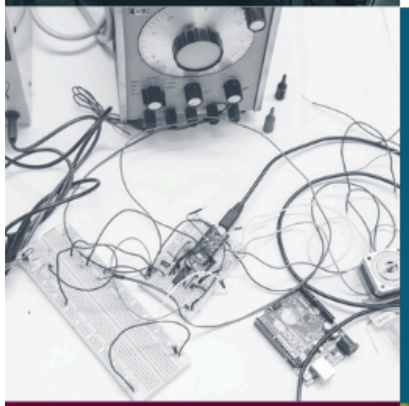
Sherman Centre for Digital Scholarship



Visualizing with Power BI

Presenter: Subhanya Sivajothy, Data Analysis and Visualization Librarian
Date: November 06, 2025

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Land Acknowledgement

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Book an Appointment with the DASH Team

Receive help from a member of the DASH team! DASH can assist with the following topics:

- **Creating data visualizations, including charts, graphs, and scatter plots**
- **Figuring out which statistical tests to run (e.g., t-test, chi-square, etc.).**
- **Analyzing data with software including SPSS, Python, R, SAS, ArcGIS, MATLAB, and Excel**
- **Choosing which software package to use, including free and open-source software**
- **Troubleshooting problems related to file formats, data retrieval, and download**
- **Selecting methodology and type of data analysis to use in a thesis project**

Book an appointment: https://library.mcmaster.ca/services/dash

Certificate Programs

The Sherman Centre for Digital Scholarship Certificate of Attendance

The Sherman Centre's certificate program recognizes attendance at our workshops. It complements degree training, supports the development of critical competencies in data analysis, research data management, and digital scholarship, and formalizes core skills fostered by our workshops.

Participants are invited to attend seven workshops and receive a certificate of attendance. To verify your participation in today's workshop, we will provide a code and additional instructions at the end of the session.
You can learn more about the certificate program at **scds.ca/certificate-program**

The Canadian Certificate for Digital Humanities
This workshop is also eligible for the Canadian Certificate for Digital Humanities. To learn more about the certificate, visit **ccdhhn.ca**. You can also contact local liaison Alexis-Carlota Cochrane at scds@mcmaster.ca

Learning Objectives

By the end of this workshop, you will:

- Identify and construct basic visualizations using Power BI.
- Be able to critique the accessibility and design features of graphs.

Have you downloaded Power BI Desktop and the data file?

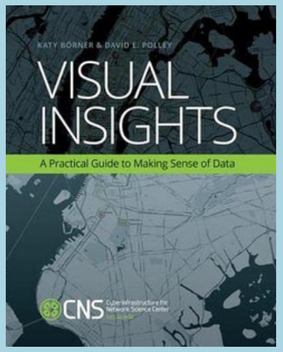
Identify Audience and Purpose

Prepare and Clean Data

Visualization Idioms

Visualization Elements

Share for Interpretation and Critique



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	The exploring data phase“the answer stage”	The explaining data phase“the telling others stage”
Intended audience	Yourself	Someone else
Desired complexity	High (Show all possible options)	Low (Focus on the answer)
Goal	Understand what the data means	Explain the meaning of the data to others
Use	The answer is the output of your work	The answer is an input to someone else's decisions

from *Persuading With Data*

1. Identify Audience and Purpose

01	**Who is your audience for your visualization?**
02	**What level of familiarity do they have with your topic?**
03	**What is the purpose of your visualization?**
04	**Is it to communicate a finding, or is it exploratory for your own analysis?**
05	**What is the story that I'm trying to tell?**

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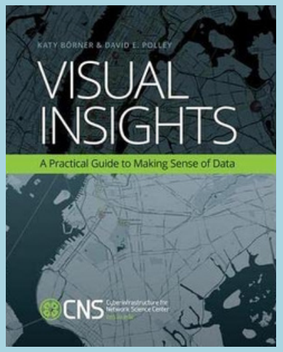

