Tableau Users’ Manual

*Using Tableau Server to Access the Acorn Institutional Data Warehouse*

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Navigation on Tableau Server

**Tableau Server Login address:** https://idw-bi.ualberta.ca

**Definitions:**
- Views - Pages that display data in tables or graphs and the display of the information can be changed by manipulating elements of the page (e.g. filters)
- Workbooks – contains a group of pages that were developed together from a common data source and can have linked views that are displayed as tabbed views.
- Projects – organizational folders where workbooks can be stored with designated access rights

*Projects* contain workbooks and *workbooks* are made up of *views*.

**Accessing a View through the Project screen**

The Project screen is what you see the first time you login to the Tableau server. This will be your start page unless you manually change where you want to start (see page 11). To return to this page at any point, click on the UofA logo in the top left corner.

The project page will list all the projects that you have permission to access.

1) Click on the link to the Project you would like to access.

*Note* The orange bar next to the “Projects” in the left-hand sidebar indicates that projects are displayed on the screen
2) This will direct you to a page with a list of all the workbooks that are associated with that project. Click on the workbook that contains the view that you want to see.

(Note* The orange bar next to the “Workbooks” in the left-hand sidebar indicates that workbooks are displayed on the screen)

3) This page shows links to all the views included in the workbook selected in step 2. Click on the view (image or title) that you wish to look at.
4) This page displays the view you selected. All other views in the workbook are represented by tabs and can be accessed by clicking on the tab (rather than going back to the workbook level).
Modifying the displayed information on a view

The information displayed in a Tableau view can be changed so that you see less information (filtering, keep, exclude, drill up), more information (drill down), reordered (sorting) or highlighted.

Filtering data

1) Click on the upside down triangle on left side of the dropdown filter.
2) Select either one item on the dropdown filter (single value menu) or multiple items (multiple value menu)

**Single value selection**

**Multiple value selection**

Click on boxes of the values to be included or excluded in the table or figure being viewed.
Keep or exclude one or more data cells

1) One data cell
   I. Move your mouse over a cell in a table until a tool tip box appears.

   II. Select “Keep Only” to display only that one cell/value in the displayed table or graph.
       Select “Exclude” to remove only that one cell/value in the displayed table or graph.

2) Multiple data cells
   I. Hold the [Ctrl] key down (or the Command key [⌘] when using a Mac) and then select each cell you want. A tool tip box will pop up when you select each cell.
   II. Once all the cells are selected, click on the “Keep Only” or “exclude” buttons on the tool tip box.

Keep or exclude one or more rows or columns of a table

3) One row/column
   I. Select the row header for the row you want to keep or exclude. A tool tip box will pop up when you select the row.
   II. Select “Keep Only” to display only that row/column in the displayed table. Select “Exclude” to remove only that one row/column in the displayed table.

4) Multiple data rows/columns
   I. Hold the [Ctrl] key down (or the Command key [⌘] when using a Mac) and then select each row/column you want. A tool tip box will pop up when you select each row/column.
   II. Once all the rows/columns are selected, click on the “Keep Only” or “exclude” buttons on the tool tip box.
Drill-down or drill-up in a table or graph

The drill-down or drill-up function refers to either expanding or contracting the detail of a particular row or column in a table or Graph.

1) Drill-down

   I. Move the mouse over a particular row or column. A box with a “+” in it appears over the row or column.

Fall Headcount

<table>
<thead>
<tr>
<th>Enrolment Reporting Status</th>
<th>Reporting Year</th>
<th>+</th>
<th>Undergraduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final</td>
<td>2009/10</td>
<td></td>
<td>1,461</td>
</tr>
<tr>
<td></td>
<td>2010/11</td>
<td></td>
<td>1,355</td>
</tr>
<tr>
<td></td>
<td>2011/12</td>
<td></td>
<td>1,367</td>
</tr>
<tr>
<td></td>
<td>2012/13</td>
<td></td>
<td>1,434</td>
</tr>
<tr>
<td></td>
<td>2013/14</td>
<td></td>
<td>1,607</td>
</tr>
</tbody>
</table>

   II. Click on the “+” to drill-down to a level below reporting year. An additional column showing an additional breakdown of reporting year into the student study year appears between reporting year and undergraduate in the table.

