S&DS 425/625 Report Template

Name(s)

Date

Abstract or Executive Summary

An overview of your report, including one or so sentences on each of these:

- the motivation behind the project
- a brief description of the problem statement
- a brief description of the data, including possibly the predictors, the outcome, and the observations
- a brief summary of the models that are used (Abstract, not Executive Summary)
- a brief summary of the main takeaways

An executive summary is typically longer, up to a page, could possibly contain key visualizations, tables, or other figures, and is intended for someone outside of the analytics team of an organization.

An abstract is one paragraph with text only.

Introduction

A few paragraphs that contain the following:

- background on the topic you are studying, including the motivation behind the project and the problem statement you mentioned in the abstract, but in more detail
- a description of the data
- a sentence or paragraph describing what is contained in each section of the rest of the paper. Include roughly one sentence per section, that describes what is in the section and the main takeaways from each section. For example,

  "Section 2 contains data exploration and visualization, which reveals that *****. In Section 3, we build several different predictive models and find that *****. We discuss the results of the model, including *****, in Section 4. Finally, we discuss conclusions, recommendations and ideas for future work in Section 5."

There are similarities between the introduction and the abstract. The introduction is longer and more detailed, and contains a brief outline of the contents of the rest of the paper.

Data exploration and visualization

This section will have descriptive statistics and visualizations of the raw data. Reveal to the reader any interesting relationships in the data, and convince the reader that the predictors are related to the outcome.

Visualizations are one of the most powerful ways to communicate information to the reader, so it is important to spend time producing clear, descriptive, eye-catching visualizations.

This shows code and output

Since `echo=F` is the option chosen at the top, the default will be to show the output but not the code:

```
[1] 2
```

If you don't want to show the output either, you can use `include=F`:

Nothing was shown above. If you want to force it to show the code for some reason, you can override the default by putting the options `echo=T` for this chuck.

```
1+1
```

```
[1] 2
```

Modeling/Analysis

Describe regression or classification model(s) used, or analysis that was performed. For each model, give

- any assumptions that are made
- the observation, the predictors, and the outcome (aka the rows of X, the columns of X, and y)
- what the coefficients mean (when applicable) and how this is related to your problem
- appropriate measures of the performance of the model, such as fit and predictive ability

For other kinds of analysis, what you give is highly dependent on the types of analysis. But in general, talk about assumptions, if they are appropriate, how they might not be appropriate, and why you chose this type of analysis.

Visualization and interpretation of the results

Create visualizations of the results, focusing on visualizations that

- help describe aspects of the results that have real-world interpretation
- help the reader understand how the model addresses the problem you are studying.

Visualizations are one of the most powerful ways to communicate information to the reader, so it is important to spend time producing clear, descriptive, eye-catching visualizations.

Discuss the results of the model or models you chose, and describe how they are related to the problem statement or question that you were trying to answer in the project.

If you have built multiple models or types of analysis, compare the measures of performance and the ease of interpretability across models or types of analysis, stating which model or models performed best, and which model or models were most interpretable. Finally, decide which model or type of analysis is best for your particular problem based on some combination of performance and interpretability.

Conclusions and recommendations

One or two paragraphs stating conclusions, recommendations, and ideas for future work and improvements.