

CSE 5520

Data Visualization and Communication
Fall 2021

Welcome Everyone

Instructors: **Sean Hong (seung-hyun.hong@uconn.edu)**
 Dong-Guk Shin (shin@engr.uconn.edu)

What Makes a Great Data Visualization?

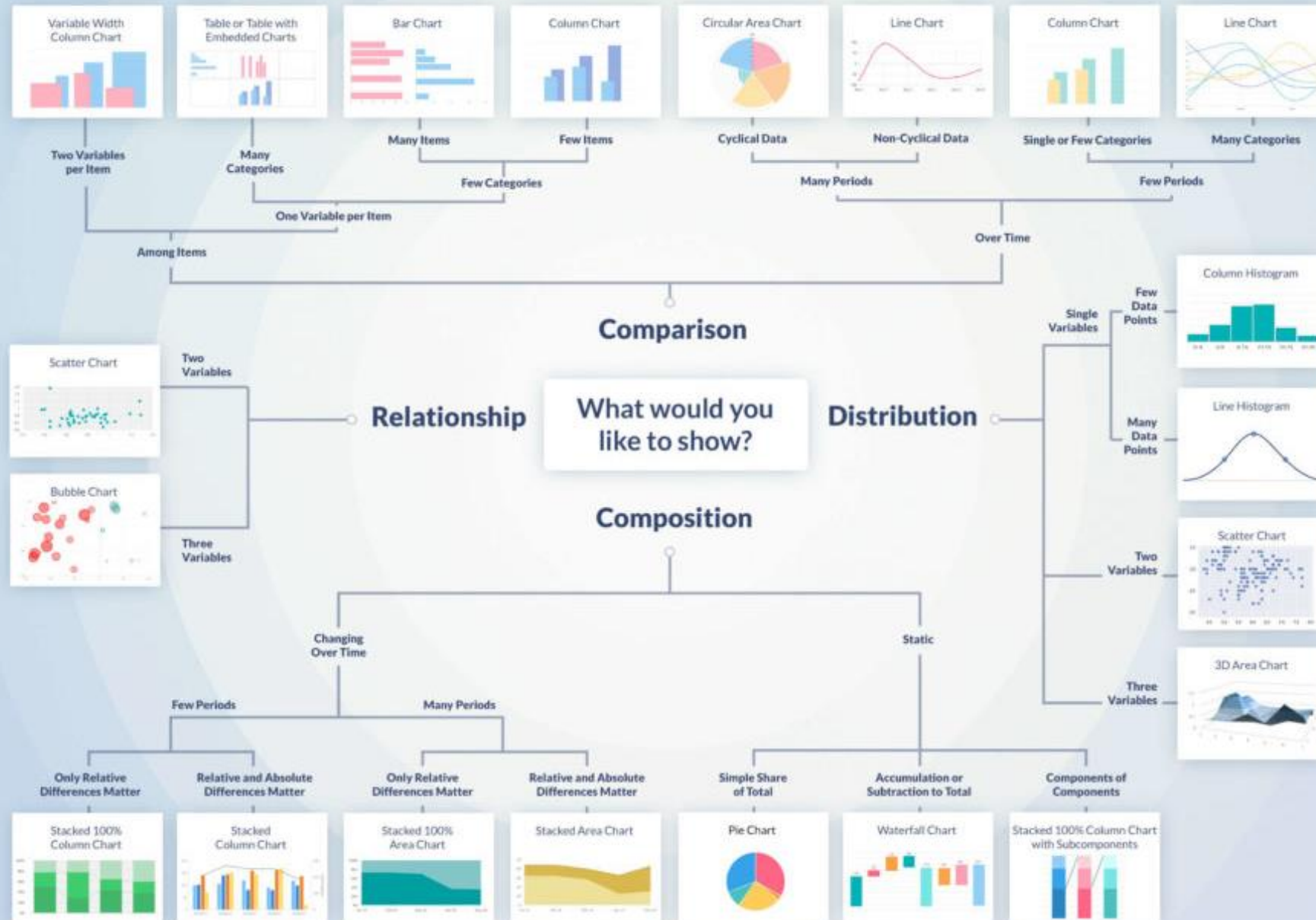
Comprehensibility, applicability, and appropriate use of charts and graphs. But that answer falls short. Those factors make for decent visuals that fall under the category of average or functional visual data.

To get great visualizations, you need to go beyond that. Great data visualizations are **quick to decipher and easy to be remembered as well as being appropriate** to the data they represent.