Fall Headcount

<table>
<thead>
<tr>
<th>Enrolment Reporting Status</th>
<th>Reporting Year</th>
<th>Study Year</th>
<th>Undergraduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final</td>
<td>2009/10</td>
<td>00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Y1</td>
<td>284</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Y2</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Y3</td>
<td>557</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Y4</td>
<td>470</td>
</tr>
</tbody>
</table>

2) Drill-up

   I. Move the mouse over a particular row or column. A box with a “-” in it appears over the row or column.

Fall Headcount

<table>
<thead>
<tr>
<th>Enrolment Reporting Status</th>
<th>Reporting Year</th>
<th>-</th>
<th>Study Year</th>
<th>Undergraduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final</td>
<td>2009/10</td>
<td></td>
<td>00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Y1</td>
<td>284</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Y2</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Y3</td>
<td>557</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Y4</td>
<td>470</td>
<td></td>
</tr>
</tbody>
</table>
II. Click on the “-” to collapse the column to the left of the reporting year (the column disappears). The column to the right of the “-” gave a more detailed breakdown of the reporting year column (e.g. Undergraduate headcount in Y1 for reporting year 2009/10).

**Sorting data**
Sorting allows you to reorder rows in a table based on the values found in one column. When you hover over a table column a triangular shaped image appears (made up of 3 horizontal bars).

To order the column from highest to lowest values, click on the icon that looks like an upside-down triangle at the right corner of the column header.

<table>
<thead>
<tr>
<th>Reporting Year</th>
<th>Undergraduate</th>
<th>PhD</th>
<th>Masters</th>
<th>Other GS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009/10</td>
<td>1,461</td>
<td>70</td>
<td>92</td>
<td>23</td>
</tr>
<tr>
<td>2010/11</td>
<td>1,355</td>
<td>80</td>
<td>84</td>
<td>8</td>
</tr>
<tr>
<td>2011/12</td>
<td>1,367</td>
<td>74</td>
<td>69</td>
<td>6</td>
</tr>
<tr>
<td>2012/13</td>
<td>1,434</td>
<td>69</td>
<td>75</td>
<td>8</td>
</tr>
<tr>
<td>2013/14</td>
<td>1,607</td>
<td>63</td>
<td>76</td>
<td>5</td>
</tr>
</tbody>
</table>

The sort reorders all the rows in based on the sort order of the column. Therefore, the reporting year order results in the non-sequential order (2009/10; 2010/11; 2013/14; 2012/13; 2011/12). Also notice that the sort icon now remains visible indicating that a sort was done on this column.

**Highlighting**
Highlighting changes the brightness of parts of a table or figure which makes them stand out more in the view.

### Highlighting in tables
- Highlight a row or column by selecting it’s header
- Highlight a cell by selecting the cell

### Highlighting in figures
- Highlight a value in a graph by selecting the element in the graph (e.g. a bar in a chart or a colour in a stacked bar chart).
- Highlight a value in a graph by selecting the value in a colour legend for the figure.

*(Note*The highlight selected items icon next to the legend title should be selected first and appear grey in order for it to work)*
Resetting and removing changes to Views
Remove the last change to a view or all the changes

Remembering and saving information

Remember my settings
When you leave a Tableau view, all the changes that you made (e.g. filters, highlights, drill-downs etc.) are lost.

To save your setting:
Click on “remember my settings” in the top left section of the screen. Type in what you want to call the custom view in the field at the top of the drop-down menu. You can save multiple different configurations for a view and call them whatever makes sense to you.

The name of the “Remember my Settings” menu changes to “Original View” once you have saved your first custom view

Change custom views:
Edit the saved views by clicking “Manage custom views” on the “Original View” menu. You can either delete a custom view or publish it so everyone with access to the workbook can access the custom view you created.
Exporting data

**Method 1 – Downloads whole table**

1. Click on the “Export” icon found on the top center of the page.
2. Select cross-tab data. A download prompt appears asking if you want to download a text file that can be viewed in excel.

You can also use the export icon to export the view as either an image or a pdf file.

**Method 2 – Downloads data for selected rows or columns only**

1. Click on all the row or column headers of the data you want to download. Select the “View data” icon from the Tool Tip pop-up screen.
   
   A pop-up windows appears with a table that has all the data that you selected. At the top and bottom of the table you will find a link that says “download all rows as a text file”. The download file appears as a text file with each row corresponding to a row in the table and a comma between each value in a row (comma delimited). This file can easily be imported into excel for additional analysis.

**Printing**

WARNING - If you try to print a view using the print function (button or key-stroke) the output may have part of the graph cut off.

1. Click on the “Export” icon found at the top, center of the page and save as a pdf with the following page size and scaling settings:
2. Open and print the pdf

Improving Navigation

Display of Workbooks and views
You can display workbooks and views as thumbnails (small images of the workbook) or as a list.

- Thumbnails – works better if you are looking for information displayed in a particular way (table or graph)
- Lists – works better if you have a lot of workbooks or views and you need to display them as a list to get them all displayed on the page.

Set start page
1. Navigate to the page (project, workbook or view) that you want to start on when you first login to Tableau server.
2. Click on the “Account” menu in the top left corner of the screen and select “Make this my start page”

**Favorites**

**Add a Favorite**

- Thumbnail view - Move your over the workbook or view image. Click on the faint outline of a star next to the name on the tool tip that appears.
- List view - click on this star next to the workbook or view to make it a favorite.

**Navigating to Favorite** - Go to the “Favorite” drop-down menu and selecting the favorite that you want.

**Remove a Favorite** – Click on the yellow star next to the workbook or view name (list view). In the thumbnail view click on the star that appears next to the name on the images tool tip.

**Advance searching**

You can do advance searches by using the “Filter” panel on the left side of the screen. Search by:

- Content found in the name of workbooks or information in a view.
- Filter by selecting a project, owner, tag, date or favorite. This displays all the workbooks or views associated with the selection. For example, selecting an owner will display all workbooks and views that are owned by a particular owner.
- You can add multiple filters. For example, you can have it display all the workbooks in “student” projects that have content related to “retention”.

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# Web Authoring

People can use the web authoring function (also known as “Web Edit”) to customize workbooks published on the Tableau server. Using the web authoring function, users gain access to the data set behind the workbooks. They can pick the dimensions and measures from the data set, and customize report content to suit their data need. In this section, various components on the web authoring interface will be discussed. At the end, two examples are given to demonstrate how web authoring can be used to change table content and transform a table into a graph format. The “U of A Staff” workbook in the Staff Project is used for the purpose of illustration.

![U of A Staff Headcount](image)

## Select Filters to Apply to Data

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(multiple values)</td>
<td>(48)</td>
<td>(48)</td>
<td>Administrative/Professional Officer</td>
<td>584</td>
<td>413</td>
<td>475</td>
<td>511</td>
<td>521</td>
<td>528</td>
<td>554</td>
<td>550</td>
<td>522</td>
<td>527</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Contingent Faculty</td>
<td>281</td>
<td>320</td>
<td>363</td>
<td>430</td>
<td>470</td>
<td>462</td>
<td>445</td>
<td>446</td>
<td>432</td>
<td>439</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Contingent Faculty Service Officer</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>8</td>
<td>7</td>
<td>8</td>
<td>13</td>
<td>19</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Contract Academic Staff, Teaching Faculty</td>
<td>848</td>
<td>913</td>
<td>941</td>
<td>908</td>
<td>882</td>
<td>977</td>
<td>960</td>
<td>985</td>
<td>922</td>
<td>924</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Faculty Service Officer</td>
<td>1,541</td>
<td>1,588</td>
<td>1,626</td>
<td>1,678</td>
<td>1,714</td>
<td>1,614</td>
<td>1,680</td>
<td>1,680</td>
<td>1,694</td>
<td>1,621</td>
<td>1,650</td>
</tr>
</tbody>
</table>

Click on the “*” on the column header to drill down. This expands the table to include the Employee Subcategory.
Workbook in Web Edit Mode

Web Edit mode provides tools for customizing a workbook on Tableau server. In fact, the Web Edit interface is very similar to what developers use for creating Tableau workbooks on their desktop. The graph below depicts the items on the web authoring interface. The details for each item are explained in the following sections. It is important to understand the items on the web authoring interface before jumping into customizing workbooks.

Items highlighted in red font are only accessible in Web Edit and they are the tools for customizing the display area, which is highlighted in green font.

1. The URL with the word “authoring” in it indicates the workbook is in web edit mode.

2. List of Dimensions

3. List of Measures

4. Toolbar

5. Filter Shelf

6. Marks Card

7. Column Shelf

8. Row Shelf

9. Filters displayed in the view

10. Table/Graph – Data Display Area

11. Worksheets in the Workbook

1. The word “authoring” is part of the URL when the workbook is in the Wed Authoring Mode.
2. Dimensions are characteristics of an entity. In the example above, each record is a person’s job record (limited to Active Leave With Pay or Leave of Absence (APL) status) in the “staff headcount and FTE” dataset. The dimensions are mostly the qualitative attributes about the job and the person who holds the job, such as “Department” the job belongs to, “National Status” the employee has and the “Staff Agreement” the job is classified into. The dimensions are frequently used to pivot/slice the data. In this example, the Employee Category and Employee Sub Category are used on the row shelf to slice the headcount.

Hierarchy is built on top of the dimensions to represent the hierarchical relationships among them. A hierarchy (Hierarchy - Faculty, Group, Category and Subcategory) has a triangle shape and a flow chart sign beside its name. When the triangle shape gets clicked, the hierarchy is unfolded and the underlying dimensions are displayed. You can use the dimensions belonging to a hierarchy in the same way as the stand-alone dimensions (e.g. drag the dimensions to Row and Column Shelves to further pivot the data).

3. Measures are usually the quantitative attributes of an entity. Measures are mostly numeric, and mathematical calculations can be performed on the measures. For instance, each person’s job
record has an FTE (Full Time Equivalent) number. FTE can be added together so that the total number of FTE in a department can be measured. If the measure is to be displayed in a table, the corresponding measure should be placed on the Mark Shelf (#6 in the screen shot on page 15 above). If the measure is to be displayed in a line/bar graph, the measure should be placed on the Column Shelf (#7) or Row Shelf (#8).

4. In the Web Edit mode, the tool bar menu provides many options for users to change the layout of the view, create brand new sheets and to export results in various formats.

- Pause Updates – Users can ignore this option. It is related to updating data sources using live connections. Up to this point, the data sources provided by the Strategic Analysis and Data Warehousing (SADW) Office use data extracts rather than live connections. Clicking or unclicking on this menu will not change anything in the workbook.

- Swap – Clicking on “Swap” causes the column and row headings in the view area (table or graph) to get swapped (row items move to column and column items move to row). It is similar to the “Transposed” function in Excel.

- Totals – “Totals” have four sub menu items which can be used to turn on and off the totals and subtotals in the data display area.

- Show Labels - toggles the labels in the graph format. It has no effect table format.

- View Size – this menu can be used to control the item size in the display area. For instance, if the table cell is too narrow, the content will be displayed as “#####”. To resize the cell and view the number masked by “#####”, users can click on “View Size”->“Cell Size”->“Wider”.
f. Worksheet - allows users to create a new sheet from scratch or duplicate an existing sheet. It also allows you to rename an existing sheet.

g. Export – users can export worksheets to Image, Data, PDF and Crosstab formats. Please refer to page 11 for usage details discussed earlier in this text.

h. Show Me – it is an intelligent feature that would suggest a graph based on the data element currently presented in the display area. You might need to adjust the dimensions on the column and row shelves to turn the suggested graph into the desired layout.

5. Filters Shelf (#5 on page 15) has all the filters which control the data presented in the workbook. Dimensions can be dragged into Filters Shelf to further restrict data. Please be cautious when adding new filters. Some filters used in the report such as “Reporting Snapshot Month” is essential for getting the correct headcount. It is advised that users add more filters into the Filters Shelf rather than removing any existing filters. When adding filters, please be careful not to drag the new dimension over existing filters on the Filters Shelf because such action would remove an existing filter. To add a new filter, drag the new dimension to the empty space on the Filters Shelf. The two images below show the wrong way and the correct way of adding filters.
6. The Marks Card (#5 on page 15) controls various parts in the data display area. You can drag the dimensions and measures into the Marks Card to control the graph type, colour, size, tooltip value and so on. Tableau online help has full coverage on this topic. You can find the details by following this URL: http://onlinehelp.tableau.com/current/pro/online/windows/en-us/buildmanual_shelves_marks.html
7. **Column Shelf** – dimension Column Shelf. Each item placed on the Column Shelf corresponds to a table column in the display area. When a measure is placed on the Column Shelf, a graph is created in the display area. More details can be found in Example#2 on page 27.

8. **Row Shelf** – dimensions can be placed on the Row Shelf. Items placed on the Row Shelf correspond to rows in the table. When a measure is placed on the Row Shelf, a graph is created in the display area. More details can be found in Example#2 on page 27.

9. **Filters** shown in the display area – All the filters for the workbook are on the Filters Shelf (Item #5 as explained earlier). Per the author’s discretion, some filters are hidden from the user, and some filters are presented to the user in the display area. The filters presented in the displayed area are intended to be controlled by the user for changing the values.
10. **Table/Graph – Data Display Area (#10 on page 15)** – This is where the information is presented to the user. It could be in the format of a table or a graph. By changing the elements in the Marks Shelf, the presentation of the data can be changed (e.g. changing from line graph to bar graph).

11. **Worksheets in the Workbook (#11 on page 15)** – a workbook usually contains a number of worksheets. In the Web Authoring view, users can work on one worksheet at a time to customize the content. Users can switch to different worksheets by clicking on the various tabs located on the bottom of the display page. Please pay close attention to which worksheet you are editing. One clue is that the current worksheet tab is a slightly lighter colour compared to other tabs (however, it is not easy to tell the difference among gray colours). Another clue is to check the URL, the ending is the name of the worksheet that is currently being edited. The end of the URL has the name of the worksheet that is currently opened in the Web Authoring mode. The “%” is a replacement for the space in the worksheet name. The “#3” at the end has something to do with the versioning of Tableau, which can be ignored by user.

**Example 1: Web Authoring – Add Gender to Professor Headcount Table**
This example demonstrates the steps taken to add the Gender dimension into the Profess Headcount worksheet using the Web Authoring Interface.

1. In the “U of A Staff project”, find the “UofA Staff Headcount” workbook. Once in the workbook, navigate to and click on the “UofA Professoriate Headcount by Faculty and Rank” worksheet (5th tab at the top of the display page). The table shows the professor headcount by Employee Subcategory (Faculty vs Contingent Faculty) and Academic Rank (Full/Associate/Assistant Professor). You can further detail the headcount by gender by using Web Authoring. To enter the Web Authoring Interface, click on the Edit menu under workbook path (top left hand of display page).
Once in the Web Authoring Interface, double check that the correct worksheet is being worked on. You can do this by checking the ending of the URL, which should contain the worksheet name. In this case, it should be similar to “…UofAProfessoriateHeadcountbyFacultyandRank#SomeNumber”.

You can also check this by looking for the worksheet tab “Professor Headcount” at the bottom of the page, which should be slightly highlighted.
3. Once you are in the right worksheet, you can begin editing. Try to find dimension “Gender” from Dimensions Pane on the Left. The dimensions are sorted alphabetically.
4. Left click your mouse on the “Gender” dimension, hold on the left mouse button and drag the “Gender” Dimension to the Column Shelf. You should drop the “Gender” dimension after “HR Academic Year” on the Column Shelf.
The above graph shows that Gender dimension is being dragged out from the dimension pane, and moving toward the column shelf. The graph below shows the gender dimension ended up on the column shelf. At the same time, the headcount is further sliced by gender (female and male).

5. If you would like the gender dimension to appear on the row rather than the table column, you can drag the gender dimension from Column Shelf onto the Row Shelf. In the table, the gender now shows up right beside the Academic Rank.
6. If you would like to export this table as an image, you can click on the Export menu on the top menu bar, and choose “Image”.
Example 2: Web Authoring - Turn a Professor Headcount Table from a Table to a Bar Graph

The Web Authoring interface also provides you tools to transform a table into a graph. This example will guide you through the process.

1. Enter the web edit mode for the worksheet “UofA Professoriate Headcount by Faculty and Rank”. Click on “Edit”. We have a table with professor headcount by Employee Subcategory, Academic Rank, and HR Academic Year. This is our starting point.

2. On the Marks Card find the measure “CNTD(Employee ID)” (AKA. Headcount). Drag it to the Column Shelf. You will find the table gets transformed into a bar graph.
3. You can label the headcount on the bar graph by clicking on the “Labels” icon in the Marks Card, and check the box “Show mark Labels”.

4. If we would like to see the proportion of professor headcount based on academic rank, you can move the Academic Rank dimension out of Row Shelf and place it in the Marks Card on the Color icon. Please note that you need to drop the Academic Rank dimension on top of the Color icon.
As shown in the graph below, each vertical bar represents the total professor headcount in the year for either Faculty or Contingent Faculty. Each colour in the bar represents the professor headcount belonging to an academic rank. The legend on the side indicates which colour represents which academic rank.
5. The Grand Total might not be needed. We can remove it by unchecking the “Show Column Grand Totals” option from the “Totals” menu.

Uncheck “Show Column Grand Totals” to remove Grand Totals from the Graph.
The graph below shows the graph without Grand Totals.