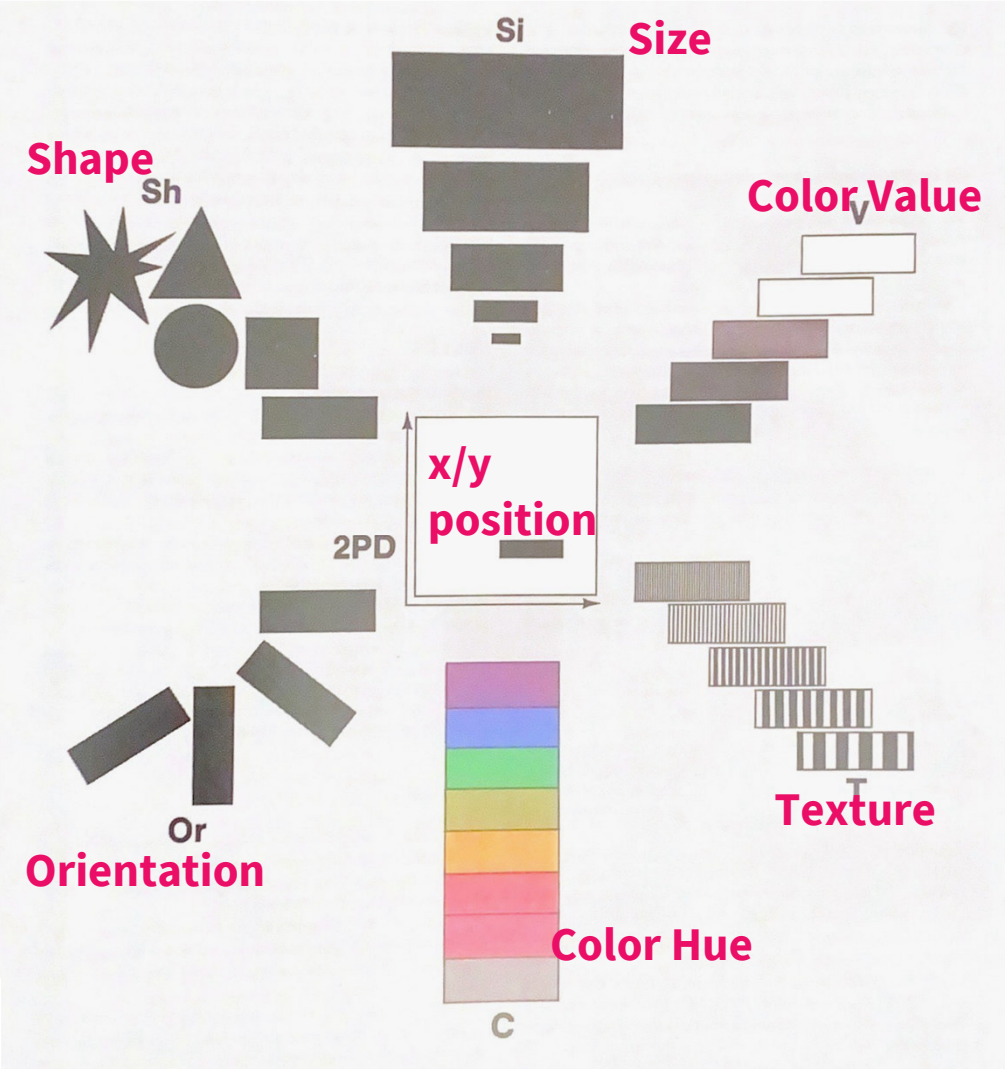
Jacques Bertin (1918-2010), French cartographer and theorist

