Data Visualization

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Learning Objectives

- Be able to define data visualization
- Understand the importance of data visualization
- Learn how to design infographics
- Become familiar with a new software platform (i.e., Piktochart)

The Eyes Have It: A Task by Data Type Taxonomy for Information Visualizations
Ben Shneiderman

- **"Information exploration should be a joyous experience but many commentators talk of information overload anxiety"**

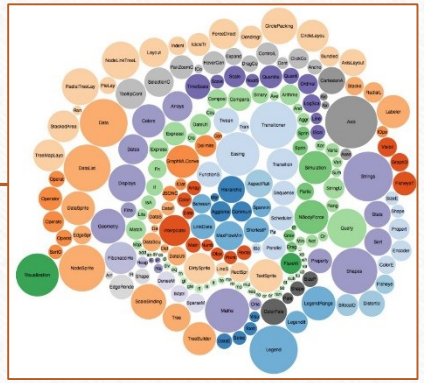
(Shneiderman, 1996, p. 336)

What is data visualization?

- **Data visualization** refers to the ways that data can be manipulated visually.
  - Examples include:
    - Maps, bar charts, timelines, artistic renderings, etc.
- Data visualization usually includes **information** and **scientific visualization**.
  - **Information Visualization** – covers graphs and charts, as well as other visual metaphors
  - **Scientific Visualization** – involves visualizing scientific data with real-world objects (via spatial properties)
    - Examples include:
      - Taking MRI scans and creating 3D volumes

(Zoss, 2017, About Data Visualization)

