

User Manual
Discrete Choice Model Builder

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1 The Program's graphical Interface

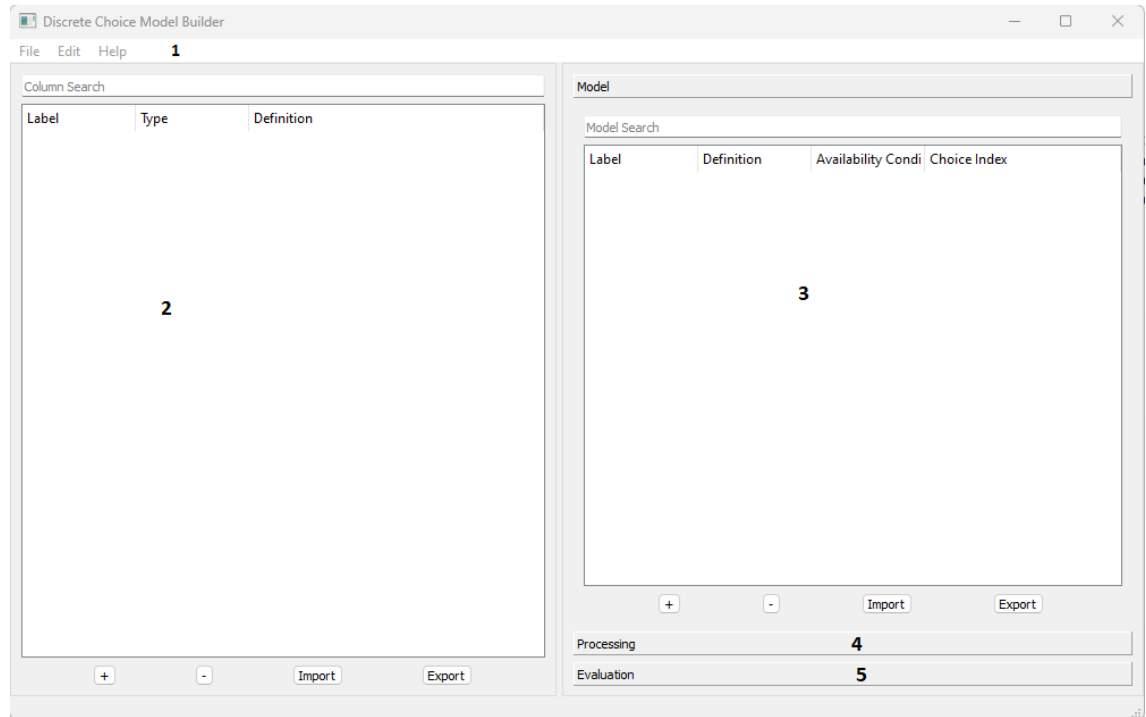


Figure 1.1: The GUI

- 1) This is the menu bar. It covers three menus: File menu, Edit menu, and Help menu. Further information can be found in 1.1.
- 2) This part of the GUI is the column widget, where the columns of the survey data are displayed. The derivatives are also shown here. Detailed description is found in 1.2.
- 3) The Model widget where alternatives (aka utility functions) can be added and modified. Further information is in section 1.3.
- 4) The Processing Widget is where the processing method can be chosen. To expand this widget, click on the "Processing" bar as shown in figure 1.1. Consider visiting section 1.4 for more information.
- 5) The Evaluation Widget is where the model can be evaluated and the results are displayed. To expand this widget, click on the "Evaluation" bar as shown in figure 1.1. Detailed description is in 1.5.

1.1 The Menus

1.1.1 File Menu

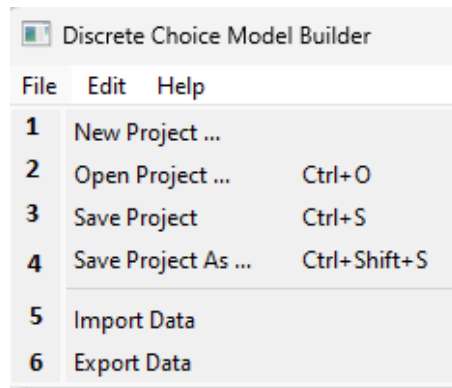


Figure 1.2: The File Menu

- 1) Opens an empty project.
- 2) Opens an existing project. For that you need the path of the project's folder. A project can contain derivatives, alternatives, processing information, survey data and an evaluation.
- 3) Saves the current project in a pre-chosen path. The user will be requested for the path if none exists.
- 4) Allows saving the project in a different path under a different name.
- 5) This button is for importing survey data from a chosen path. It's only possible to import one CSV file.
- 6) Export data means the survey data as well as the derivatives will be exported to a path of your choice as a CSV file.

1.1.2 Edit Menu

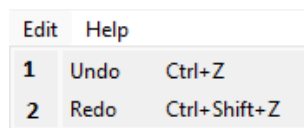


Figure 1.3: The Edit Menu

- 1) With Undo you can reverse the last change.
- 2) With Redo you can reset the last Undo.

1.1.3 Help Menu

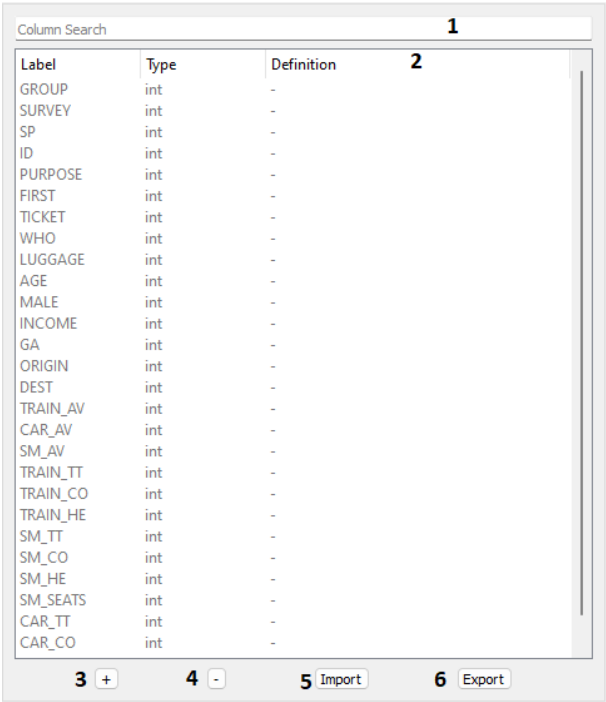


Figure 1.4: The Help Menu

- 1) Opens the user manual.

1.2 The Column Widget

This is where names of the columns from the imported survey data are displayed. Even the derivatives are shown here.



The screenshot shows a window titled "Column Search" with a search bar at the top labeled "1". Below the search bar is a table with three columns: "Label", "Type", and "Definition", with the header row labeled "2". The table lists various columns and derivatives, all with a type of "int" and a definition of "-". At the bottom of the window, there are four buttons: "3" with a plus sign, "4" with a minus sign, "5 Import", and "6 Export".

Label	Type	Definition
GROUP	int	-
SURVEY	int	-
SP	int	-
ID	int	-
PURPOSE	int	-
FIRST	int	-
TICKET	int	-
WHO	int	-
LUGGAGE	int	-
AGE	int	-
MALE	int	-
INCOME	int	-
GA	int	-
ORIGIN	int	-
DEST	int	-
TRAIN_AV	int	-
CAR_AV	int	-
SM_AV	int	-
TRAIN_TT	int	-
TRAIN_CO	int	-
TRAIN_HE	int	-
SM_TT	int	-
SM_CO	int	-
SM_HE	int	-
SM_SEATS	int	-
CAR_TT	int	-
CAR_CO	int	-

Figure 1.5: The Columns table

- 1) Using this search bar, it's possible to search for columns and derivatives using their labels.
- 2) The table is divided into three columns. Label stands for name of a derivative or a column from the imported CSV file, which contains the survey data. Type indicates the possible type of the derivative or the data, which are stored under the corresponding label in the survey data. Definition is only available for a derivative. This is where you can see its definition (As a function).
- 3) This button is for adding a new derivative. A new window appears, where you can enter the derivative. It's possible to modify a derivative after adding it by clicking twice on the cell to modify.

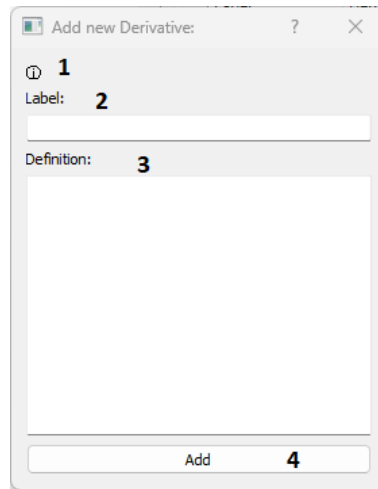


Figure 1.6: Window to add a Derivative

- 1) Hovering over this circle will show you the syntax specification for label and definition.
- 2) Label stands for the name of the derivative.
- 3) The syntax for the definition is python syntax. This includes mathematical and logical expressions with or without variables.
- 4) Click the button for confirmation and to add the derivative.
- 4) If you click on a derivative and then on the "-" button, the chosen derivative will get deleted.
- 5) This is used to import an external derivative. Note that only JSON files can be accepted.
- 6) Choose derivatives from the table and then click on the "Export" button to export the derivatives to a path of your choice.

1.3 The Model Table

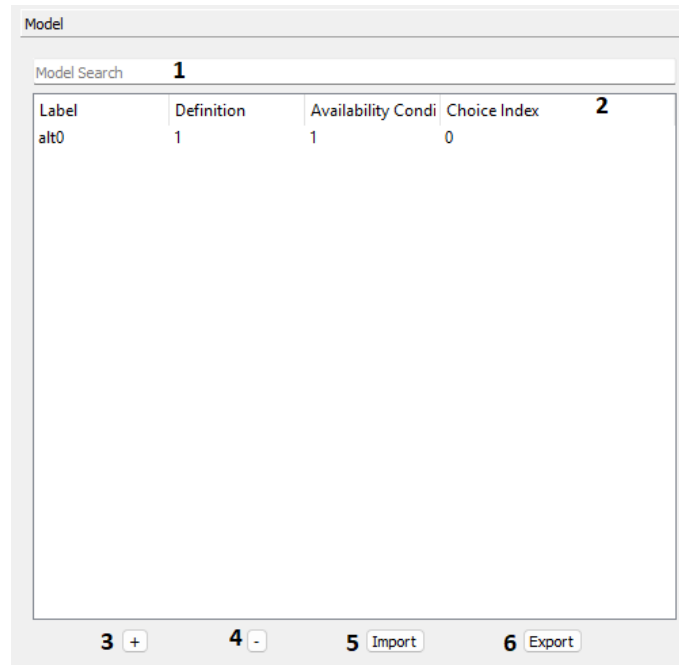


Figure 1.7: The Model

- 1) In this search bar it's possible to search for an alternative using its label.
- 2) The table in this widget consists of 4 columns: label for the names of the alternatives, definition for the functions, availability condition indicates when the alternative should be considered, and choice index to identify and sort the alternatives. Please note that an alternative with choice index equal to 0 must be defined.
- 3) This button will open a new window, where you can define a new alternative to add it to the table.

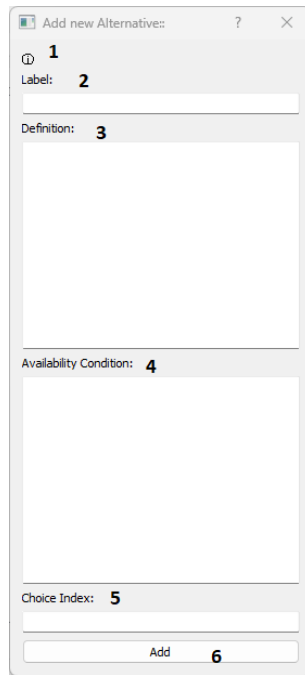


Figure 1.8: Add Alternative Window

- 1) The syntax for the definition of alternatives is the same as Python syntax. This includes mathematical and logical expressions. If you hover over this circle, you will find specific information regarding the syntax.
 - 2) The label of the alternative.
 - 3) The definition of the alternative.
 - 4) The availability condition of the alternative.
 - 5) The choice index of the alternative.
 - 6) The button to confirm and add a new alternative.
- 4) This button deletes alternatives after choosing them.
 - 5) It's possible to import. Currently only JSON files can be imported.
 - 6) This button enables exporting alternatives after choosing them from the table. The alternatives will be exported as JSON files to path of your choice.

1.4 The Processing Widget

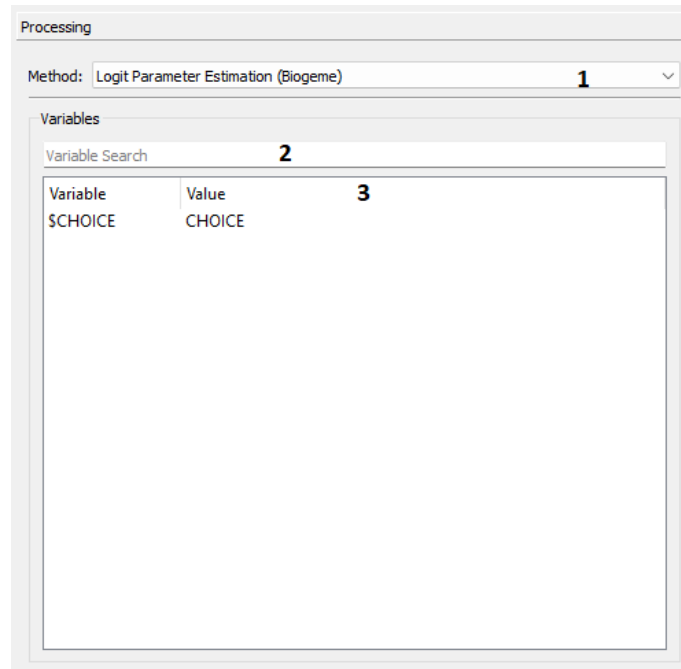


Figure 1.9: The Processing Widget

- 1) Here you can choose the processing method.

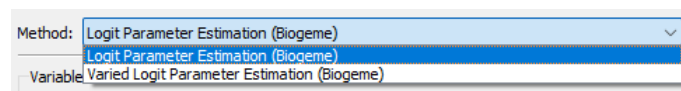
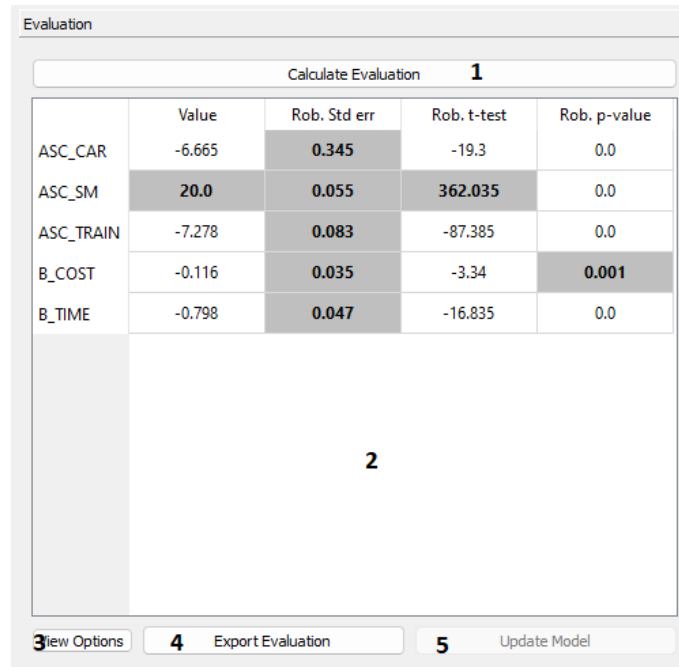


Figure 1.10: The Processing Methods

- 2) This search bar is useful if you want to search for a specific variable in the table.
- 3) The variable called '\$Choice' represents the value that defines in the data what Alternative was chosen.
- 4) The table shows all parameters found in the derivatives that can be varied. Here you can put in values you want to calculate the model for. These parameters are the ones that change when the model is updated.

1.5 The Evaluation Widget



	Value	Rob. Std err	Rob. t-test	Rob. p-value
ASC_CAR	-6.665	0.345	-19.3	0.0
ASC_SM	20.0	0.055	362.035	0.0
ASC_TRAIN	-7.278	0.083	-87.385	0.0
B_COST	-0.116	0.035	-3.34	0.001
B_TIME	-0.798	0.047	-16.835	0.0

2

3 View Options 4 Export Evaluation 5 Update Model

Figure 1.11: The Evaluation Widget

- 1) This button is to start the evaluation process. During the evaluation it's not possible to use the program. Instead wait until the calculation finishes.
- 2) In the table the evaluation is displayed. Some cells are highlighted, because the values in these cells are above the thresholds.
- 3) This button will open a new window, where you can adjust the thresholds to highlight cells in the table.

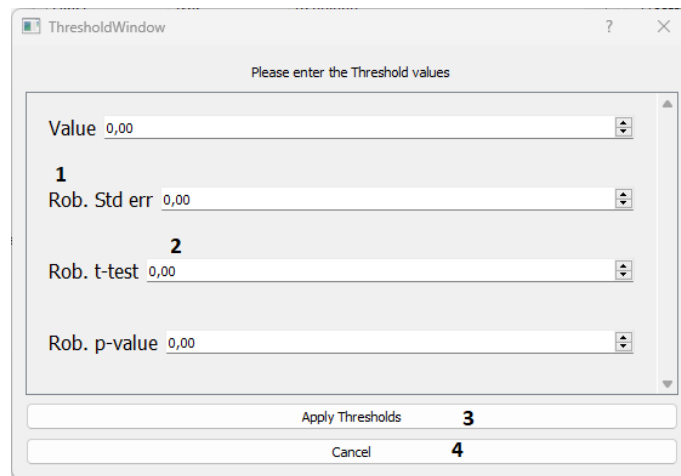


Figure 1.12: The Threshold Window

- 1) This stands for the name of the column in the evaluation table.
- 2) In this field you can enter a threshold for a specific column.
- 3) This button is for confirming changes and applying the thresholds
- 4) The "Cancel" button will close the window without applying the new thresholds.
- 4) Using this button it's possible to export the results as a CSV-file.
- 5) The feature to optimize the model is unavailable in the current version.

2 Displaying Errors

There are two ways to display errors in the program:

1. Using marker to display syntax errors. To see the details and causes of an error, hover over the faulty cell.

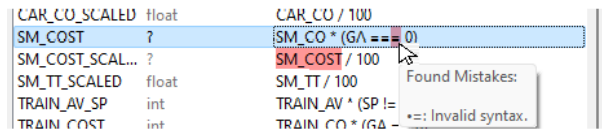


Figure 2.1: Error Marker

2. Using notification windows. For example when performing the evaluation, but an exception is thrown during the calculation. In the notification window the cause for an unsuccessful calculation is displayed.

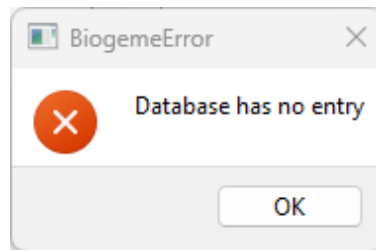


Figure 2.2: Notification Window with Explanation