Book: *Sémiologie Graphique* (*Semiology of Graphics*), 1967



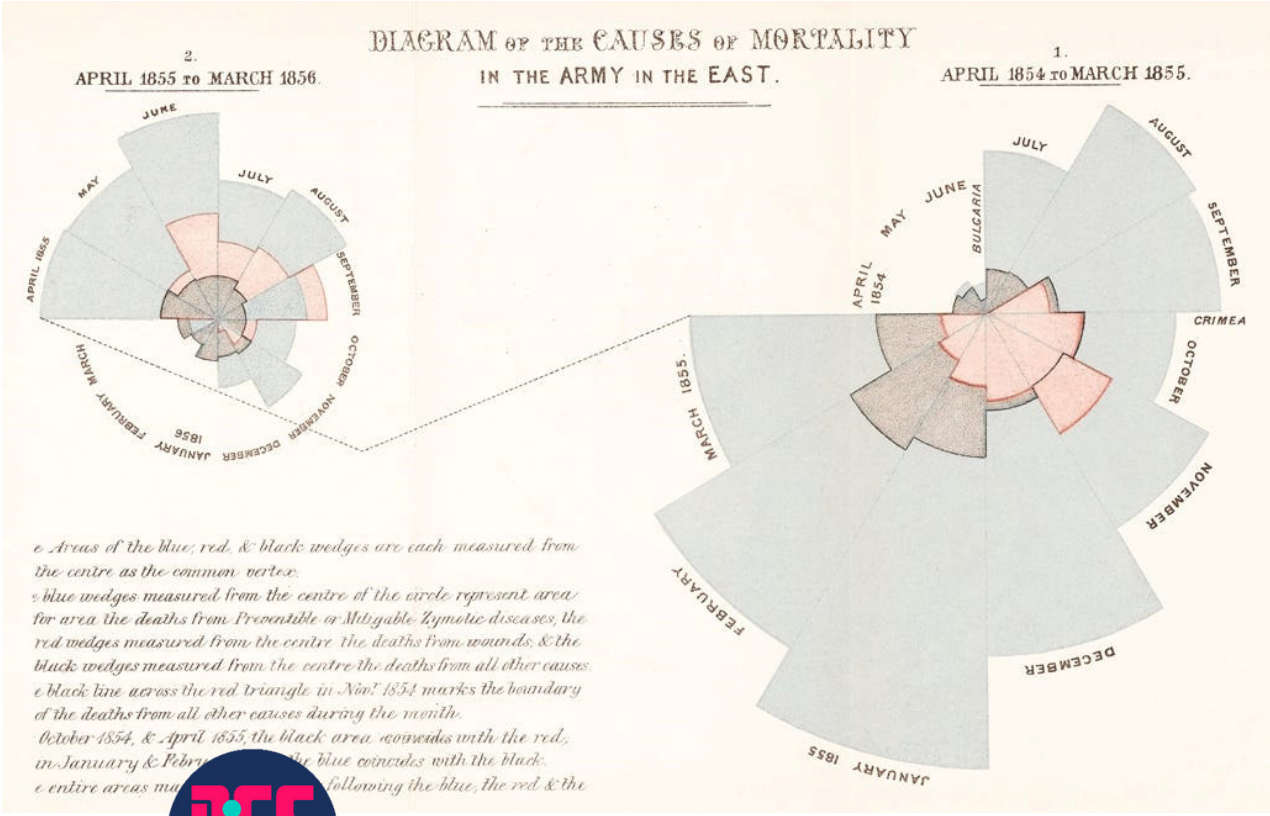
Visual Variables





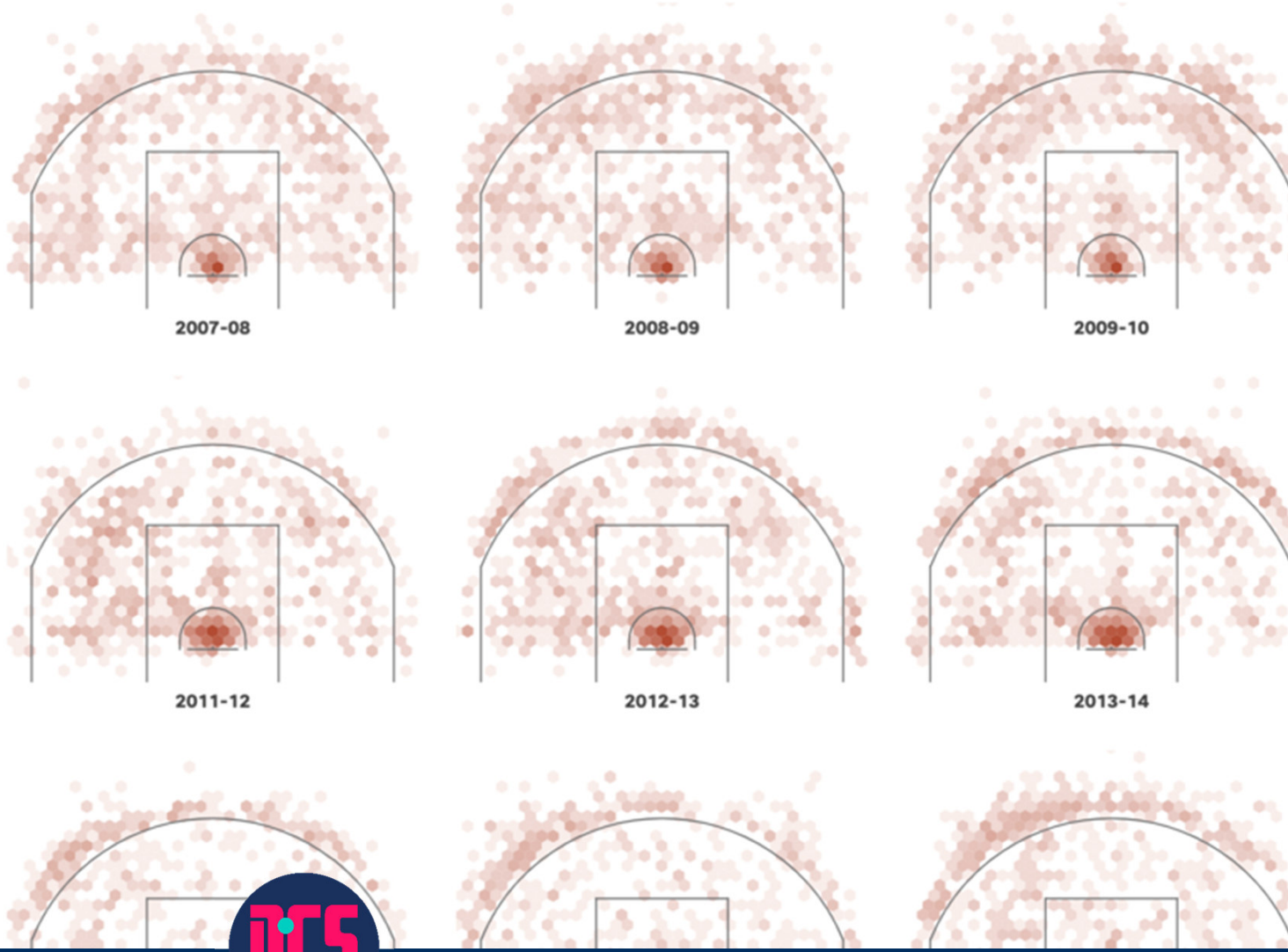
Florence Nightingale's Rose Chart (1858)

- draws attention to preventable diseases as the main cause of death in the army
- cause of death → color
- number of deaths → length of wedge
- month → position around circle



“LeBron James has captured the scoring title. We visualized every shot.” (USA Today)

- unique spatial data
- easy to understand because the lines of the basketball field are shown
- position → x/y position
- number of shots → color