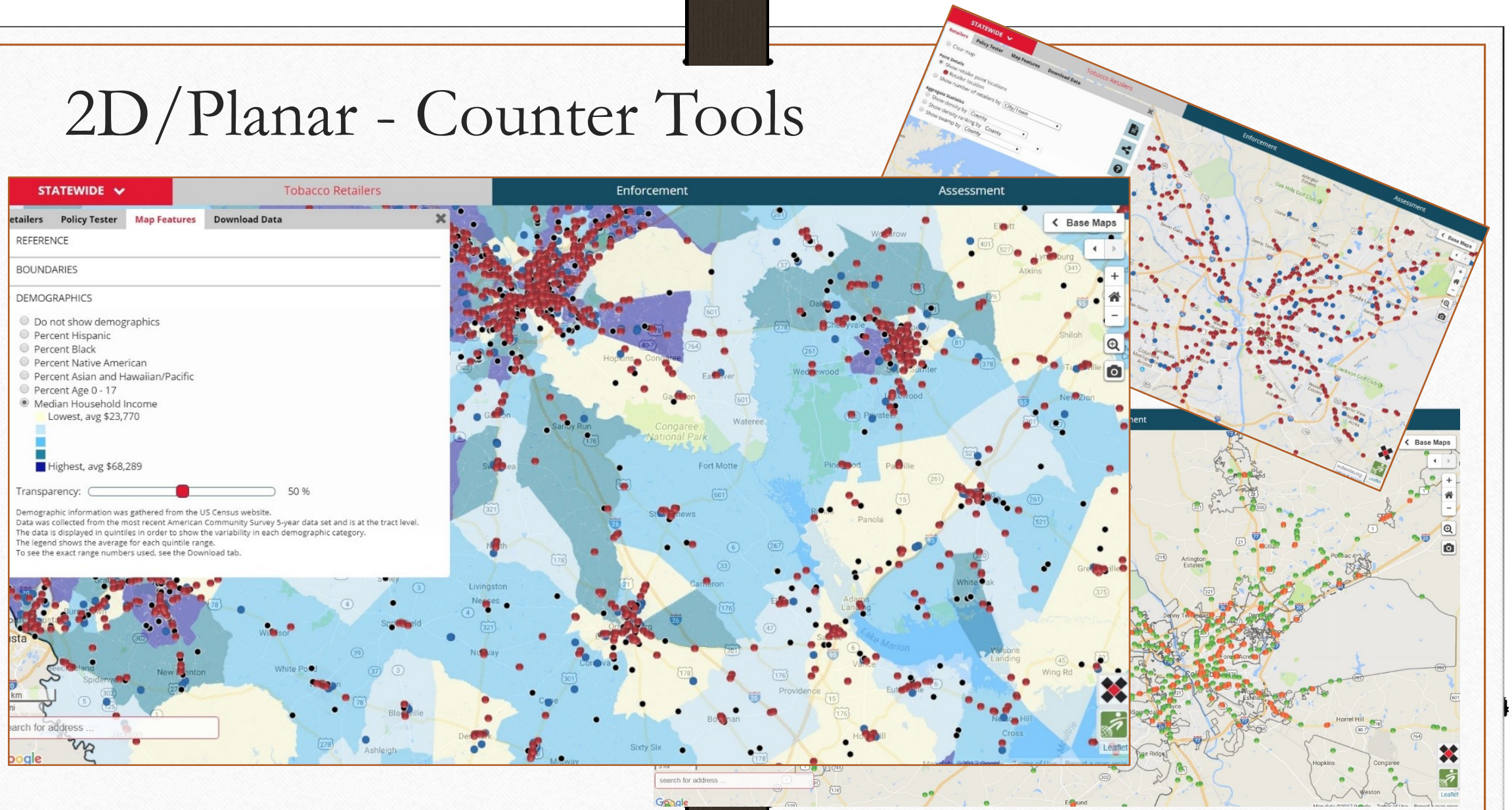
Visualization Types



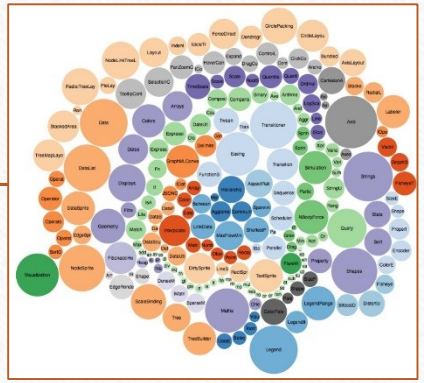
- Types of data:
  - 1-Dimensional/Linear (Ex. Organized lists of data)
  - 2-Dimensional/Planar (Ex. Geospatial maps)
  - 3-Dimensional/Volumetric (Ex. 3D computer models, volume renderings, and computer simulations)
  - Temporal (Ex. Timelines, time series, time plots, scatter plots, Gantt charts, etc.)
  - Multi-dimensional (Ex. Pie charts, histograms, Wordles, unordered bubble charts, bar charts, scatter plots, line charts, box and whisker plots, etc.)
  - Tree/Hierarchical (Ex. Tree map)
  - Network (Ex. Matrix, node-link diagram)

(Zoss, 2017, Visualization Types)

2D/Planar - Counter Tools



Visualization Types



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(Zoss, 2017, Visualization Types)

Why should we care about data visualization?

- What makes data visualizations so important is how efficient visuals are in relaying information.
- Our visual cortex is extremely efficient at processing information quickly and picking up on trends, patterns, and outliers.
- With this in mind, we want to process our data and be able to tailor a data-driven narrative to our target audience.

(O'Reilly Media, 2011, "Designing Data Visuals")

Special Genre of Visualizations

- Visualizations are more general, whereas infographics serve a specific purpose.
- Infographics use statistics and visuals to depict a narrative.
- They are a tool that presents information visually in a creative way.

(Kosara, 2011, "The Difference Between Infographics and Visualization")

