Introduction to Oracle Business Intelligence Enterprise Edition: OBIEE Answers 11g

Cornell Customized Version
April 2012
Minor corrections were made on page 2, for the Oct 20, 2017 OBIEE 12c Upgrade

Contents

Overview of the Training Data Used In This Manual

This OBIEE ad hoc Answers manual utilizes data from an internal Cornell Training database that contains information about employees in several organizational units, and the number of work hours they spent doing a variety of activities. All names have been “anonymized” so there is no way to identify any individual, and Organizations were assigned randomly. To give context to the types of Hours used, note the following:

Corrected Hours = Applied Hours (charged to Projects) + Unbilled Hours (Leave, Holiday, Overhead)

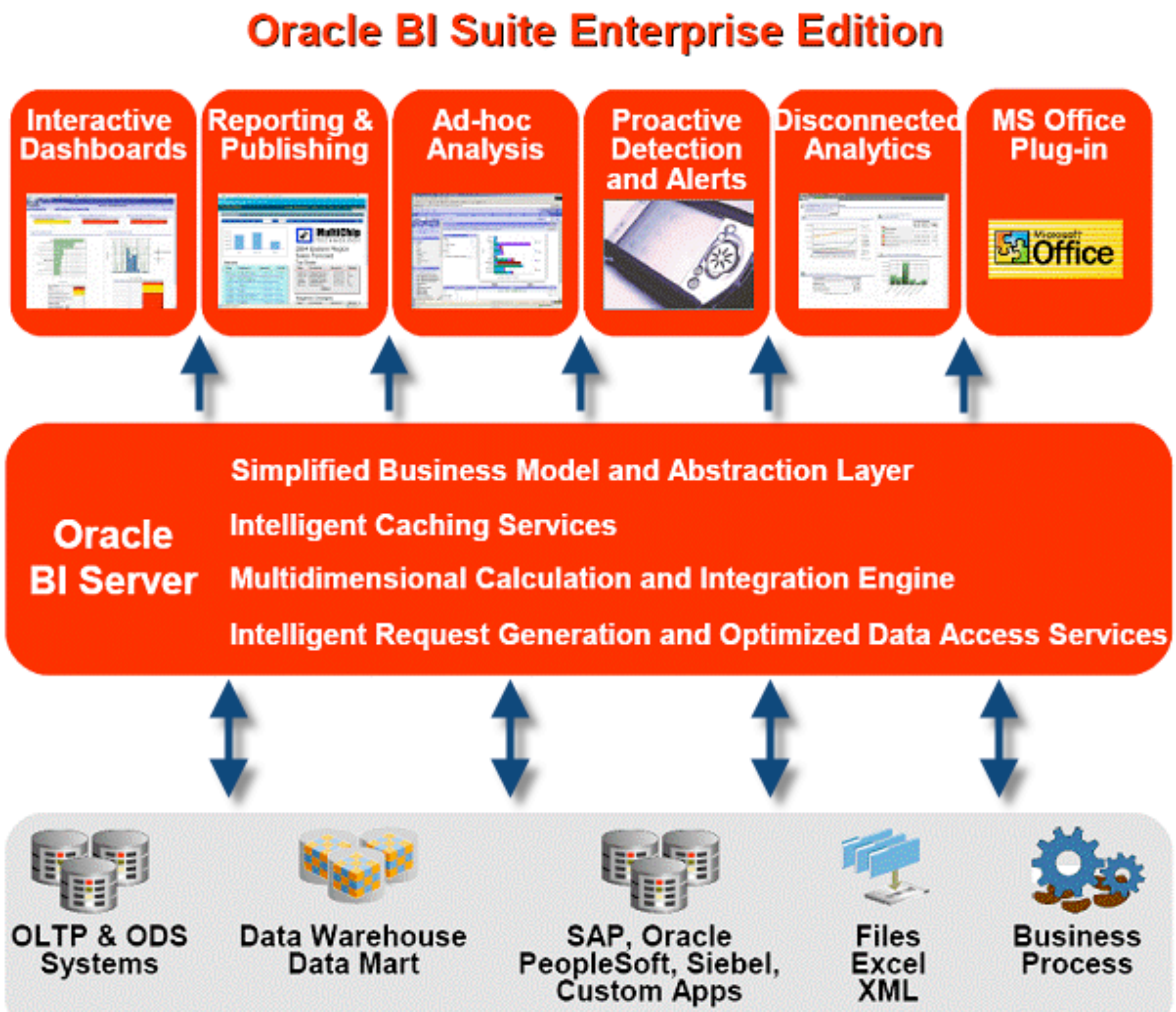
These inserts indicate a **Tip or Helpful Hint or Decision** about how to create or use a certain feature or set of functionality.

