

BSBINS401 - Analyse and Present Research Information

Session 6: Report Writing & Effective Visuals

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Learning Objectives

1. Understand the core components of a well-structured report.
2. Learn strategies for choosing effective visuals to support your findings.
3. Explore Jupyter nbconvert for converting .ipynb notebooks to PDF.
4. Demonstrate the workflow from notebook to a polished PDF report.

Session Overview

- Writing an Effective Report
- Structuring Your Findings and Analysis
- Selecting the Right Visuals
- Introducing nbconvert
- Demonstration: Converting .ipynb → PDF
- Final Tips and Best Practices

1. Writing an Effective Report

Elements of a Comprehensive Report

Section	Contents / Purpose
Introduction	Clearly define research objectives, context, and scope
Methodology	Describe data collection, cleaning, analysis approaches
Analysis & Findings	Present data-driven insights, tables, and charts
Discussion	Interpret findings; link back to objectives; note limitations
Conclusions & Recommendations	Sum up key takeaways; outline potential next steps
References & Appendices	Cite sources, include supplementary data or code

2. Structuring Your Findings & Analysis

- **Flow of Information:**
 - Start broad with context → Narrow down to specific analysis → Summarize key insights
- **Maintain Clarity:**
 - Use headings, bullet points, sub-sections
 - Avoid jargon, or define it clearly
- **Tell a Story:**
 - Guide readers through logical steps
 - Provide necessary background and context

3. Choosing Effective Visuals

1. **Relevance**: Does this visual directly support your key findings?
2. **Simplicity**: Minimize clutter; highlight the most important data points.
3. **Appropriate Graph Type**:
 - Bar chart for categorical comparisons
 - Line chart for trends over time
 - Histogram for distribution
 - Scatter plot for relationships (two variables)
4. **Aesthetics**: Clear labels, consistent color scheme, readable font sizes

Example: Aligning Data to Visual Choice

Data / Finding	Possible Visual(s)	Why it Works
Sales by Region	Bar Chart / Donut Chart	Compares discrete categories clearly
Student Scores Over Time	Line Chart	Shows trends or fluctuations
Two Variables Relationship	Scatter Plot	Reveals correlation or clustering

4. Introducing nbconvert

What is nbconvert?

“nbconvert” is a tool that allows you to convert Jupyter Notebooks to a variety of formats like HTML, PDF, and slides.

Why Use nbconvert?

Streamline your workflow from interactive exploration to final deliverables.
Share your work with stakeholders in PDF or HTML format.
Standardize reporting outputs in a reproducible manner.

5. Demo: Converting .ipynb → PDF

Prerequisites

- Ensure you have a working LaTeX distribution for PDF export (e.g., MiKTeX, TeX Live).
- Install nbconvert if not installed:

```
pip install nbconvert
```

Basic Command

```
jupyter nbconvert your_notebook.ipynb --to pdf
```

- This will generate a PDF in the same directory, using the default exporter.

Demonstration Steps

1. **Open Terminal/Command Prompt**
2. **Navigate** to the folder containing your .ipynb file
3. **Run** the nbconvert command:

```
jupyter nbconvert MyAnalysis.ipynb --to pdf
```
4. Check for any errors (e.g., missing LaTeX components)
5. **Locate** your newly created PDF in the same directory

6. Best Practices for PDF Exports

1. Clean Up the Notebook

- Remove extraneous code cells or debugging outputs
- Add section headings and markdown explanations

2. Check Image Sizes

- Large images may get clipped in PDFs

3. Use a Stylized Template (Optional)

- You can customize nbconvert templates for consistent branding

4. Verify Font Rendering

- Especially for special characters or math expressions

Activity: Practice Converting a Notebook

1. **Download** the sample Jupyter Notebook from the LMS (or create your own).
2. **Edit** the notebook to include a short explanation, 1–2 visuals, and a conclusion.
3. **Export** using nbconvert → PDF.
4. **Review** the finished PDF for clarity and formatting.

Final Tips & Next Steps

- **Incorporate Effective Visuals:**
 - Provide context, label axes, and include brief captions.
- **Refine Your Report:**
 - Structure it for readability.
 - Use headings, bullet points, and short paragraphs.
- **Prepare for Assessment 1:**
 - Draft your methodology and findings with meaningful visuals.
- **Next Session:**
 - Peer review your initial report drafts.
 - Discuss advanced presentation methods.

Questions?

- Office Hours: Monday – Friday, 9 AM – 5 PM
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