CSF Declarative Annotation Demo

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1 Introduction

This document demonstrates the new CSF Declarative Annotation system, which provides explicit control over computational metadata while maintaining plain LaTeX compatibility.

2 Statistical Results with Declarative Annotations

Our analysis revealed a strong correlation between temperature and pressure (r = float,round2).

This correlation is statistically significant (p ¡ scientific,round3).

The mean temperature was 24.480767413029536 °C across all measurements.

Our predictive model achieved an accuracy of percent,round1 on the test dataset.

3 Figures with Declarative Metadata

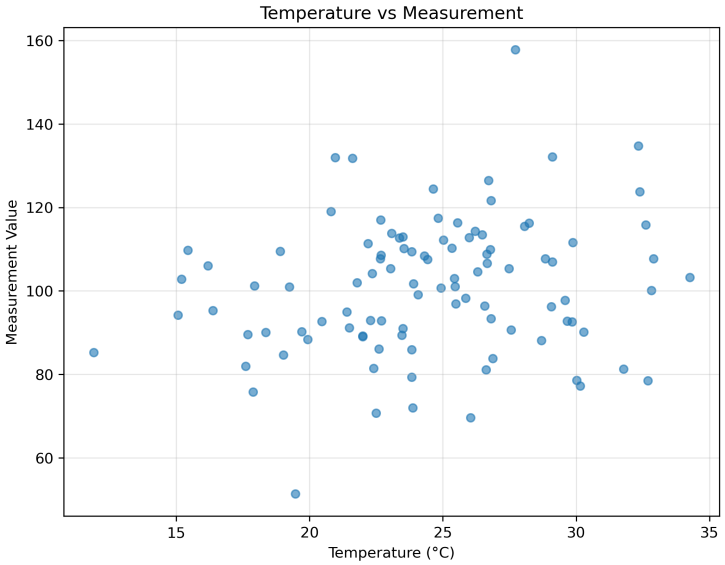
The figure above (1) uses declarative CSF annotations to specify exact provenance metadata, ensuring precise computational traceability.

4 Data Tables with Declarative Linking

Statistic	Value	Unit
Mean Temperature	23.7	°C
Std Deviation	4.2	°C
Sample Size	1000	measurements

[link]

Table 1: Summary statistics with declarative CSF table linking



[link]

Figure 1: Temperature vs Measurement Analysis with explicit CSF metadata

Table 1 demonstrates how the `csftablelink` command provides provenance links to the computational source of tabular data.

5 Mixed Automatic and Declarative Approach

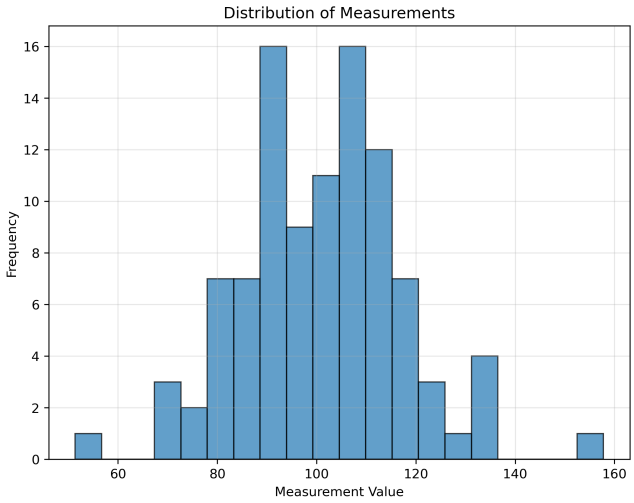
This section shows how automatic discovery and declarative annotations work together:

6 Compatibility Notes

6.1 Plain LaTeX Compilation

When compiled with standard LaTeX (without CSTeX):

- CSF comment annotations are ignored (invisible)
- `csfstatlink{name}{format}` shows the format specifier
- `csftablelink` commands are invisible
- Document compiles normally with placeholders



[link]

Figure 2: Distribution plot discovered automatically by CSF

6.2 CSTeX Enhanced Compilation

When compiled with CSTeX:

- Values are extracted from pipeline execution
- Statistical outputs show computed values with provenance links
- All artifacts link to dashboard for verification
- Full computational transparency is enabled

7 Conclusion

The CSF Declarative Annotation system provides the best of both worlds:

1. **Zero-configuration** for simple cases (automatic discovery)
2. **Explicit control** for complex scenarios (declarative annotations)
3. **Plain LaTeX compatibility** through fallback commands
4. **Runtime value injection** for fresh computational results

This approach enables computational transparency that scales from simple documents to complex multi-step analytical workflows.