Assessment 102:

Effective Techniques for Data Presentation & Analysis

June 11, 2024

Assessment 102: Learning Outcomes

- Participants will understand the methods of presenting and analyzing assessment data.
- Participants will learn how to effectively use assessment results to improve outcomes.

Assessment 101: Quick Recap

What is assessment?

- Assessment is a systematic inquiry into what students are learning
  - . . . [it] includes research, data gathering, **data analysis, and evaluation** (Erwin, 2002; Palomba & Banta, 1999)

Why do we do it?

- Useful feedback (identify strengths, address weaknesses)
- To make informed decisions (data-driven decision making)
- To tell our story (showcase strengths & identify areas for improvement)

What is Co-Ca?

Assessment Cycle

Elements of Assessment Plan

Now that we've mastered the basics of assessment, let's learn how to present, analyze, & interpret our results.

Validating Data

- **Ensuring that the data collected is accurate, complete, and relevant**
  - **Why? - to ensure that the information is reliable and useful for decision-making**
  - **Accuracy:** avoid errors in data that lead to incorrect conclusions/decisions
  - **Consistency:** ensure data follows a standard format & structure (to make it easier to compare and analyze)
  - **Completeness:** avoid missing data, ensure all necessary information is captured for comprehensive analysis
  - **Relevance:** only necessary & pertinent data is present; avoid clutter & *focus on what's important*
- **Common methods to validate data**: format checks, consistency checks, mandatory field checks, range checks, etc.

Data Presentation

Why is this important?

- Increases the credibility of assessment findings
- Aids in effective communication of findings (across a wide range of constituencies)
- Clear & accurate data presentation facilitates strategic decision-making
- Engages stakeholders and supports transparency
- Supports program improvement & strategic planning
- Accountability!

Data Analysis Tools

- Most common: Excel, Google Sheets
- SPSS (higher level data analysis)
- Tableau (higher level visualization)

Analyzing Assessment Data

Methods for analysis:

- **Descriptive Analysis**: summarize the main themes within the data (participation rates, survey responses, & program attendance)
- **Trend Analysis**: identify changes in engagement/patterns over time
- **Comparative Analysis**: compare data across different groups or time periods
- **Inferential Analysis**: make inferences - draw conclusions from the data that extend beyond the immediate/obvious output

Accurately Interpreting Data

- **Contextual Understanding:** Align findings with the specific context of the co-curricular activity. Consider the unique environment and participants involved.

- **Triangulation:** Use multiple data sources to confirm findings (e.g., surveys, focus groups, observations). Ensure consistency across different data collection methods.

- **Descriptive Analysis:** Use descriptive statistics to summarize data (e.g., mean, median, mode). Present visual representations like charts and graphs for clarity.

- **Comparative Analysis:** Compare pre- and post-assessment results to measure changes over time. Benchmark against similar programs or historical data.

Accurately Interpreting Data

- **Qualitative Insights:** Analyze qualitative data for themes and patterns. Use coding techniques for focus group and interview transcripts.

- **Anomalies and Outliers:** Identify and investigate any anomalies or outliers in the data. Determine if they indicate unique cases or errors in data collection.

- **Alignment with Learning Outcomes:** Ensure that interpretations directly relate to the predefined learning outcomes.Discuss how findings meet or deviate from expected outcomes.

- **Stakeholder Involvement:** Involve stakeholders in interpreting data to gain diverse perspectives. Validate interpretations with those who are directly impacted.

Data Misrepresentation

Cherry-Picking Data: Selecting only favorable data to support a desired outcome. Ignoring data that contradicts or challenges the preferred narrative.

Overgeneralization: Drawing broad conclusions from a small or non-representative sample. Misapplying findings to a wider population without sufficient evidence.

Misleading Visuals: Using distorted graphs or charts that exaggerate or minimize differences. Omitting key data points or axes to misrepresent trends.

Confirmation Bias: Interpreting data in a way that confirms pre-existing beliefs or hypotheses. Dismissing data that does not align with expectations.