**“Data visualization is a comprehensive,
integrative science!”**

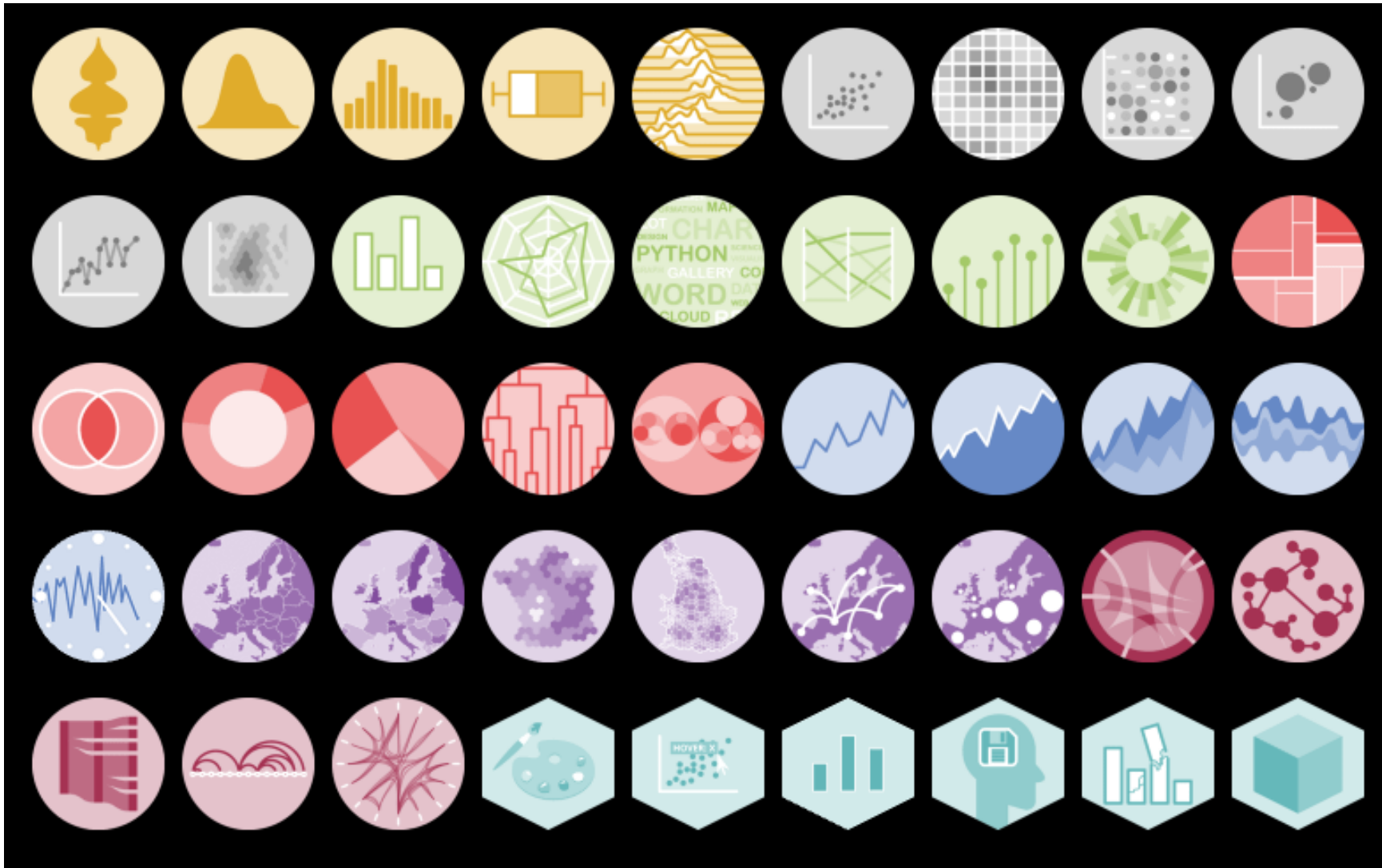
**Are there concrete rules for what you should
visualize and how you should visualize?**

Guided Visualizations for Charts and Graphs



Where would
be "trend"?

