Notes regarding the research report

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This document contains notes regarding the final report for the statistical project in ADAR. The project report represents a complete "documentation of research" that describes the whole process (from research questions to questionnaire design to data collection and data analysis to the answers to the research questions). It should be written in the vein of a "statistical report for a colleague", i.e., you should intermingle running text (the results of computations have to be paraphrased/verbalized) with R-code/R-output.

A possible structure *could* be (not all of the points may be applicable to your specific problem):

1 Abstract

Summary of the most important points of the report on *one page at most*. Emphasis on the presentation of the results using a "comprehensible" language (i.e., avoid statistical terms as much as possible), only one diagram (that is easily understood).

2 Introduction

- Starting point; Research objective
- Area of research, research questions, research hypotheses
- Operationalization
- Methods of analysis used (*short* description in two sentences)

3 Data collection

- Type of survey; facts concerning the execution of the survey (period etc.)
- Description of the data set (type of sample, sample size, variables, scale levels, missing values etc.)
- Data preparation (missing value treatment, transformations, ...)

4 Descriptive analysis of the sample

- Description of the respondents using the demographic variables in the data set (age, gender etc.)
- Descriptive analysis of the analyzed variable(s)
  - Diagrams, numerical measures, tables, ...
  - All statistics have to be commented, in particular diagrams!
  - Are there any distinctive features? (e.g., group differences, trends, outliers, ...)
- Summary of the descriptive analysis. Based on these descriptive findings, segue to the analysis of the questions about the population

5 Investigation and testing of the hypotheses about the population

- Translation of research hypotheses into statistical hypotheses that are testable
- Performance of the analysis (Statistical test, Regression model etc.)
- When performing a test, pay special attention to
  - null hypothesis/alternative hypothesis
  - significance level
  - p-value, including formal interpretation
  - check of the statistical preconditions (e.g., normal distribution, outliers, ...)
  - substantive interpretation (i.e., relate the statistical findings to the research question)
- When building a model, pay special attention to
  - significance of the parameters, confidence intervals
  - explanatory power (R^2)
  - model equation including interpretation (!), i.e., how do the independent variables influence the dependent one ("effect size")
  - utilization of model graphics (e.g., effect plots)
  - check of the statistical preconditions (e.g., normal distribution, outliers, ...)

6 Conclusion and criticism

- Summary
  - What has been done?
  - Providing answers to the research question
- Possible problems
  - Data problems
  - Analysis problems
- Generalizability of the findings?
- Possible further questions