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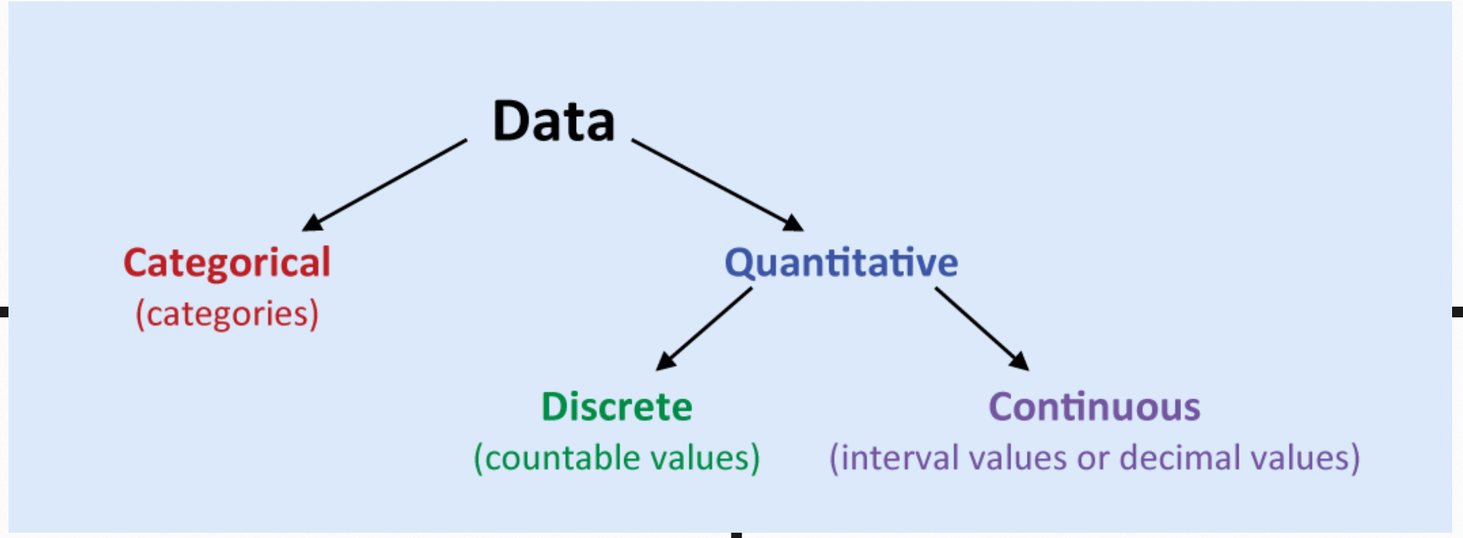
Prepare and Clean Data



Categorical

Categorical variables contain a finite number of categories or distinct groups. Categorical data might not have a logical order. Qualitative data is often categorical.

Continuous

Continuous variables are numeric variables that have an infinite number of values between any two values. A continuous variable can be numeric or date/time. Continuous data is always quantitative.

Discrete

Discrete variables are numeric variables that have a countable number of values between any two values. A discrete variable is always numeric.

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Common Tasks

formatting values

anomalies and missing data

standardizing values and
remove pre-aggregated data

readable headings

OpenRefine

Excel

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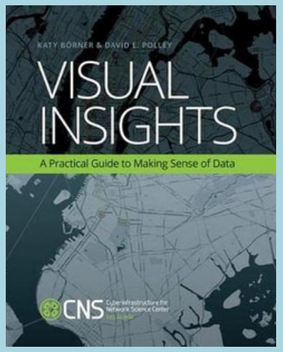