Introduction to Oracle BI Enterprise Edition (OBIEE)

Several years ago, Oracle took a look at the state of the Business Intelligence industry in terms of the different processes and applications that were required to create, use and maintain a Business Intelligence environment.

Oracle found a hodgepodge of multi-vendor, non-integrated hardware and software that a corporate BI development team had to evaluate, test, find "Best of Breed", and then somehow try to make it all work together.

Oracle's vision was to bring all of these disparate pieces from multiple vendors together into one suite of products, called the Oracle Business Intelligence suite.



The Oracle BI Server is the engine that takes information from just about any data source, converts it into a clean, query-ready format, and then makes it available to a suite of tools such as dashboards, ad-hoc analytics, BI Publisher, and even Excel.

Starting OBIEE on the Web: Presentation Services

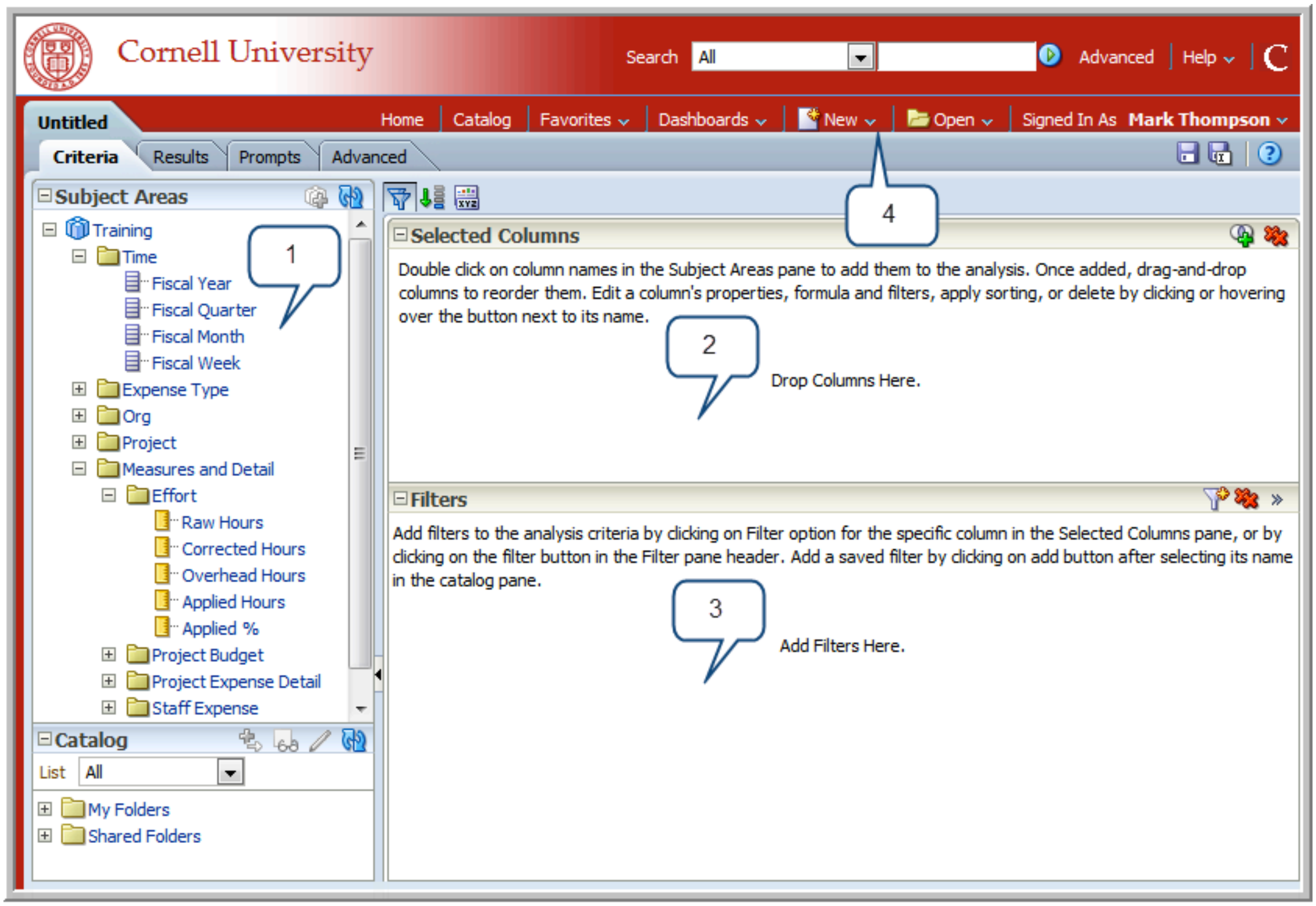
- You use a browser to access the OBIEE server. There is no "plug-in" or other software to install.
    - **October 2017 UPDATE: OBIEE 12c works fine in more recent versions of hte 11g browsers listed below.**
    - **You can see minor differences found during testing at the bottom of the OBIEE 12c UPGRADE page here: https://confluence.cornell.edu/x/jyLHF**
    - Supported browsers for the currently installed OBIEE version 11.1.1.6 are:
        - Internet Explorer/IE7 or 8
        - Firefox 3.5 through 9 (not 10)
        - Most OBIEE features will work in Chrome, but it is not a supported platform.

