**WEEK 1**

Communicating your data insights

Understand data visualization

**Data Visualization** The graphic representation and presentation of data

**The McCandless Method**

1. **Introduce the graphic by its name**

Begin the presentation of your graphic by establishing the visual as the star of the show.

1. **Answer the obvious before being asked**

Beginning at the highest level and working to the lowest required detail, answer questions audience members should have to keep them engaged.

1. **State the insight of your graphic**

Give your audience the insight they will see before you dive into the supporting details of your data story

1. **Call out data to support the insight**

Give as many interesting examples from your data as you can to substantiate the insight and wow your audience (saving the best for last)

1. **Close and transition to next point**

Restate your insight and leave the visual by building momentum that will carry the audience to the next point in your presentation

**Bar graphs** Use size contrast to compare two or more values

**Line graphs** Help your audience understand shifts or changes in your data

**Pie charts** Show how much each part of something makes up the whole

**Maps** Help organize data geographically

One of the biggest considerations when creating a data visualization is where you’d like your audience to focus

**Histogram** A chart that shows how often data values fall into certain ranges

**Correlation charts** Show relationships among data

**Causation** Occurs when an action directly leads to an outcome

**Static visualizations** Do not change over time unless they’re edited

**Dynamic visualizations** Visualizations that are interactive or change over time

Design data visualizations

**Data composition** Combining the individual parts in a visualization and displaying them together as a whole

The **Venn diagram by David McCandless** identifies four elements of successful visualizations:

* **Information (data):** The information or data that you are trying to convey is a key building block for your data visualization. Without information or data, you cannot communicate your findings successfully.
* **Story (concept):** Story allows you to share your data in meaningful and interesting ways. Without a story, your visualization is informative, but not really inspiring.
* **Goal (function):** The goal of your data visualization makes the data useful and usable. This is what you are trying to achieve with your visualization. Without a goal, your visualization might still be informative, but can’t generate actionable insights.
* **Visual form (metaphor):** The visual form element is what gives your data visualization structure and makes it beautiful. Without visual form, your data is not visualized yet.

**Design thinking** A process used to solve complex problems in a user-centric way

**Five phases of the design process**

* **Empathize**: Thinking about the emotions and needs of the target audience for the data visualization
* **Define**: Figuring out exactly what your audience needs from the data
* **Ideate**: Generating ideas for data visualization
* **Prototype**: Putting visualizations together for testing and feedback
* **Test**: Showing prototype visualizations to people before stakeholders see them

Exploring visualization considerations

**Headline** A line of words printed in large letters at the top of the visualization to communicate what data is being presented

**Subtitle** Support the headline by adding more context and description

**Legend** Identifies the meaning of various elements in a data visualization

**Way to make data visualizations accessible**

* Labeling
* Alternative text: provides a textual alternative to non-text content
* Text-based format
* Distinguishing
* Simplify

**WEEK 2**

Create visualizations in Tableau

**Diverging color palette** Display two ranges of values using color intensity to show the magnitude of the number and the actual color to show which range the number is from

**A few rules about what makes a helpful data visualization:**

* **Five-second rule:** A data visualization should be clear, effective, and convincing enough to be absorbed in five seconds or less.
* **Color contrast:** Graphs and charts should use a diverging color palette to show contrast between elements.
* **Conventions and expectations:** Visuals and their organization should align with audience expectations and cultural conventions. For example, if the majority of your audience associates green with a positive concept and red with a negative one, your visualization should reflect this.
* **Minimal labels:** Titles, axes, and annotations should use as few labels as it takes to make sense. Having too many labels makes your graph or chart too busy. It takes up too much space and prevents the labels from being shown clearly.

**WEEK 3**

Use data to develop stories

**Dashboard** A tool that organizes information from multiple datasets into one central location for tracking, analysis, and simple visualization

**Dashboard filter** A tool for showing only the data that meets a specific criteria while hiding the rest

**Data storytelling** communicating the meaning of a dataset with visuals and a narrative that are customized for each particular audience

**3 data storytelling steps**

* Engage your audience
* Create compelling visuals
* Tell the story in an interesting narrative

**Engagement** Capturing and holding someone’s interest and attention

**Spotlighting** Scanning through data to quickly identify the most important insights

Sharing data stories

The narrative you share with your stakeholders needs **characters**, **a setting, a plot, a big reveal, and an "aha moment,"** just like any other story. The **characters** are the people affected by your story. This could be your stakeholders, customers, clients, and others. When adding information about your characters to your story, you have a great opportunity to include a personal account and bring more human context to the facts that the data has revealed—think about why they care. Next up is a setting, which describes what's going on, how often it's happening, what tasks are involved, and other background information about the data project that describes the current situation.

**Best practice for presentations:**

* Use an attention-grabbing opening?
* Start with broad ideas and later talk about specific details?
* Speak in short sentences?
* Pause for five seconds after showing a data visualization?
* Pause intentionally at certain points?
* Keep the pitch of your voice level?
* Stand still and move with purpose?
* Maintain good posture?
* Look at your audience (or camera) while speaking?
* Keep your message concise?
* End by explaining why the data analysis matters?

**Slide decks checklist:**

* Include a good title and subtitle that describe what you’re about to present?
* Include the date of your presentation or the date when your slideshow was last updated?
* Use a font size that lets the audience easily read your slides?
* Showcase what business metrics you used?
* Include effective visuals (like charts and graphs)?

**WEEK 4**

The art and science of an effective presentation

**Purpose of a framework:**

* Give your audience context to better understand your data
* Help you focus on the most important information
* Create logical connections that tie back to the business task

**Hypothesis** The theory you’re trying to prove or disprove with data

Establishing the hypothesis early in the presentation will help your audience understand the data

**The McCandless Method**

* Introduce the graphic by name
* Answer obvious questions before they’re asked
* State the insight of your graphic
* Call out data to support that insight
* Tell your audience why it matters (present the possible business impact of the solution and clear actions stakeholders can take)

Identify presentation skills and practices

**Presentation tips:**

* Channel your excitement
* Start with the broader ideas
* Use the five second rule
  + Wait five seconds after showing a data visualization
  + Ask if they understand
  + Give your audience another five seconds
  + Tell them the conclusion
  + Preparation is key

Caveats and limitations to data

**Anticipate the question**

* Understand your stakeholder’s expectations
* Make sure you have a clear understanding of the objective and what the stakeholder wanted
* Start with zero assumptions, don’t assume that your audience is already familiar with jargon, acronyms, past events, or other necessary background information
* Be prepared to consider any limitations of your data by:
  + Critically analyzing the correlations
  + Looking at the context
  + Understanding the strength and weakness of the tools

Handling objections

**Types of objections**

* About the data
  + Where did you get the data?
  + What systems it came from”
  + What transformations happened to it?
  + How fresh and accurate is the data?
* About your analysis
  + Is your analysis reproducible?
  + Who did you get feedback from?
* About your findings
  + Do these findings exist in previous time periods?
  + Did you control for the differences in your data?

**Responding to possible objections**

* Communicate any assumptions
* Explain why your analysis might be different that expected
* Acknowledge that those objections are valid and take steps to investigate further

Listen, response, and include

**Q&A best practices**

* Listen to the whole question
* Repeat the question (if necessary)
* Understand the context questions are being asked to
* Involve the whole audience
* Keep your responses short and to the point

**Important aspects to a presentation**

* Define your purpose
* Keep it concise
* Have some logical flow to your presentation
* Make the presentation visually compelling
* How easy is it to understand?