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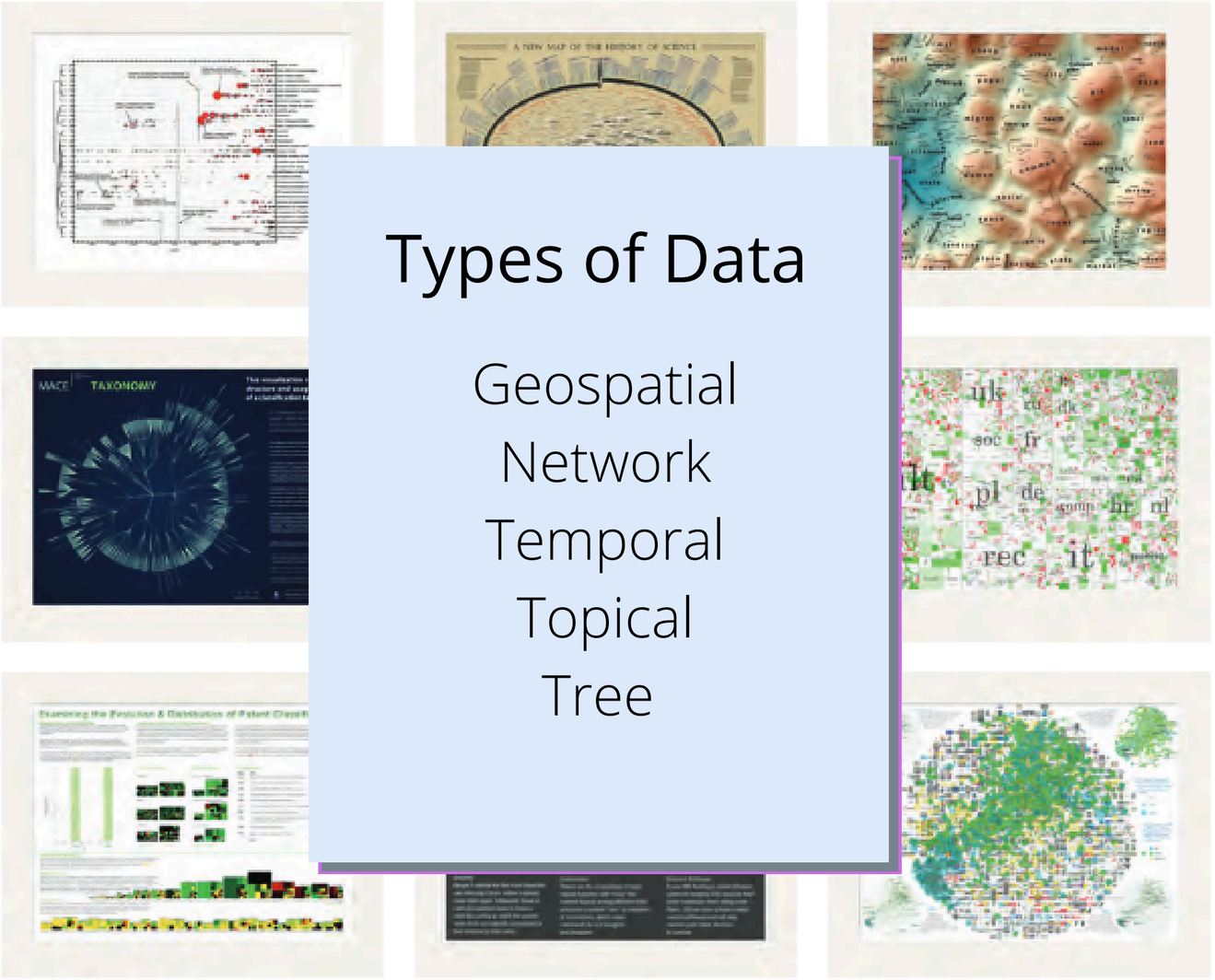

Types of Data
Geospatial
Network
Temporal
Topical
Tree

Choosing Idioms

01	**Geospatial**	**Bubble Map, Choropleth Map**
02	**Temporal**	**Timeline, Line Graph, Area Chart, Histogram, Bubble Chart**
03	**Network**	**Arc Diagram, Chord Diagram, Network Diagram**
04	**Topical**	**Wordclouds, Bar Graph, Tree Maps**
05	**Tree**	**Sunburst diagram, Tree Map, Flowchart**