    - **Macintosh** users can use IE 7 "natively", again, with no plug-in to install. A future OBIEE version may be certified to work with Safari, but it currently will not function properly. There is no need for Virtual PC software, Crossover or Parallels.

- The website for the **upgraded 12c OBIEE server** is: https://obieetest.db.cornell.edu/analytics for **Answers Training** (and testing) and https://obieeprod.db.cornell.edu/analytics for Production.

- When prompted, login to the new DUO Two Step authentication screen, using your Netid and password.

The OBIEE Answers interface will look like this screenshot when creating or editing an analysis:



Legend:

1. The **selection panel** (area #1) contains the list of all tables and columns that can be selected in an Answers analysis for the selected subject area.

2. As columns are selected, they will appear in the Criteria canvas in area #2.

3. Filter conditions will be shown in the Criteria canvas in area #3. The rows returned by an Answers analysis may be **filtered** based on one or more selection criteria.

4. The toolbar (area #4) contains links that allow you to (in order, from left to right):
    a. Home: Navigate to your OBIEE Home page.
    b. Catalog: Display the OBIEE catalog of stored objects (analyses, filters…).
    c. Favorites: Display a list of your personal favorites (Analyses, Dashboards).
    d. Dashboards: Navigate to a dashboard.
    e. New: Create a new analysis.
    f. Open: Open an existing OBIEE object (Analysis, Filter, etc…).
    g. The left save icon: Resave the current analysis with the existing name.
    h. The right save icon: Save the analysis with a new name.

Dimensions and Hierarchical Levels

The DataMart or Subject Area that you will query with OBIEE contains two types of tables: DIMENSION tables contain descriptive attributes; FACT tables contain Numbers or Dollars.

Dimensional HIERARCHIES are built by OBIEE Repository developers in conjunction with the owners of the data, to allow users to DRILL down into Dimensional data.

The dimensions and their hierarchical levels to be used in this class are shown below. Here is an example of what these hierarchies enable you to do:

Instead of selecting ALL time dimension columns for your query or Answers Analysis, you might simply select **just the Fiscal Year column**. When results are returned, you will see links on the Fiscal Year column values that, when selected, will enable you to drill down to Fiscal Quarter data then further down to Fiscal Month data, and finally to detail by Fiscal Week (There is no Daily level in the training database).

At any point, you can click the browser's BACK button to drill back up to the previous level, or all the way back to the highest Fiscal Year level.

Dimension Name	Project	Time	Org
Levels	All Projects	Fiscal Year	All Orgs
	Work Type	Fiscal Quarter	Division
	Application	Fiscal Month	Department
	Project	Fiscal Week	Staff Member

Scenario:

The President of Cornell University has requested an analysis of year-to-date project hours related to the **Non Billable**, **Operational Improvement**, and **Operational Support** Work Types, for the **Arts & Sciences**, **Office of Human Resources**, and **Graduate School** Divisions. You will use the various tools available in OBIEE to produce this analysis.