The Python Graph Gallery – Chart Types





Napoleon's hill
in Kaunas,
Lithuania



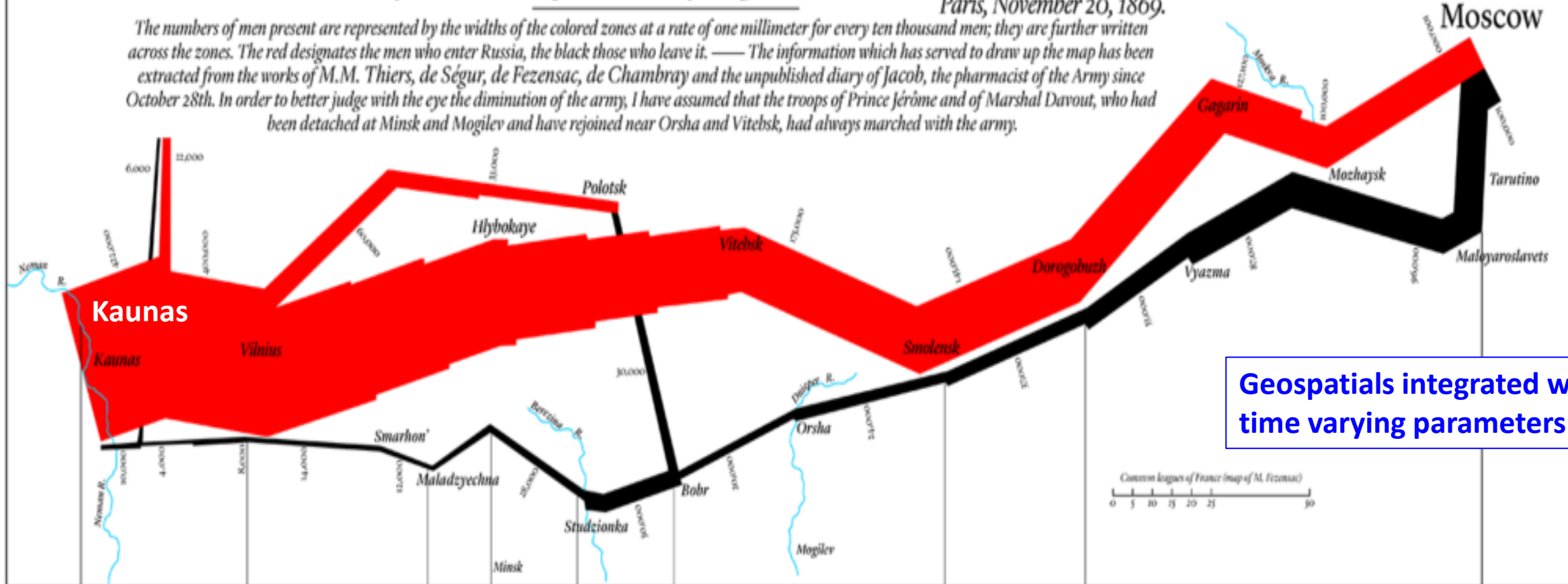
Grande Armée crossing Nemunas (June, 1812)

Figurative Map of the successive losses in men of the French Army in the Russian campaign 1812 ~ 1813

Drawn by M. Minard, Inspector General of Bridges and Roads (retired).

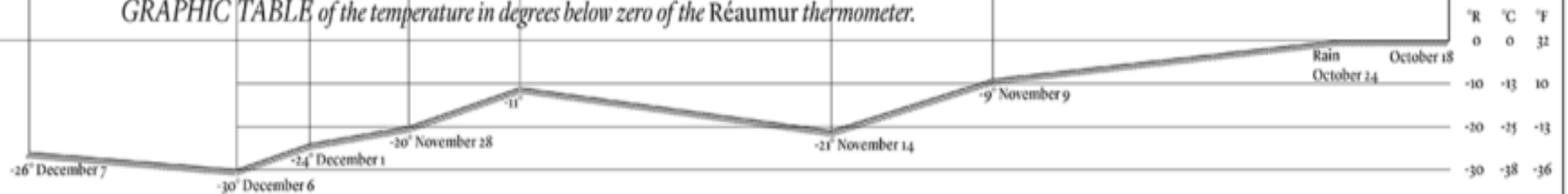
Paris, November 20, 1869.

The numbers of men present are represented by the widths of the colored zones at a rate of one millimeter for every ten thousand men; they are further written across the zones. The red designates the men who enter Russia, the black those who leave it. — The information which has served to draw up the map has been extracted from the works of M.M. Thiers, de Ségur, de Fezensac, de Chambray and the unpublished diary of Jacob, the pharmacist of the Army since October 28th. In order to better judge with the eye the diminution of the army, I have assumed that the troops of Prince Jérôme and of Marshal Davout, who had been detached at Minsk and Mogilev and have rejoined near Orsha and Vitebsk, had always marched with the army.



GRAPHIC TABLE of the temperature in degrees below zero of the Réaumur thermometer.

The Cossacks pass the frozen Neman at a gallop.



June 24, 1812 – Dec 19, 1812

PYTHON SCIENCE PLOTTING

Intro to Dynamic Visualization with Python — Animations and Interactive Plots

Making basic animations and interactive plots with Python

Naveen Venkatesan Apr 26, 2020

Sometimes, you would like to **create a dynamic graphic that either changes with time like a video, or adapts based on an interactive user input**. These visualizations do a great job of really showing **how an output can change with its inputs**.

Static Plot

Animated Plot

Interactive Plot

5 Python Libraries for Creating Interactive Plots

October 12, 2016 • Melissa Bierly

According to data visualization expert Andy Kirk, there are two types of data visualizations: **exploratory** and **explanatory**. The aim of explanatory visualizations is to tell stories—they're carefully constructed to surface key findings.

Exploratory visualizations, on the other hand, “create an interface into a dataset or subject matter... they facilitate the user exploring the data, letting them unearth their own insights: findings they consider relevant or interesting.”

More often than not, **exploratory visualizations are interactive**. While there are many Python plotting libraries, only a handful can create interactive charts that **you can embed online and distribute**. Today we're sharing five of our favorites.

- **mpld3**
- **pygal**
- **Bokeh**
- **HoloViews**
- **Plotly**