GUI NPBN WIM

The Graphical User Interface NPBN WIM computes synthetic WIM data. The observations corresponding to April 2013 for three Dutch locations in both the right (R) and the left (L) driving directions. The measurements were taken in highways A12 (km 42) Woerden, A15 (km 92) Gorinchem, and A16 (km 41) Gravendeel. Additionally, an hypothetical highway was created which is a combination of all six available WIM locations in the model. Therefore, each simulated vehicle randomly chooses one of the locations to compute the synthetic data.

The 26 codes (Vehicle types) used in the GUI WIM consist of a letter and a number that define the number of axles. The letter represents the vehicle configurations: Buses (B), Tractor - Semitrailer - Trailer (R), Tractor - Semitrailer (T), Single-unit multi-axle vehicle and/or Single unit multi-axle vehicle - Semitrailer (V) and Others vehicles (O). For example, a seven-axle vehicle with the configuration Tractor - Semitrailer is coded as T7. The vehicle types and the silhouette are presented in Figure 1.

In the main window of the GUI. The user can choose between the 26 vehicle types and the 7 locations (A12-L, A12-R, A15-L, A15-R, A16-L, A16-R and Hypothetical). To compute the desired amount of WIM Observation and the desired units. There are, three main check boxes: (1) vehicle type subset, (2) correlation matrix plot and (3) Bayesian network plot (Fig.2) .

1) If the vehicle type subset check box is selected the user need to select at least 4 of the available 26 vehicle types and provide their corresponding proportions. Otherwise 26 vehicle types will be use to generated synthetic observations.
2) Correlation matrix plot shows a color map of the (conditional) rank correlation matrix (Fig. 5)
3) Bayesian network plot shows the Non Parametric Bayesian Network (NPBN) direct acyclic graph (Fig. 6).

Once al the values are set by pressing the button “compute” the synthetic WIM observations will be generated and exceedance probability plots of total weight and total vehicle length will be shown (Fig. 3 and 4). The computed data can be stored in a csv file by pressing the button “save CSV” (Fig. 7).

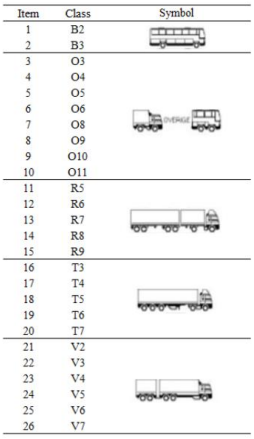

Figure 1. NPBN Vehicle types

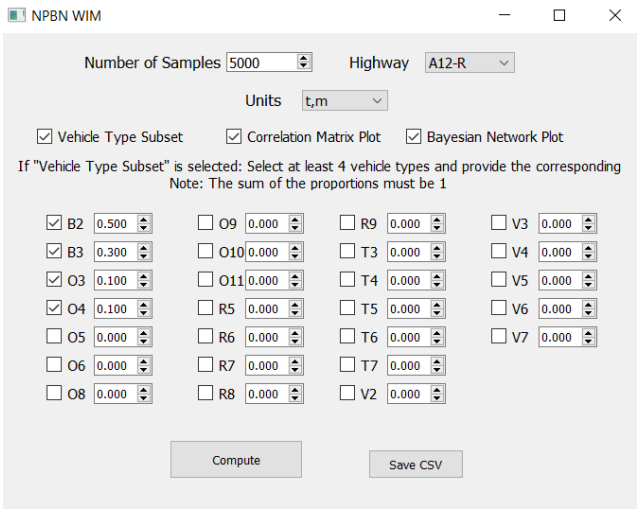

Figure 2. Main Window of the GUI NPBN WIM

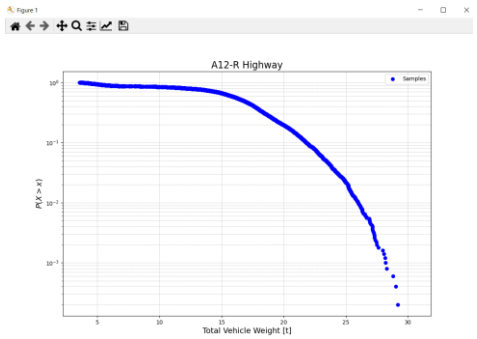

Figure 3. Total vehicle weight exceedance probability plot

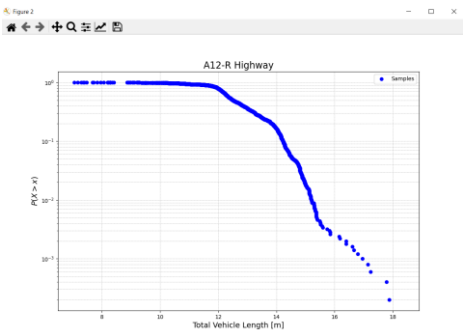

Figure 4. Total vehicle length exceedance probability plot

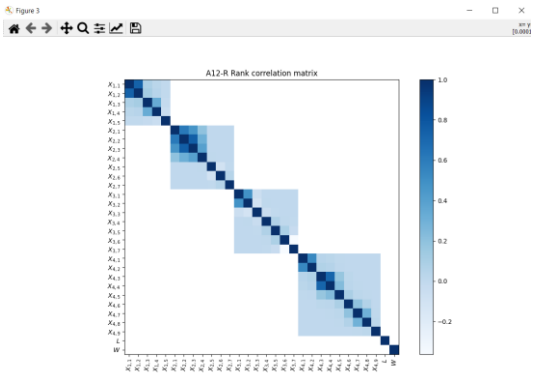

Figure 5. (conditional) Rank correlation matrix color map

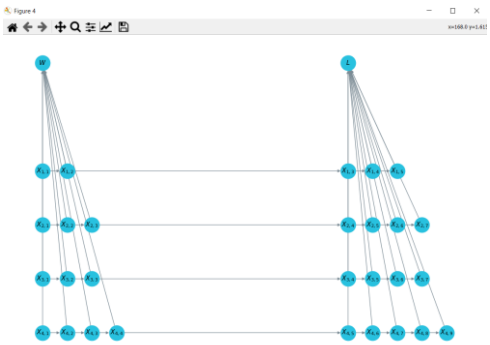

Figure 6. NPBN graph.

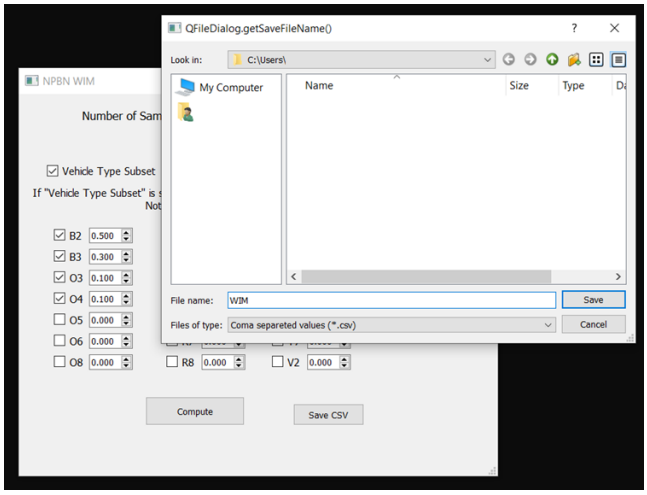

Figure 7. Save file window.