3. Visualization Idioms

The Data Visualisation Catalogue

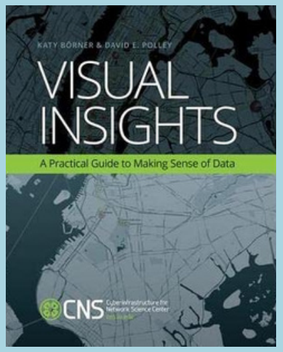
Identify Audience and Purpose

Prepare and Clean Data

Visualization Idioms

Visualization Elements

Share for Interpretation and Critique



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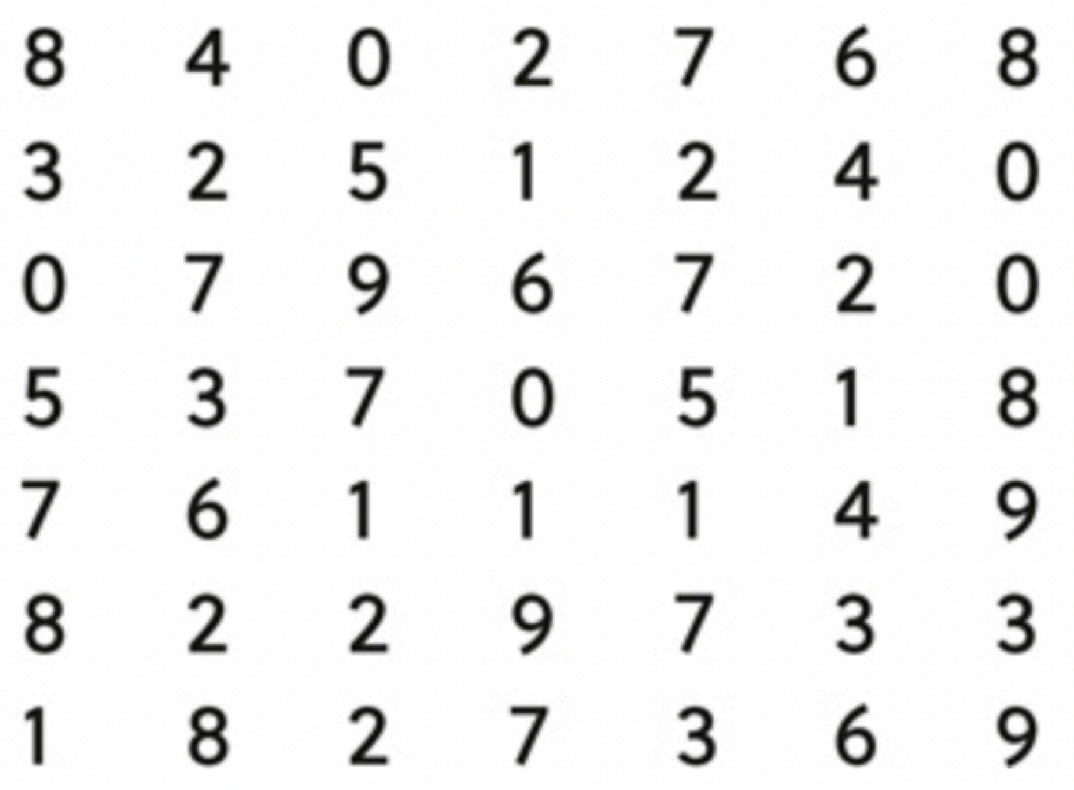
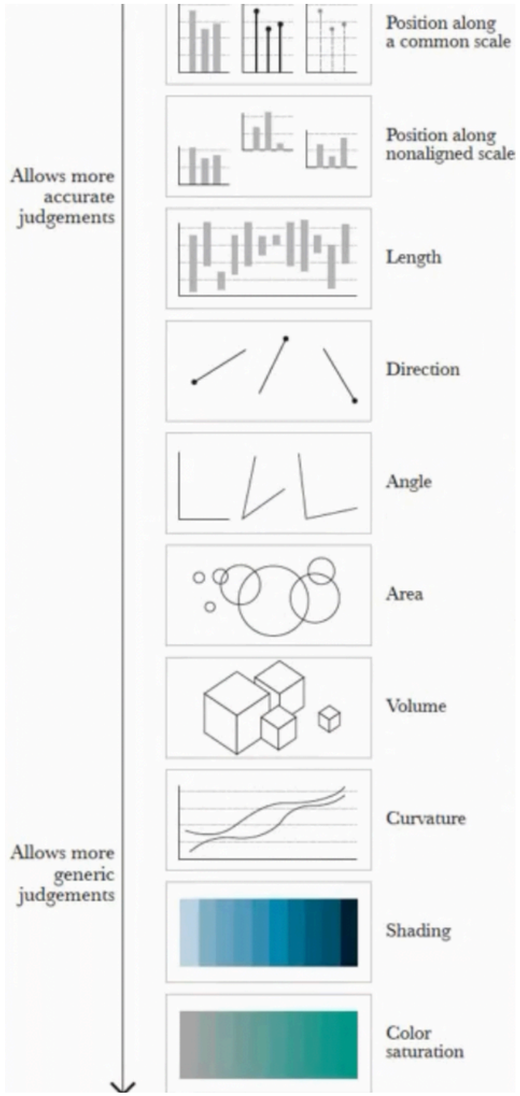
Thinking About Cognitive Load