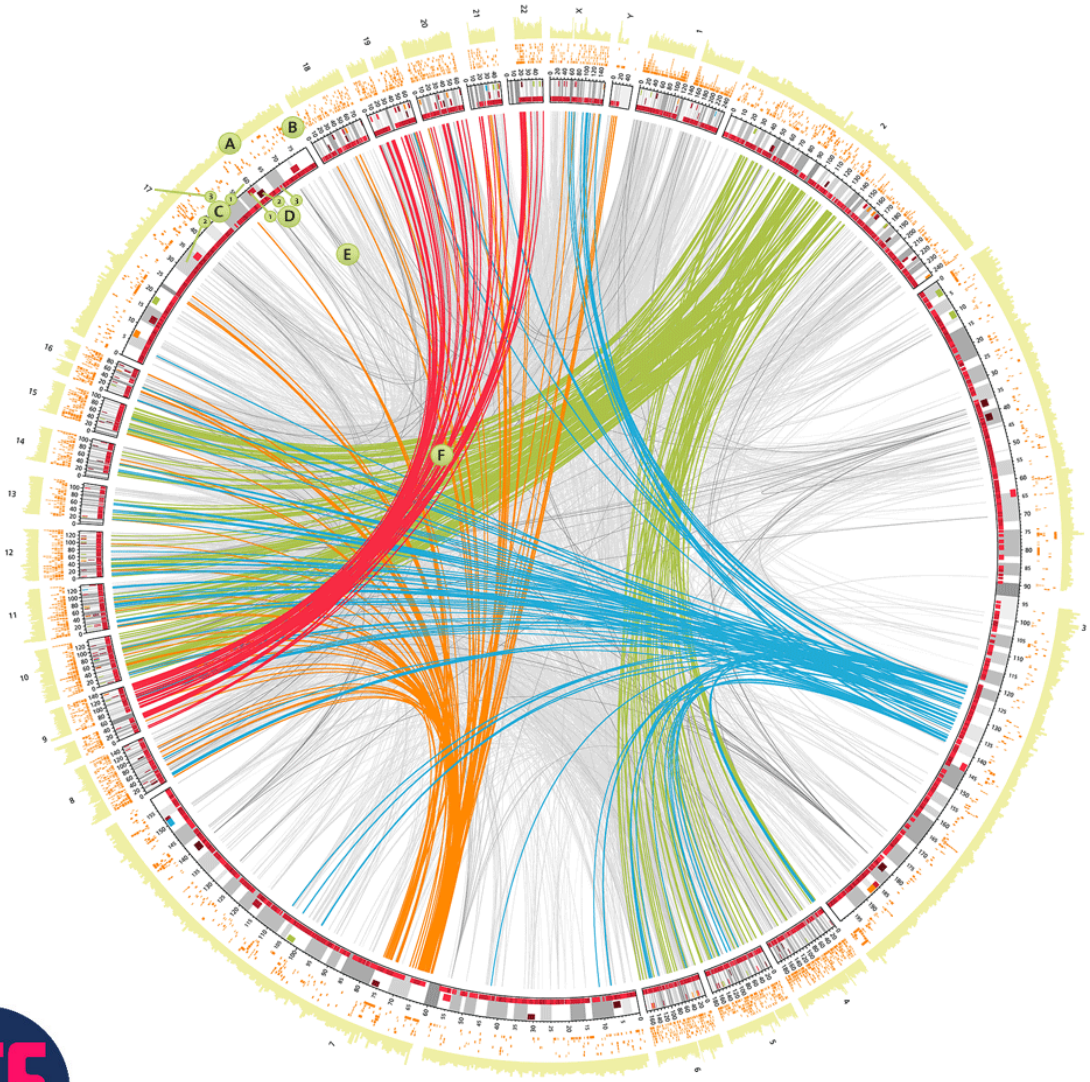


https://www.informationisbeautifulawards.com/showcase/6293-lebron-james-has-captured-the-scoring-title-we-visualized-every-shot

CIRCOS Plots

- first introduced in 2009
- now commonly used in genomics

- chromosomes → position around circle
- information about chromosomes is visualized on customizable ‘tracks’ around the circle



https://circos.ca/intro/genomic_data/

Updating Happiness: Wellcome Collection (Stefanie Posavec)

- Participative installation where museum visitors filled in a survey and provided quotes on what makes them happy
- survey responses to different questions → patterns & colors