Lesson 1: Creating and formatting an Answers analysis

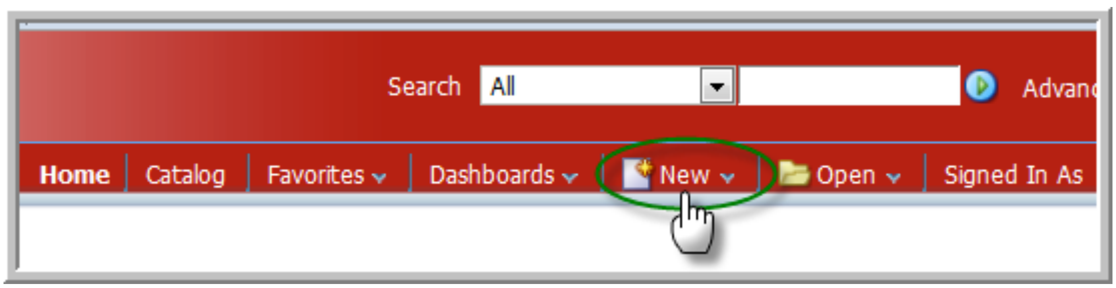
Answers is the ad-hoc query environment in the OBIEE suite. It is in Answers that you create and format ***analyses*** to help analyze business results.

In this lesson, you will

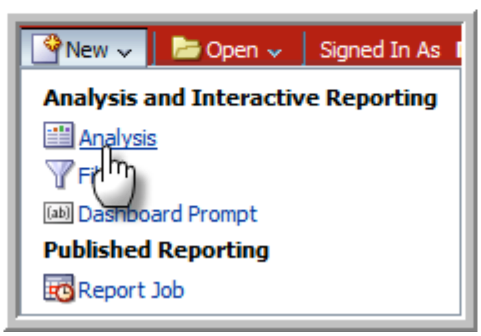
1. Create a simple analysis in Answers
2. Apply simple filters to the analysis
3. Create subtotals and grand totals
4. Format the analysis

Exercise 1a: Creating an Answers Analysis

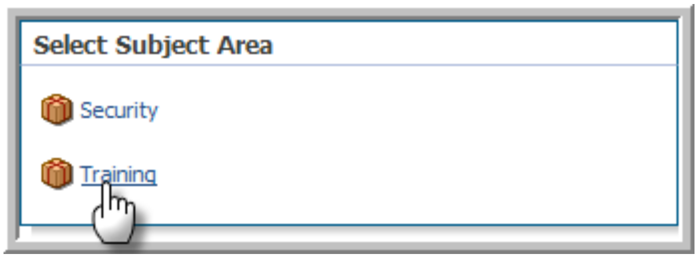
1. Click the **New** link on the toolbar to initiate the creation of a new analysis.



2. Click on the **Analysis** link.



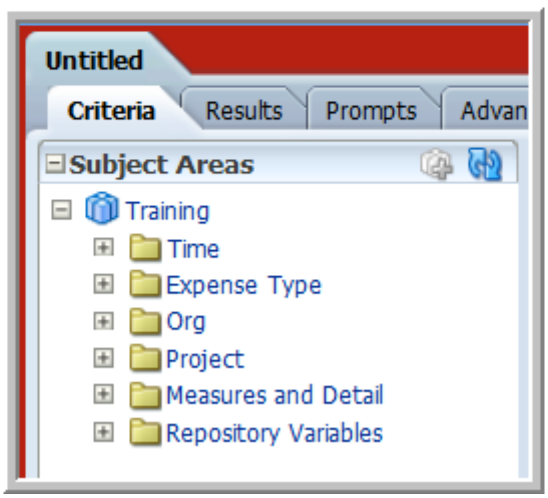
3. Click on the **Training** Subject Area link.



