

Assignment 3: Create Your Own Visualization Cheat Sheet

In this assignment, you will design a 1-page visualization cheat sheet for a chart type that doesn't already have a cheat sheet: <https://visualizationcheatsheets.github.io/>

Your goal is to teach others how to understand and use your chosen visualization — clearly, visually, and concisely.

Time Curve

Anatomy

Time point: A point in time.

Curvilinear distance: The curvilinear distance approximately gives the total amount of change between two points. It depends on the particular algorithm used.

Spatial distance: The spatial distance is what you get if you walk a path between two time points and measure the distance. It gives the difference between two time points as measured by the similarity metric.

Time Curve

Pitfalls

Matching curvilinear distance for time: The lengths of the curve segments in-between the time points are a result of the algorithm and does not mean time interval increases.

Attaching meaning to the curve: The endpoints we have in the algorithm may not have the same number of regular time intervals. The time points are discrete, so the curve between them does not have the same number of time points.

Over-interpreting interactions: Whether a curve *interprets* or not depends on the particular algorithm.

Not understanding the similarity metric: The interpretation of the time curve depends critically on the meaning of the similarity metric.

Time Curve

Visual Patterns

Clusters: A cluster is a region of points where the points are close to each other.

Outliers: An outlier is a point that stands out and has no meaningful connections, differing in density.

Cycles: A cycle is a loop that starts back to a previous point after a long progression.

U-turns: A U-turn happens when there is a reversal in progression direction between two points along a path.

Effective development: When the curve is smooth, it means an effective process that is well connected, showing no plateaus.

Ineffective development: When the curve is highly meandered and repeatedly往复, it means an ineffective process that is scattered and in different places.

Time Curve

Construction

The diagram shows the step-by-step construction of a Time Curve from a set of discrete time points. It highlights the need to know the order of points and the choice of points to connect based on the similarity metric.

Example cheat sheet

Learning Goals

- Develop a deeper understanding of a visualization type beyond the core examples.
- Practice communicating design and interpretation visually.
- Synthesize information from multiple sources into a concise cheat sheet.

Assignment Steps

Choose a Chart Type

Pick a chart **not covered** in the existing cheat sheet collection. There should be one different chart per student. Here is a list you can choose from but you can also pick others:

1. Chord diagram
2. Sankey diagram
3. Sunburst chart
4. Violin plot
5. Hexbin plot
6. Ridgeline plot
7. Streamgraph
8. Slope graph
9. Horizon chart
10. Word cloud
11. Pareto chart
12. Marimekko chart
13. Donut chart
14. Radar chart
15. Nightingale chart
16. Connected scatterplot
17. Dendrogram
18. Gantt chart (Alexandra)
19. Jitter plot
20. Time map
21. Arc diagram
22. Coropleth map

Select the chart you choose here and leave a comment with your name to claim this particular chart. Add a comment with a new chart if you'd like to choose one from outside this list.

Research

Investigate your chosen visualization:

- What kind of data and relationships does it represent?
- How are variables encoded (position, color, size, shape, etc.)?
- When is it useful — and when is it not?
- What are common pitfalls or misinterpretations?
- Which software or libraries can produce it?

Design Your Cheat Sheet

Your final product should be one landscape-oriented page (A4) and follow the guidance on the cheat sheet page. Include a minimum of four panels for:

- Anatomy
- Construction
- Visual Patterns

And pick at least one from the list below

- False friends
- Pitfalls
- Well-known relatives

The cheat sheet should remain concise and does not need to be entirely comprehensive. For example, if your chosen visualization is able to show hundreds of visual patterns, focus on a few common or strong ones.

Submit

On edunao. You have two weeks to complete this assignment.

Deliverables

One-page PDF cheat sheet

This cheat sheet will be shared with the class, so don't put your name on it if you are not comfortable with this

Grading Guide

Here is what I will be looking for when grading this assignment:

Content Accuracy (50%): Complete, accurate, well-researched explanation of chart's function and interpretation.

Design & Clarity (20%): Visually appealing, clear structure, easy to follow.

Originality & Insight (30%): Thoughtful synthesis; creative, insightful interpretation.