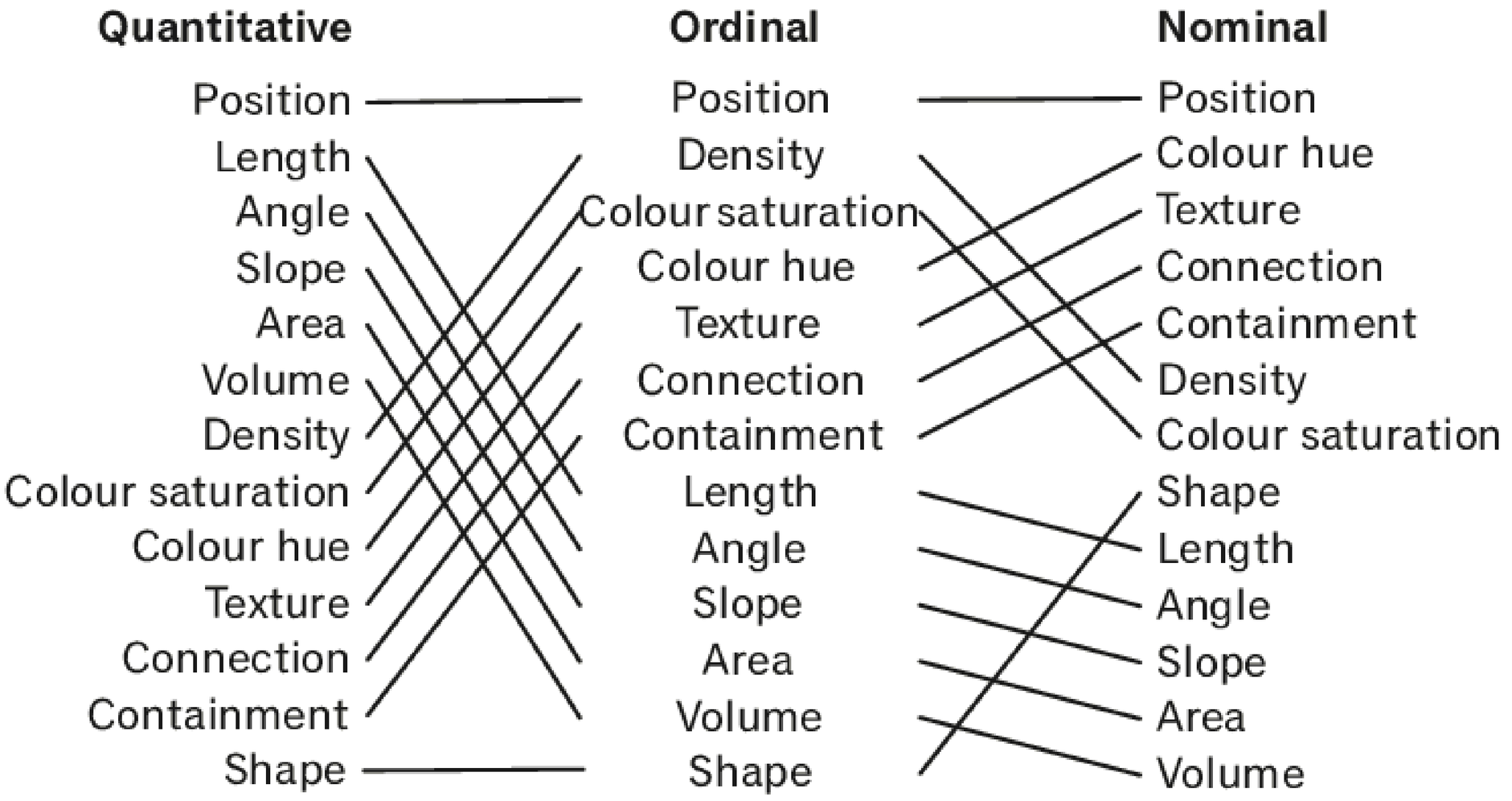


source: *Persuading with Data + Storytelling with Data*

4. Select Visual Elements



Perception of graphical elements (Cleveland & McGill, 1984, P532)