https://www.stefanieposavec.com/updating-happiness

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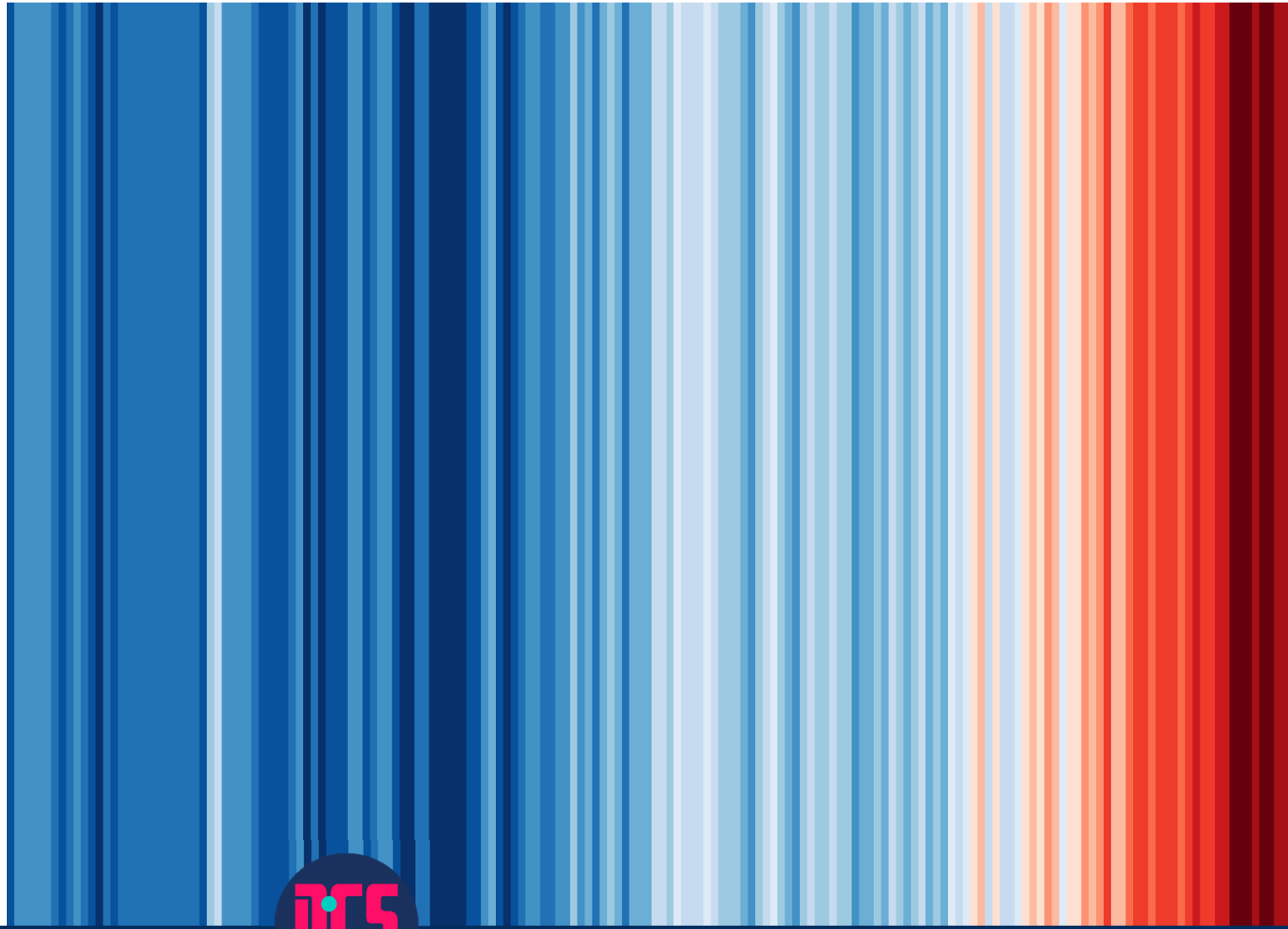
Warming Stripes