Inappropriate Comparisons: Comparing data sets that are not comparable (e.g., different time periods, cohorts). Failing to account for external variables that could influence results.

Statistical Manipulation: Using inappropriate statistical methods to manipulate outcomes. Misrepresenting the significance or reliability of findings.

How do we present data?

Potential Methods:

- Tables & charts (line graphs, bar charts, pie charts, pivot tables)
- Infographics (Canva is great for this!)
- Interactive visualizations (Microsoft Sway is a great tool for this)
- Dashboards (higher-level, complex data situations)
- Reports & summaries (written reports, i.e. annual assessment reports - these should include a variety of data presentation methods)

Choosing the “Right” Method

Things to consider:

- Focus on your intended message
- Always tailor to your intended audience - consider their knowledge level, including non-academic stakeholders
- Use appropriate charts for qualitative vs. quantitative data
- Ensure the visualization highlights key aspects of student engagement & program impact

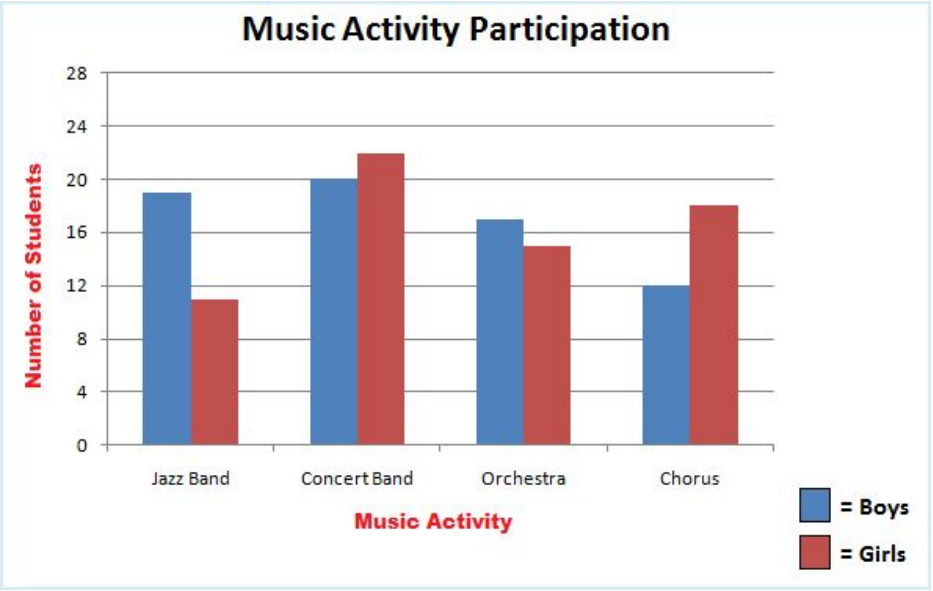
Remember to:

- Label everything clearly (chart titles, axes & specific data points)
- Leverage colors to enhance readability
- Ensure consistency across multiple graphics (color, labeling, font, etc.)
- Annotate where necessary
- Keep things as simple as possible (avoid clutter) to maximize comprehension

Choosing the “Right” Method - Continued

Bar Charts:

