Writing About Operations Research – Input Data and Model Description

1 Overview

- Your project report must explain your approach to solving your problem in detail.

- This includes describing your

  - **input data**,
  - **input data analysis**, if appropriate, and
  - **model**.

- The way you need to write about this will depend on the exact nature of your project.

- I've given some general guidelines below.

2 Describing your input data

- You need to give your reader a sense of the input data you are using for your project.

- Start by describing the sources of your data.

- Next, describe in words the contents of your data.

  - If you have tabular data, what do the rows and columns represent?
  - If your data is made up of sets, what do the sets represent?

- Finally, describe the size of your data.

  - If you have tabular data, how many rows do you have?
  - If your data is made up of sets, how big are the sets?

3 Describing your input data analysis

- If you are fitting distributions to your input data, you need to describe your input data analysis.

- For each set of input data:

  - State the candidate distributions that you fit to the data, and discuss why you chose these distributions.

    - Support your choices using histograms, characteristics of the data itself, and context.

  - Evauate the fit for each candidate distribution. This includes:

    - A graph comparing a histogram of the data with plots of the candidate distribution densities.
    - Goodness-of-fit statistics for each candidate distribution, presented in a table.

  - Conclude by stating your choice of distribution, and why you made that choice.

4 Describing your model

- You need to describe the mathematical model you are using to solve your problem.

- **For an optimization model:**

  - Describe all aspects of your model <u>in words</u> and <u>mathematically</u>:

    - Sets
    - Parameters
    - Decision variables
    - Constraints
    - Objective function

  - Discuss any simplifying assumptions you made.

- **For a statistical model:**

  - State the type of statistical model you are using.
  - Explain why this type of model is appropriate for your problem.
  - Describe the dependent and independent variables.
  - Discuss any simplifying assumptions you made.

- **For a simulation model:**

  - Provide a flow chart of how your system operates, according to your simulation model.
  - In words, walk your reader through your flow chart.
  - Discuss any simplifying assumptions you made.