The Mackinlay ranking of perceptual task

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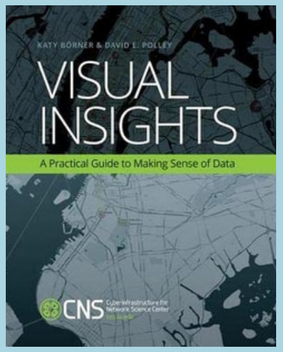

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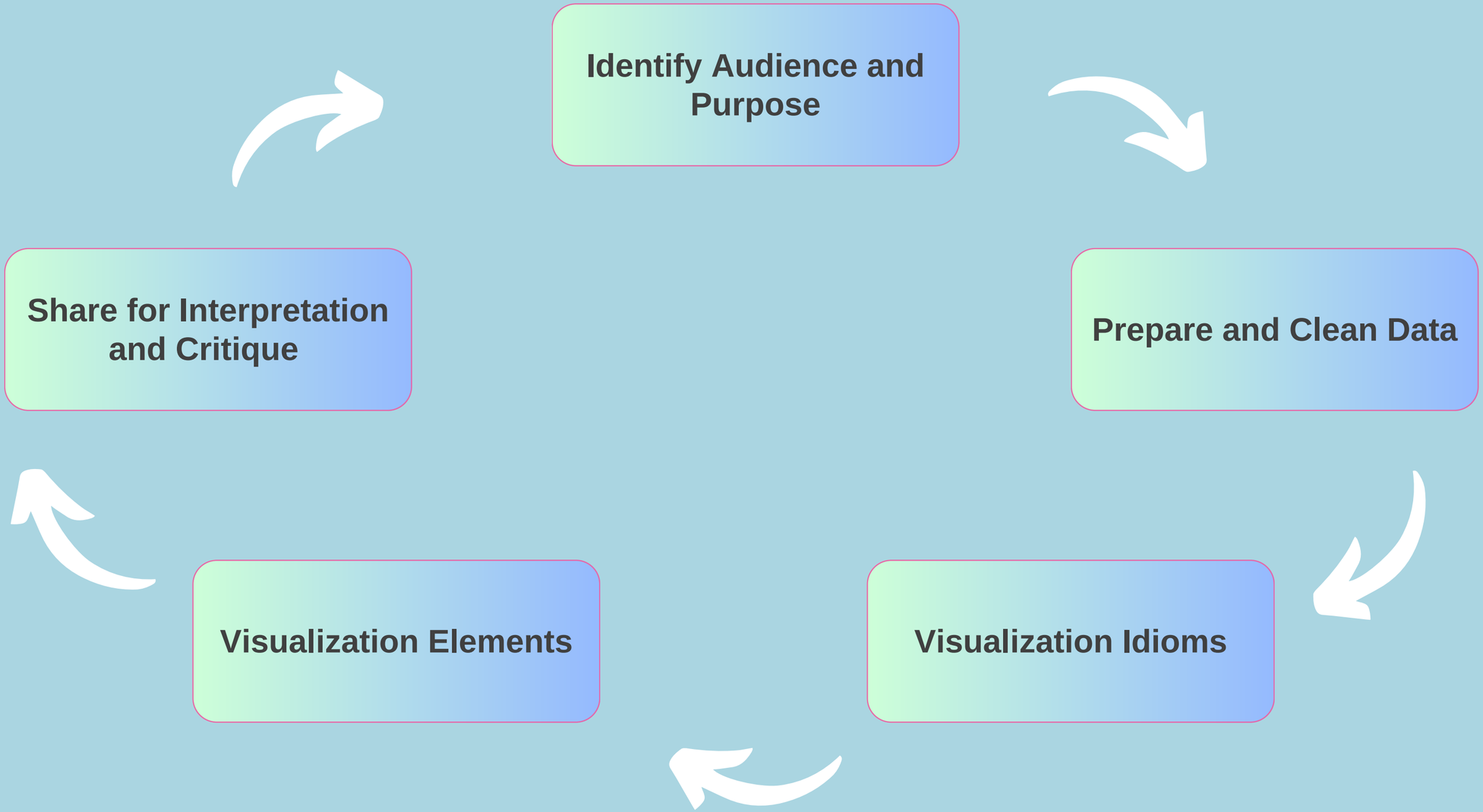
5. Share for Interpretation and Receive Feedback