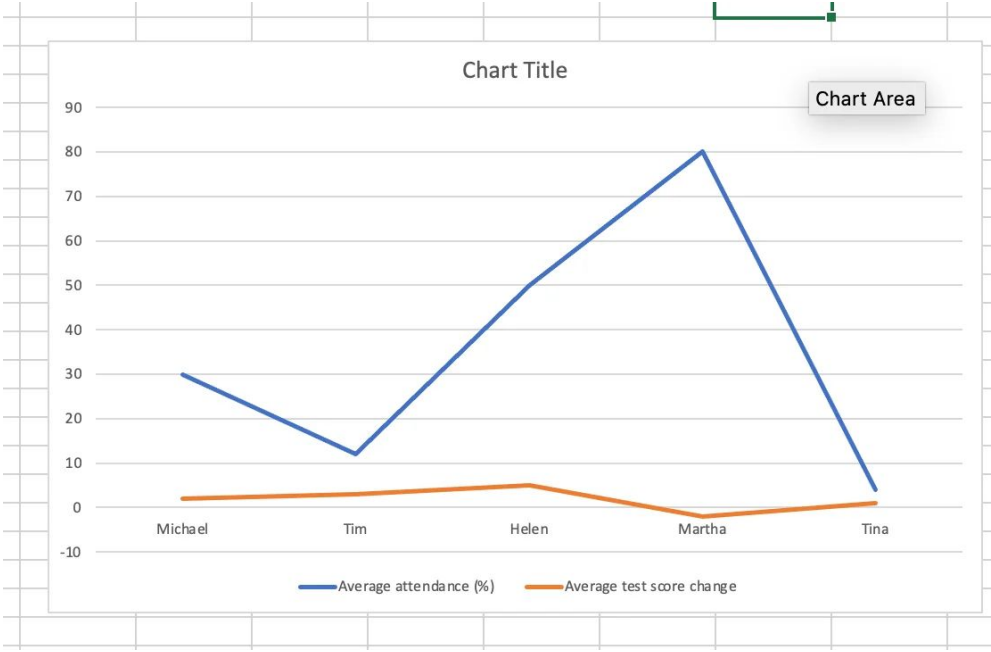
- Useful for comparing participation across different programs, events, or time periods
  - Example: Visualizing the number of students participating in different clubs and organizations over a semester



Choosing the “Right” Method - Continued

Line Graphs:

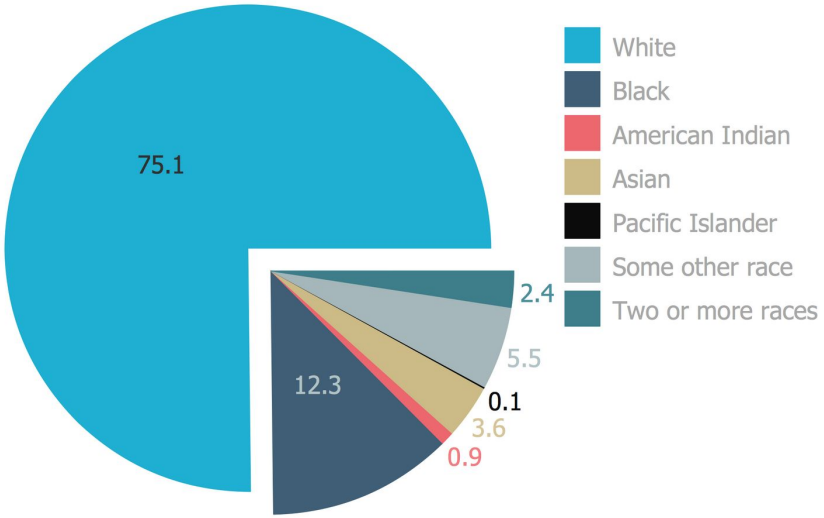
- Useful for showing trends in participation over time
  - Example: Track the growth in attendance at weekly workshops over the academic year



Choosing the “Right” Method - Continued

Pie Charts:

- Useful for showing distribution of participation among different categories
  - Example: Illustrate the percentage of students, by demographic, that engages with a specific office or service



Choosing the "Right" Method - Continued

Pivot Tables:

- Helpful in managing large datasets - quickly summarize & organize/re-organize data to identify patterns
  - Dataset containing detailed records of student participation across campus, over multiple semesters

