EPFL
ENAC TRANSP-OR
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Mathematical Modeling of Behavior
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LAB SESSION 1

The objective of this first lab session is to get familiar with the datasets that will be used during the course. We recommend you to perform the following tasks :

1. Go through the different case studies that will be used during the exercises sessions.

   For this task, go to the laboratories tab of the course webpage. Under **Datasets descriptions**, you will find a `.pdf` file for each case study, containing the following information :

   - description of the choice context,
   - methodology of the data collection,
   - description of the available data,
   - statistics on certain data variables.

2. Understand the structure of the data file (`.dat`) and compute descriptive statistics for one dataset. *Note* that for the Netherlands dataset there records for both RP and SP choices.

   For this task, open the `netherlands.dat` file using excel and answer the following :

   (a) What does each row of this file correspond to?
   (b) What does each column of this file correspond to?
   (c) Identify which variables are related to (i) attributes of the alternatives and (ii) characteristics of the decision makers. How are the variables related to the characteristics of the decision makers coded?
   (d) Compute the mean, mode, standard deviation, min and max for each variable.
   (e) Visualize the qualitative variables (e.g. gender) by generating charts.
   (f) Visualize the attributes of the alternatives (e.g. travel time) using histograms.
   (g) Investigate the correlation between the dependent and the independent variables.
   (h) Use scatter plots to investigate bias towards specific alternatives. One idea is to plot the travel time of the rail alternative against the travel time of the car alternative for those who chose car/ rail.