- Average temperature of each year encoded using color

- year → x-position
- average temperature → color

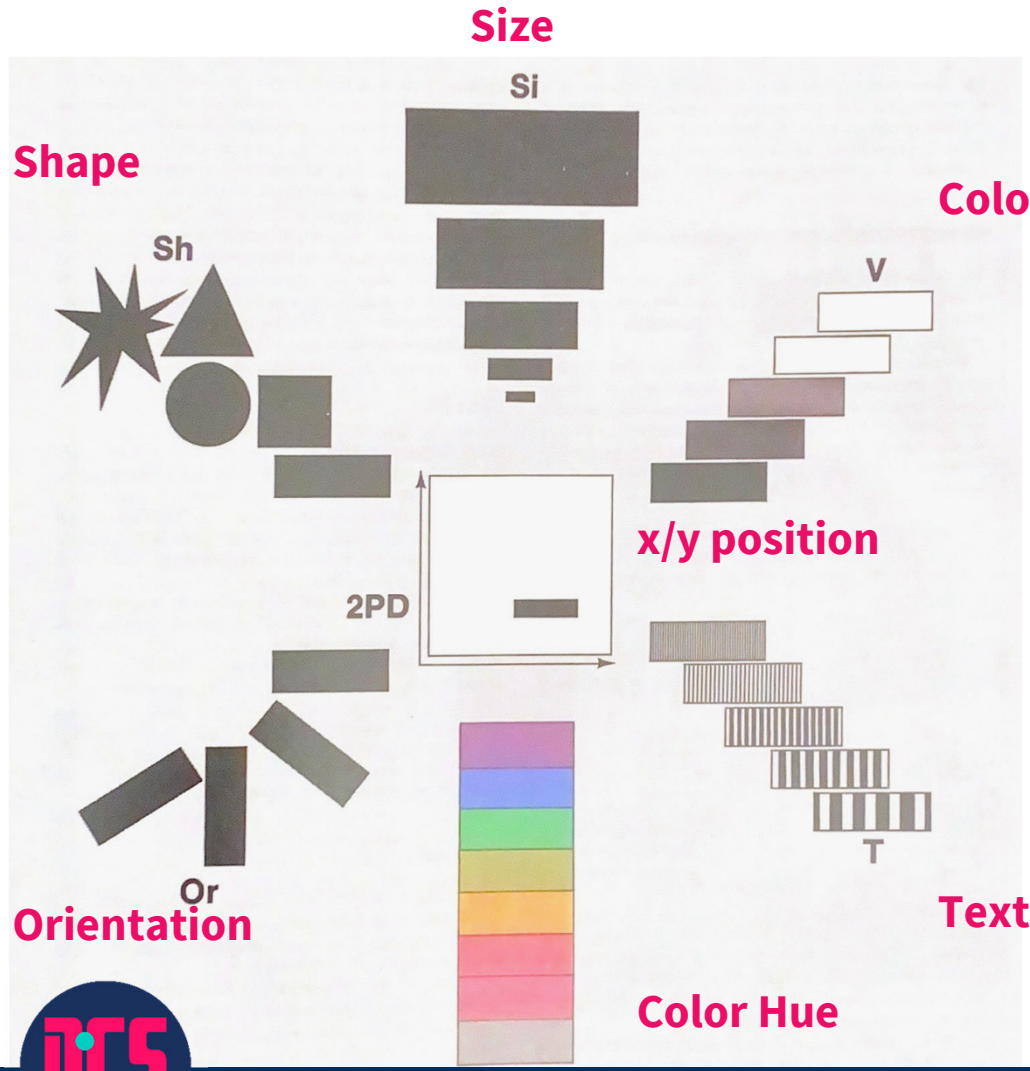


https://showyourstripes.info/

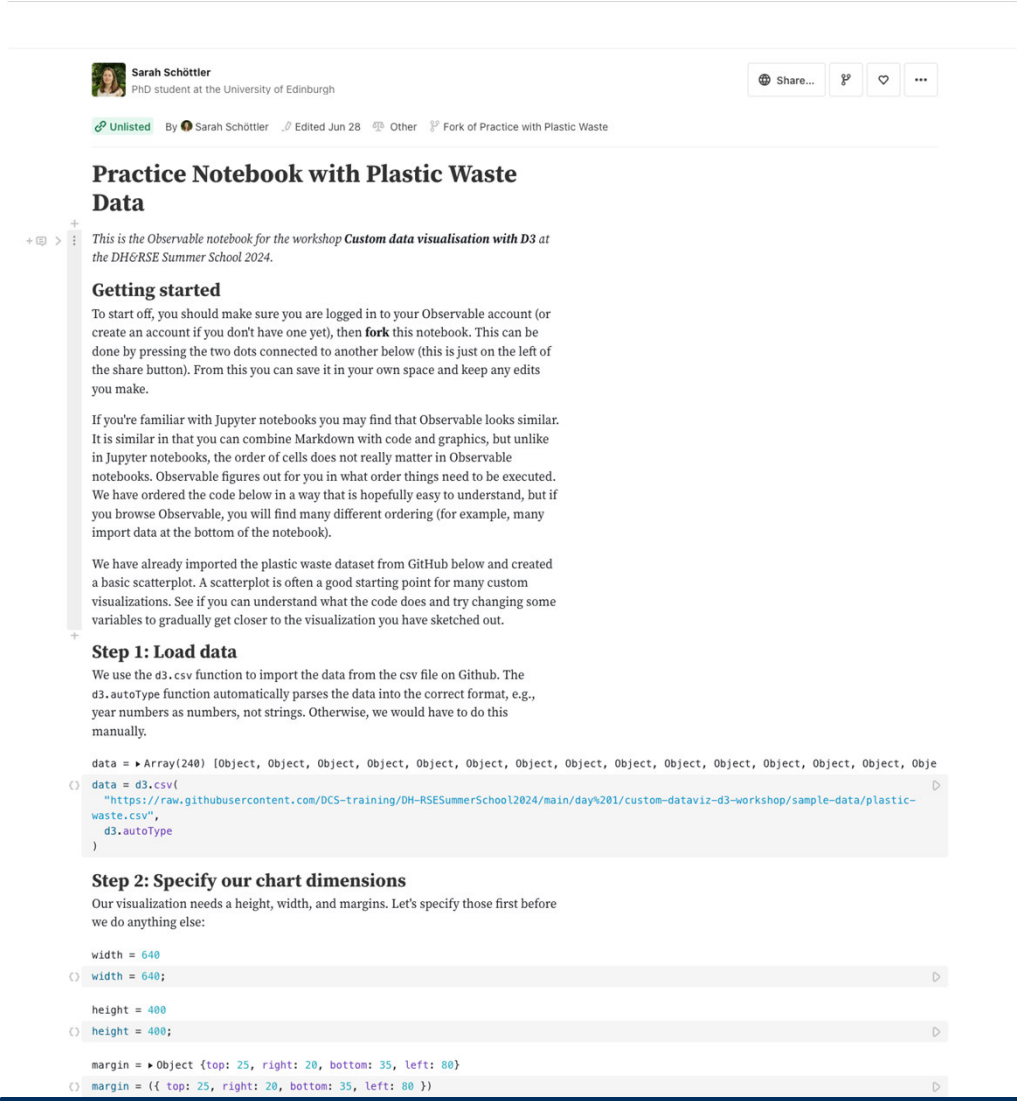
Sketching Exercise

- Sketch one or more ideas for custom visualizations using the plastic waste dataset on GitHub
- Use as many or as few variables as you like
- For each sketch, note which visual variables you are using to encode the different data points

- https://github.com/DCS-training/DH-RSESummerSchool2024/tree/main/day%201/custom-dataviz-d3-workshop/



Observable Live Demo



Sarah Schöttler
PhD student at the University of Edinburgh

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Unlisted By Sarah Schöttler Edited Jun 28 Other Fork of Practice with Plastic Waste

Practice Notebook with Plastic Waste Data

*This is the Observable notebook for the workshop **Custom data visualisation with D3** at the DH&RSE Summer School 2024.*

Getting started

To start off, you should make sure you are logged in to your Observable account (or create an account if you don't have one yet), then **fork** this notebook. This can be done by pressing the two dots connected to another below (this is just on the left of the share button). From this you can save it in your own space and keep any edits you make.

If you're familiar with Jupyter notebooks you may find that Observable looks similar. It is similar in that you can combine Markdown with code and graphics, but unlike in Jupyter notebooks, the order of cells does not really matter in Observable notebooks. Observable figures