Ethnicity	Academic Year	COUNTA of Stat
American Indian Or Alaska Native	20/21	3
	21/22	1
American Indian Or Alaska Native Total		4
Asian	20/21	23
	21/22	57
Asian Total		80
Black or African American	20/21	101
	21/22	115
Black or African American Total		216
Hispanic/Latino	20/21	66
	21/22	109
Hispanic/Latino Total		175
Native Hawaiian Or Other Pacific Islanc	21/22	1
Native Hawaiian Or Other Pacific Islander Total		1
Non Resident Alien	20/21	6
	21/22	20
Non Resident Alien Total		26
Two or More Races	20/21	22
	21/22	20
Two or More Races Total		42
Unknown	20/21	34
	21/22	85
Unknown Total		119
White	20/21	421
	21/22	754
White Total		1175
Grand Total		**1838**

Choosing the “Right” Method - Continued

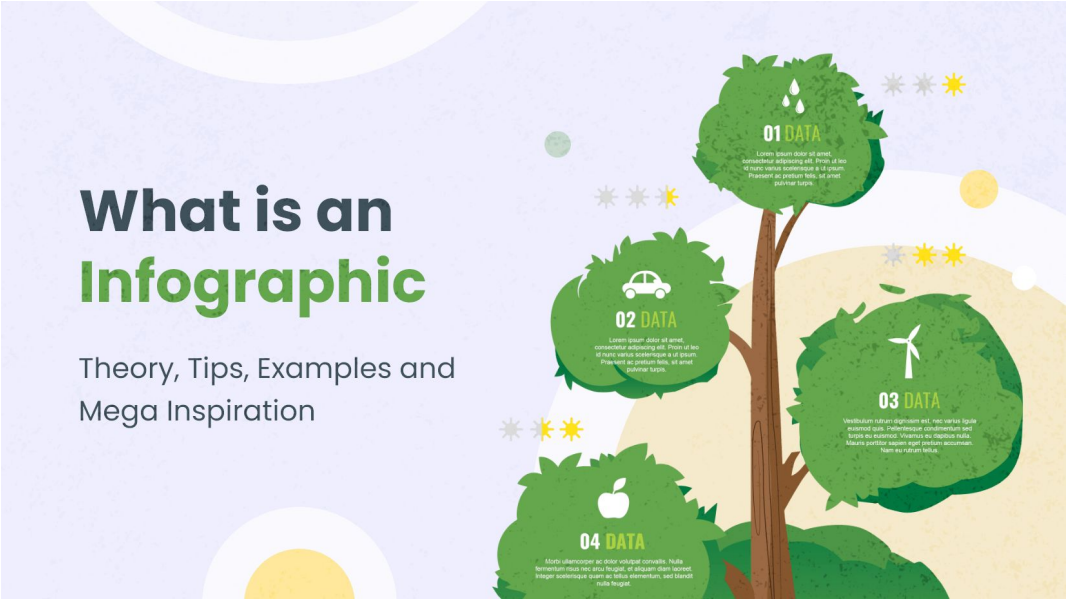
Word Clouds:

- Highlight frequently mentioned terms of phrases in qualitative feedback
  - Example: Common themes from student feedback on what they value most from co-curricular activities

Choosing the “Right” Method - Continued

Infographics:

- Ideal when presenting data to a broad audience
- Used to simplify complex information & make it visually appealing, in an attempt to make the message “easily understood”
- Summarizes key findings and tells a story



Using Assessment Results

How and why do we do this?

- Data-driven decision making
  - Informing policy & practice
- Identifying areas for improvement & developing feedback loops for continuous improvement
- Accountability!

Communicating Assessment Results

How do we most effectively communicate our message to stakeholders?

- Tailor the message to the intended audience
- Use narratives to help others relate to the data (our annual assessment reports, for example)
- Provide recommendations (based on the data), & identify action steps towards improvement
- Tell the story! Use your narrative to communicate the key takeaways/message(s) in the most effective way possible

Group Work

- Given the topics discussed today, what are some of the effective ways that you have analyzed data and shared results?
  - What are some of your challenges?
- What offices have systems/platforms that help with visualizing & analyzing data?
  - How have you used that in your reporting?
- What challenges have you come across in analyzing your data & presenting your findings to your stakeholders?
- What creative ways has your department used to share findings?

Questions?

Thanks for attending!

- Let us know how we did: