# Chapter 12: Exporting data

## Introduction

This lesson includes an introduction and highlights five blocks available from the Export group prior to a demonstration and wraps up with a summary.

Figure 1: Contents

A screenshot of a computer

Description automatically generated

An essential requirement of any analytics platform is the ability to not only import data from various sources, but also to provide functionality to export data and results.

Figure 2: Introduction

A close-up of several icons

Description automatically generated

There are many reasons to export including making files and results available to others for additional analysis, reporting and charting purposes.

Data and output may need to be made available in a variety of formats including flat files such as *.txt* and *.csv*, proprietary file formats such as Microsoft Excel, Tableau or to a database table.

An additional component is to ensure results can be output to many locations; locally, to a server or to the cloud.

## The Export group

Figure 3: Export group

A screenshot of a computer

Description automatically generated

 Database Export block

The Database Export block enables export to a database with three export type options available.

Data can be appended to an already existing table by selecting append to existing table.

Figure 4: Database Export

A screenshot of a computer

Description automatically generated

The option truncate existing table and insert will delete all existing data in the target table and replace it with the exported data. The structure of the table the data is exported to is however, retained.

Additionally, a new table can be created via the create new table option. Note that if selected,

if the table already exists in the database it will be deleted and replaced with the exported data.

The database parameters panel provides options to select the target database, table and columns to export. The target database can be an already existing Database reference which can be selected from the dropdown or a new connection can be defined via the create a new database icon, which will open the Add database wizard where the database reference can be configured.

The target table is the database table to export the data to. All columns in the connected dataset are evident in the input columns area and detailed in the input columns list.

The exported columns area details the columns from the connected dataset to export to the database and requires specification of the target column the input column is to be associated with.

The connected dataset variables available from the input columns area via the input columns list can can be moved either singularly or in bulk to the input column list in the exported columns area by either double clicking a variable, alternatively the chevrons can be used to move one or more columns.

Delimited File Export block

The delimited file export block enables export to a text file.

Figure 5: Delimited File Export block

A screenshot of a computer

Description automatically generated

The format area provides options to specify the delimiter and also whether to include variable names via the write headers to first row option.

The data can be exported to either a workspace or external by clicking the appropriate option in the file location area. Note that data exported to a Workspace means it is only accessible when using Local Engine.

The location can be browsed to using the browse button and here also the file format can be included and should be specified. For example, if a *.txt* file is being exported, the *.txt* extension must be included. This is also the case for other delimited file types such as *.csv* and *.dat*, however the default extension evident is *.csv*.

Excel Export block

Exporting to a Microsoft Excel file has the same file location options and specifications as that of the Delimited File Export block. Permissible formats are either Excel 97-2003 workbook (*xls*), or Excel Workbook (*xlsx*).

Figure 6: Excel Export block

A screenshot of a computer

Description automatically generated

Tableau Export block

The tableau export block enables the export of files to the tableau data extract format: .*tde* and automatically assigns the *.tde* extension.

Figure 7: Tableau Export block

A screenshot of a computer

Description automatically generated

The export can be to a Workspace or an external location. Additionally, the data can be uploaded to a Tableau Server by clicking the Perform upload check box. Once complete server particulars and credentials will need to be supplied.

ALTAIR Dataset Export block

The ALTAIR Dataset Export block provides the facility to export data to a *.wpd* format file. This is ALTAIR proprietary file format. Export options are few, familiar and straightforward such that data can be exported to a Workspace or an External location.

One thing to bear in mind is that the *.wpd* extension must be present. Providing a file name from the browse dialog must include the *.wpd* extension explicitly.

Figure 8: ALTAIR Dataset Export block

A screenshot of a computer

Description automatically generated

## Demonstration

So onto a demonstration.

This demonstration uses a project developed in a previous lesson. The dataset *risk\_to\_score.csv* was scored with a decision tree model.

Viewing the scored results two new variables were added: *P\_bad* and *P\_good*. These add propensity scores to each observation based on the model.

This demonstration will illustrate 5 blocks from the Export group. Database Export, Delimited File Export, Excel Export, Tableau Export and ALTAIR Dataset Export.

The Chart Builder will not be demonstrated here as this was covered in the lesson: Data exploration and profiling.

Let’s start with the Database Export. Once dragged onto the canvas and the data to export connected, the Database Export block configuration is accessed by double-clicking.

The Add Database wizard may open at this point if no databases have been previously defined. Two databases exist currently and these are evident from the dropdown: databaseB and databaseB2. These were created in a previous lesson and the target database selected here is databaseB.

There are three export types available. Note that help for the Database Export block can be located from the Help files. Here, search is selected and *database export* entered as the search term. Clicking Database Export block from the results navigates to the appropriate pages containing information in relation to its use.

Clicking Configure database export opens a page that gives information on available options and from the Export Type section, the three options are detailed.

Append to existing table is selected by default, this will add the selected exported data to an already existing table, which can be selected from the target table dropdown.

Truncate existing table and insert will delete a selected target table and replace it with the data to export.

Bear in mind that if any of these two options are selected, not only is there a need to select the target table but also to map each column to export to a column in the target table in the database, this is accomplished via the Target Column drop-down in the Exported Columns area.

Figure 9: Mapping columns

A screenshot of a computer

Description automatically generated

Performing this means that the column data to export will be placed in the database table column selected. For this example, there is interest in exporting the scored results to a new table and so the export type Create new table is selected.

A Confirmation required notification appears detailing that this option will cause the target table to be dropped and replaced each time this block is executed and here, Yes is clicked.

Figure 10: Confirmation Required notification

A screenshot of a computer

Description automatically generated

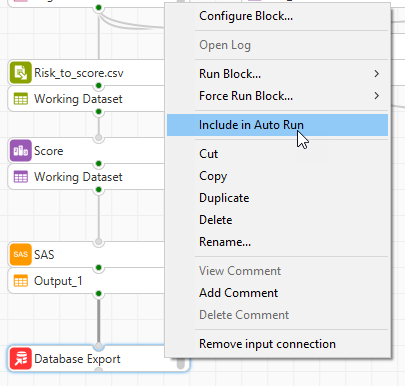
At this point, help is closed so that the Database export options occupy the entire screen.

Notice that as a result of selecting the export type: Create new table, the target table dropdown and the column to map the exported data to are no longer available from the Exported Columns area.

A new target table name is applied: *scored\_data*, and only the ID variable and variables containing scores are retained.

Clicking CTRL+S updates settings. Returning to the Workflow, the block Execution Status reflects that the block has not yet been run, right-clicking reveals why: the block is not included in auto run.

Figure 11: Database Export block not included in Auto Run



Here, the option Run Block > Run To Block is selected and once complete it can be seen that the block Execution Status is now green, meaning that the block has run and the export has been successful. Opening the log for the block also confirms this as there are no error messages.

To confirm results, a database import block is dragged onto the canvas, as there is only one database reference, it is listed by default in the Database dropdown with tables visible. The previously exported data is added to the Selected tables list and OK clicked.

Accessing the table, it can be seen that the exported data is evident with three variables *ID*, *P\_bad* and *P\_good*.

## Exporting to a Text File

To export to a text file format, the Delimited File Export block is used. This is dragged onto the Workflow canvas and the same scored data connected. Configuration settings are accessed by double-clicking the block.

Figure 12: Delimited File Export block

A screenshot of a computer

Description automatically generated

Here, the data will be exported to the Workspace project folder as a .txt file and named *scored\_data*. Clicking browse lists all projects in the current Workspace and the current project is selected. The file name is changed to *scored\_data* and the extension *.txt* added. Clicking OK returns to the main dialog.

From the Format area, the Delimiter is selected as Semicolon and the option Write headers to first row checked. Clicking OK runs the process. Notice the block Execution Status is now green.

Expanding the project from the Project Pane, the data is not visible. Right-clicking and selecting the option Refresh updates project contents and the data is now present.

Dragging onto the canvas and accessing configuration settings, notice that the delimiter is appropriately set to Semicolon. This is as a result of it being automatically detected.

## Exporting to a Microsoft Excel File

The scored results can be exported to a Microsoft Excel file using the Excel Export block. This is dragged onto the canvas, the data to export connected and configuration settings accessed by double-clicking.

Options are straightforward. Two Microsoft Excel workbook formats are available with the default being Excel Workbook (xlsx). This option is retained and Write headers to first row checked.

Figure 13: Excel Export

A screenshot of a computer

Description automatically generated

External is selected from file location and the data folder in the eLearning directory navigated to via the browse button and the filename is changed to *scored\_data*.

Clicking Finish and OK runs the export. Notice that the configuration status of the block is red and hovering reveals the message: Filename extension must be one of the following: ‘xls’, ‘xlsx’.

Figure 14: Error message

A screen shot of a computer

Description automatically generated

Accessing the block configuration, notice that the file name has no extension which must be present and is not automatically added when a name is supplied.

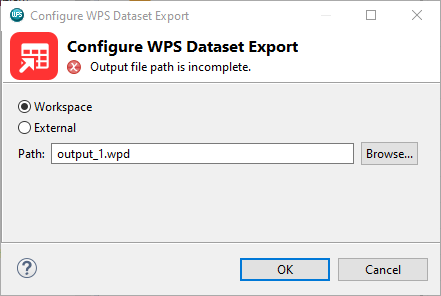
Adding the extension .*xlsx* and clicking OK addresses the issue and the block execution status is now green - meaning the process completed successfully. Right clicking the block, notice it is also included in auto run by default.

The exported results can be accessed via the File Explorer and double-clicking opens in Microsoft Excel with the exported data visible.

## Exporting to a ALTAIR Dataset

The ALTAIR Dataset Export block provides the facility to export any dataset to ALTAIR proprietary file format: WPD. Adding this block to the canvas and connecting the same dataset as before and opening configuration settings reveals few options.

Figure 15: ALTAIR Dataset Export



The dataset can be exported to a Workspace or an External location and the file can be named. Here the connected data is exported to the current project folder and named *scored\_data*. Notice that the file extension is added automatically.

Clicking OK runs the export and refreshing the project shows this to be the case.

## Exporting to Tableau

The last block to illustrate is the Tableau Export block. This exports results to a tableau data extract: *.tde* file format and results can then be used in Tableau.

Options are straightforward, the *.tde* file can be exported to a Workspace or an External location with an option to upload to a server.

Figure 16: Tableau Export

A screenshot of a computer

Description automatically generated

Selecting this option will require additional details to be supplied including Hostname, Site ID, Project, Datasource and authentication credentials.

Here, the data will be exported again to the current project folder. The file name is again changed to *scored\_data* and notice that the *.tde* extension is added automatically. Clicking OK returns to the dialog and clicking OK again applies all settings.

Notice that the block Execution Status is grey. This is because the block is not included in auto run and this is the default for this block.

The block is right-clicked and Run Block, Run To Block is selected and the block execution status is now green, meaning the export was successful. Refreshing the project, the exported results are visible with the appropriate extension.

Bear in mind that the data has been exported to the Workspace. This means that the data is only accessible if using local engine. Selecting the option external, means that the exported results can be accessed whether using a local or remote engine.

The resulting *.tde* file is not available to import but double-clicking opens the file in a text reader, and

as can be seen the data is encoded so that it can be read by Tableau.

## Summary

This lesson focused on the export capabilities available from the Altair Analytics Workbench Workflow export group and included an introduction prior to highlighting five blocks from the export group.

A demonstration illustrated capabilities to export to databases, delimited files, Microsoft Excel, ALTAIR’ proprietary file format and to the Tableau data extract format.