out for you in what order things need to be executed. We have ordered the code below in a way that is hopefully easy to understand, but if you browse Observable, you will find many different ordering (for example, many import data at the bottom of the notebook).

We have already imported the plastic waste dataset from GitHub below and created a basic scatterplot. A scatterplot is often a good starting point for many custom visualizations. See if you can understand what the code does and try changing some variables to gradually get closer to the visualization you have sketched out.

Step 1: Load data

We use the `d3.csv` function to import the data from the csv file on Github. The `d3.autoType` function automatically parses the data into the correct format, e.g., year numbers as numbers, not strings. Otherwise, we would have to do this manually.

```
data = ▸ Array(240) [Object, Object, Object, Object, Object, Object, Object, Object, Object, Object, Object, Object, Object, Object, Obje
```

```
data = d3.csv(
  "https://raw.githubusercontent.com/DCS-training/DH-RSESummerSchool2024/main/day%201/custom-dataviz-d3-workshop/sample-data/plastic-waste.csv",
  d3.autoType
)
```

Step 2: Specify our chart dimensions

Our visualization needs a height, width, and margins. Let's specify those first before we do anything else:

```
width = 640
```

```
width = 640;
```

```
height = 400
```

```
height = 400;
```

```
margin = ▸ Object {top: 25, right: 20, bottom: 35, left: 80}
```

```
margin = ({ top: 25, right: 20, bottom: 35, left: 80 })
```

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