

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.
- Below are some general guidelines.

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 and parameters, what do they 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 and parameters, 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 that you fit to a distribution:
 - 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.
 - Evaluate 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 in words and mathematically:
 - ◊ 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.