01	**Would a user be able to understand the basics in 15 seconds?**
02	**Is this visualization honest about what isn't represented?**
03	**Have I properly attributed the work?**



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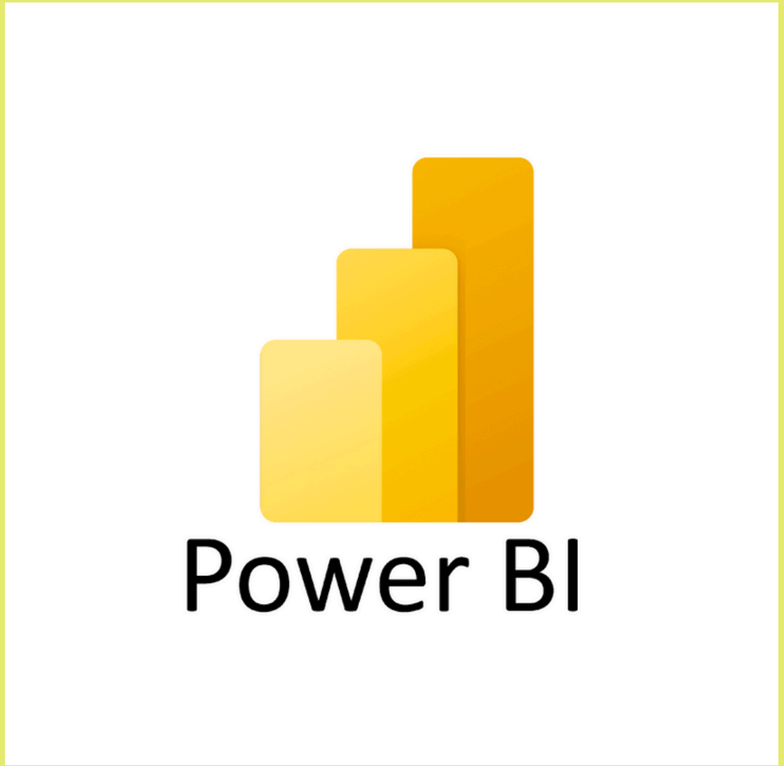

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Licences

- **Power BI Desktop** is the application that runs on a Windows computer, mainly to design and publish reports. It is available at no cost and available to all staff, students and faculty. This version will allow a user to create reports for personal use or to export for others.
- **Power BI Pro** is the licence distributed at the University. Utilizing a Pro licence will allow content creators the ability to publish and share dashboards and reports with other Pro users.
    - This license is required if:
        - A user needs to create a dashboard to **share** with others.
        - A user needs to view a **shared** dashboard.
- **Power BI Premium** is the enterprise subscription managed and administrated by the University. Utilizing the Premium subscription on one of your workspaces will allow content creators the ability to share dashboards and reports with other users without the requirement of everyone needing a Pro license.
    - This subscription is required if:
        - A report or dashboard will be shared with multiple people who are **not** publishing content as well.

Before Diving In:

Let’s Take a Look at the Data

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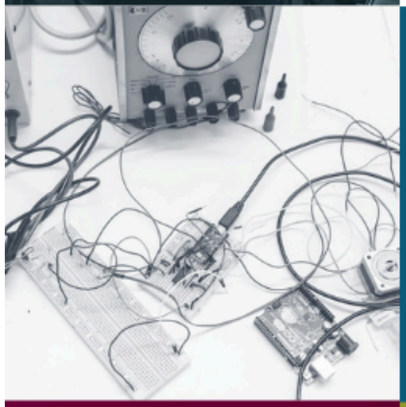

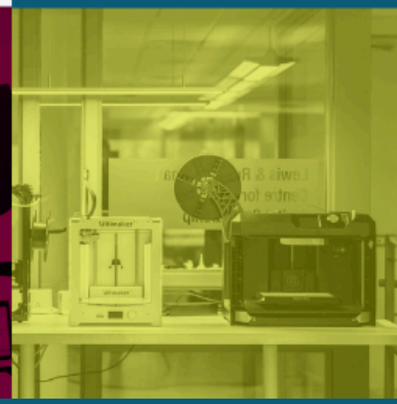

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