

Generic Outline for Data Analysis Report

0. Front Material

- Title: Project title, your name, and date
- Executive Summary (like an abstract): One paragraph that describes the problem, how it is addressed, results, and conclusions.

1. Introduction

- Background: clear, concise statement of scientific problem and context into which investigation fits.
- Problem: Specific questions to be answered or hypotheses to test.

2. Methods (this section should be brief)

- Population from which data were drawn; definition of sampling units.
- Criteria for inclusion or exclusion of specific units from study or analysis.
- Data collection; experimental design where appropriate.
- Variable descriptions where needed.
- Methods of statistical analysis; software.

3. Results

- a. Exploratory Data Analysis (EDA; 90% of results should be obvious 90% of the time through presentation of simple descriptive statistics and plots.)
 - Visualizations: histograms, box-plots/violin plots, scatter plots with smooths
 - Summary statistics: means/medians, standard deviations, min/max/range
 - Tabular summaries: two- and three-way cross-classifications
 - Measures of association: correlation coefficients, odds ratios
- b. Model Fitting/Inferences
 - Regression coefficients with standard errors or confidence intervals with appropriate units of measure
 - Transformation back to original or most meaningful scale of measurement
 - ANOVA: fraction of variation in response that is explained by different covariates
 - Alternative models and explanations: rationale for variables selected into final model(s)
 - Tests of hypotheses/p-values
 - Model checking: diagnostics designed for specific model assumptions; stability, influence, and outliers
 - Interpretation!

4. Discussion/Conclusions

- What is the answer to the question(s) of interest?
- Conclusions to be derived from the analysis.
- Limitations of the study design, data, and analysis and how they may affect the conclusions.
- Interpretation of the results in a scientific context.
- Importance of the findings; new questions that may have arisen for investigation.