



Technology and Data Analytics

Dr. Nicole S. Wright, Ph.D., CPA, CFE

2025 College and University Auditors of Virginia
Conference

Wednesday, April 30, 2025

Agenda and Objectives



Data Wrangling – discuss the difficulties with data and common data issues

Technology Spotlight: Alteryx



Data Analysis – discuss common techniques and issues related with data analysis

Technology Spotlight: DATASNIPPER

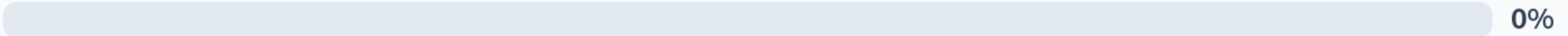


Results Visualization – discuss how visualizations can be impactful and setting up dashboards for ease of use

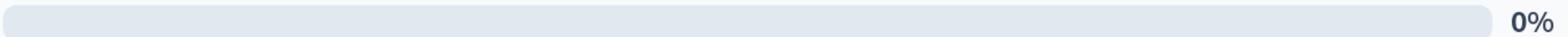
Technology Spotlight: Power BI

What do you find most frustrating when dealing with data? You can select up to 3 issues.

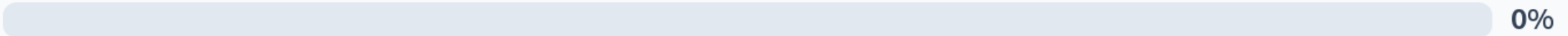
Missing or null values



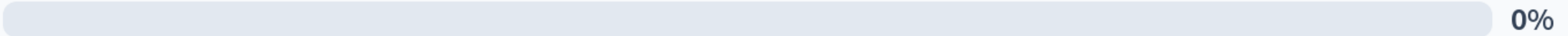
Inconsistent formats



Duplicates



Messy data



Incorrect data types



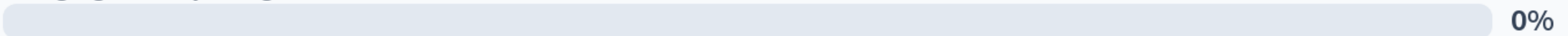
Column naming inconsistencies



Unstructured text



Merging and/or joining errors



Data Wrangling

Common Difficulties when Dealing with Data:



Data Quality
Issues



Data Integration



Scalability and
Storage



Privacy and
Security



Data Governance



Understanding
and Interpretation

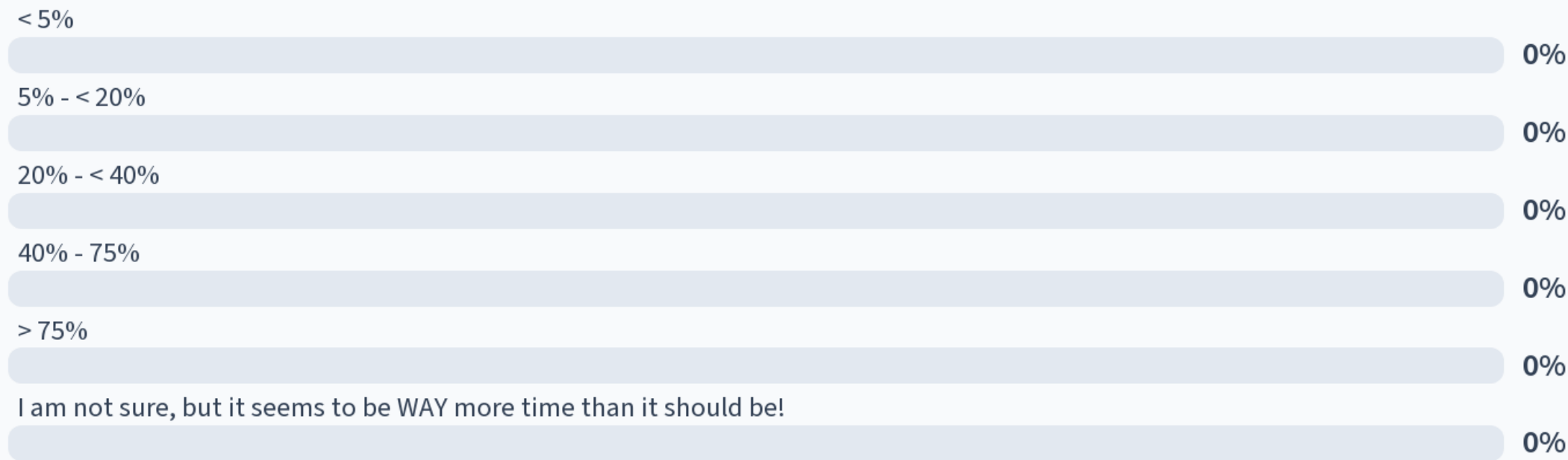


Tool Overload

Common Issues Faced when Wrangling Data:

- Missing or Null Values
- Inconsistent Formats
- Duplicates
- Messy or Nested Data
- Incorrect Data Types
- Unstructured Text
- Outliers and Anomalies
- Column Naming Inconsistencies
- Merging and Joining Errors

What percentage to time devoted to testing do you spend dealing with hard copy or pdf documents and trying to figure out the best way to organize and document testing?



Data Analysis

Common Data Analysis Techniques

Descriptive
Analytics

Ratio and
Benchmark
Analysis

Risk Scoring
& Ranking

Trend and
Time Series
Analysis

Exception
Testing

Recalculation
& Validation

Text/Keyword
Analysis

Stratification
and Sampling

Common Issues Faced when Performing Data Analysis

- Limited Access to Data
- Poor Data Quality
- Lack of Technical Skills
- Time Constraints
- Siloed Data
- Lack of Standardized Data Definitions
- Overwhelming Data Volumes
- Difficulty in Interpreting Results

How would you rate your usage of visualizations to present results of projects, risk analysis, or audit planning?

I use visuals for every presentation and/or report

0%

I only use visuals for presentations for high ranking individuals

0%

I only use visuals when I know the audience will probably have no idea what I am talking about

0%

I would like to use visuals more in presentations and/or reports but I am not sure the best and most efficient way to include them.

0%

I never use visuals - what a waste of time!

0%

How Visualizations Help Communicate Results?



Make Complex
Data Easy to
Understand



Improve Retention
and Recall



Highlight Risks
and Anomalies
Clearly



Cater to Non-
Technical
Stakeholders



Speed Up
Decision-Making



Encourage
Exploration



Support Your
Narrative



Increase
Credibility

Based on what you learned - how would you rank the tool's usefulness to you and your current position?

Alteryx

DATASNIPPER

Power BI

How to Get These Tools

- Alteryx

<https://www.alteryx.com>

- DATASNIPPER

<https://www.datasnipper.com>

- Power BI

<https://www.microsoft.com/en-us/power-platform/products/power-bi>





Questions?

Nicole S. Wright

wrightns@jmu.edu

www.linkedin.com/in/nicole-s-wright-Phd-JMU