Designing An Infographic

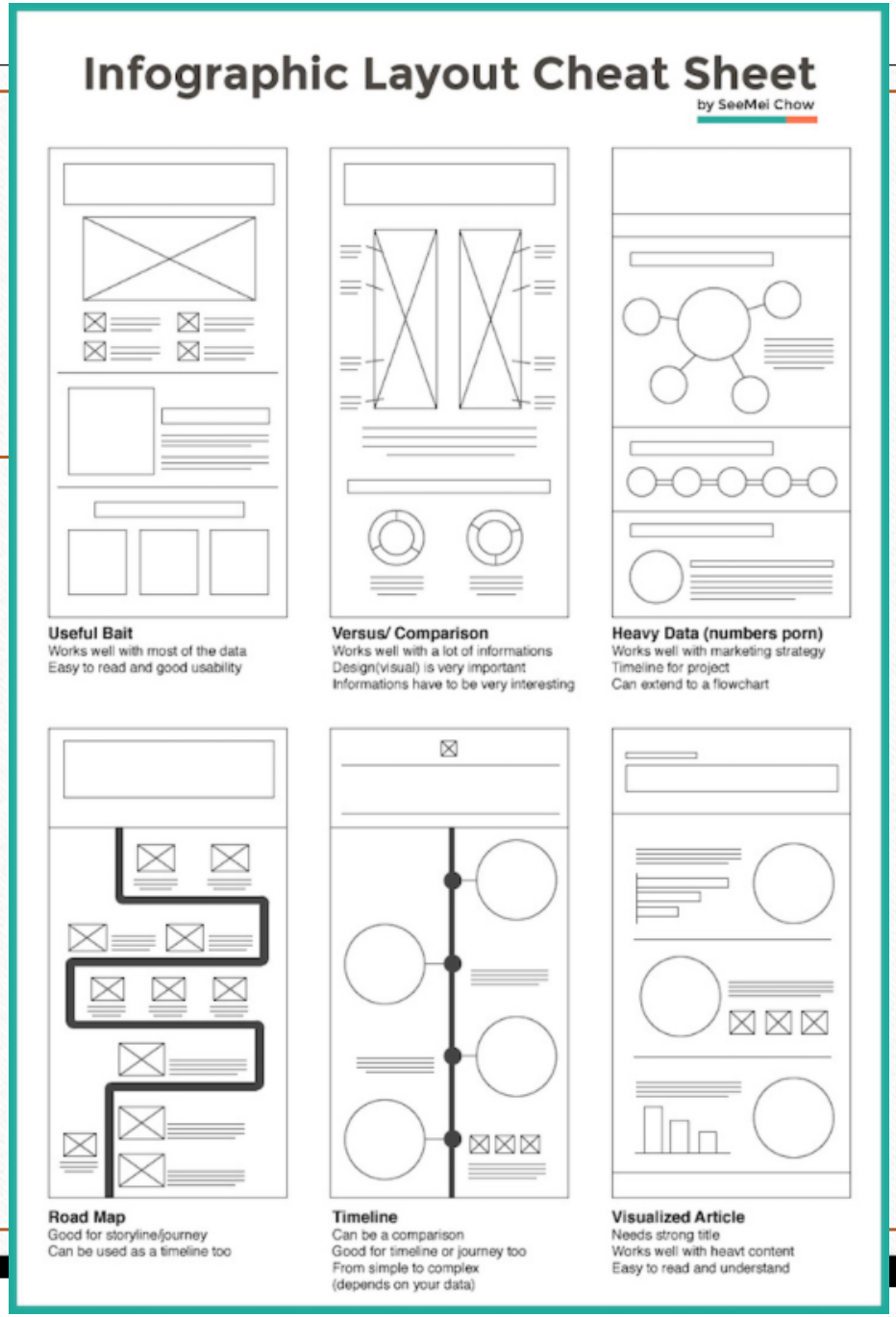
- Always keep in mind these three inputs:
  - 1) Reader
  - 2) Designer
  - 3) The Data
- You want to introduce the **topic**, then **the problem** and **its complexity**, followed by **the central argument**, and finish with **the conclusion** / take home message.

(Canva Learn, 2017, "Infographic Design")

Design Elements

- Organized narrative
- White space
- Flow
- Come up with a theme or style
- Keep it simple

(Mei Chow, 2017, Layout Cheat Sheet for Infographics)



Piktochart

- Allows you to generate infographics, presentations, and other printable documents (i.e., posters, reports, and flyers).
- This software can be used to enhance your needs assessments, program materials, and depict data in an innovative way!
- There are various accounts
  - 1) Free Lifetime Account ($0.00 annually – fewest features, templates, and limited downloads)
  - 2) Lite Account ($150.00 annually – more features, templates, and standard download ability)
  - 3) Pro Account ($290.00 annually – most features, 600+ templates, and download ability)
- **This is just one infographic platform available; however, there are many to choose from!**

Piktochart - URL

- https://piktochart.com/

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