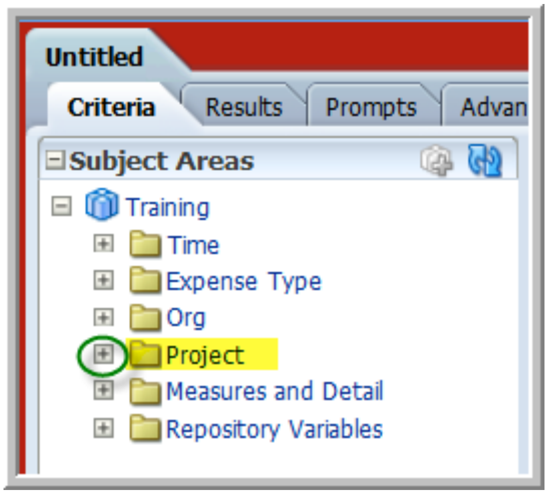
Subject areas contain sets of related information with a common business purpose, represented by a group of several Tables and their related Columns, listed in a Windows-like directory on the far left side of the Answers workspace referred to as the selection pane.

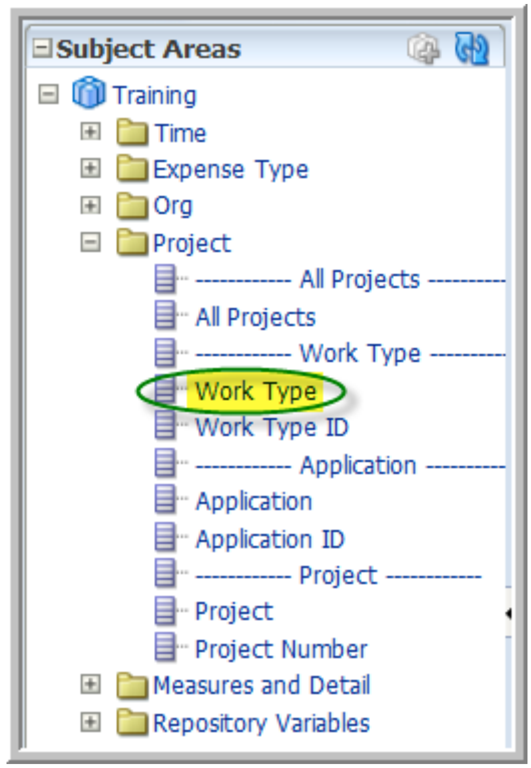
There are often several Subject Areas for each broad functional area / datamart / data warehouse, like Accounting, HR Payroll, or (Remedy) Incident Management. The list of subject areas available to **you** will depend on your responsibilities.

After selecting a Subject Area, the list of available folders in that subject area will appear on the left side of the screen, as shown here.

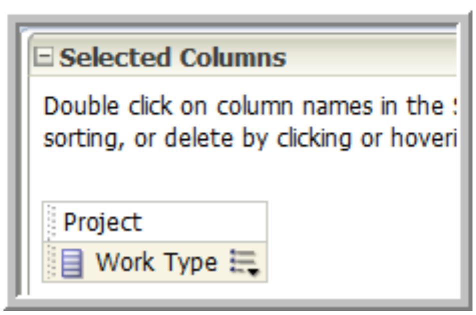


4. In the left-hand selection pane of the Answers interface, click the small ⊞ icon for the **Project** table (below, left) to drill down and display its columns (below, right):





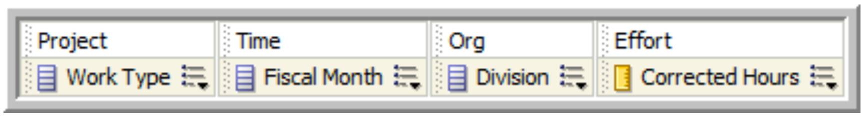
5. Double-click the **Work Type** column to add it to your analysis criteria, which appears in the right pane.



6. Click the **Time** table link to drill down and see its columns. Double-click the **Fiscal Month** column to add it to your analysis criteria.

7. Click the **Org** table link to see its columns. This time we want to select the **Division** column. You may either double-click the column, or you may click/hold/drag the Division column with the left mouse button, moving the mouse to the appropriate location for the new column, looking for a gray vertical line. When that gray vertical line appears in the correct location among the selected columns, release the mouse button.

8. Finally, drill on the Measures and Detail table, then on its **Effort** table, and add the **Corrected Hours** column. Your analysis should look like this:

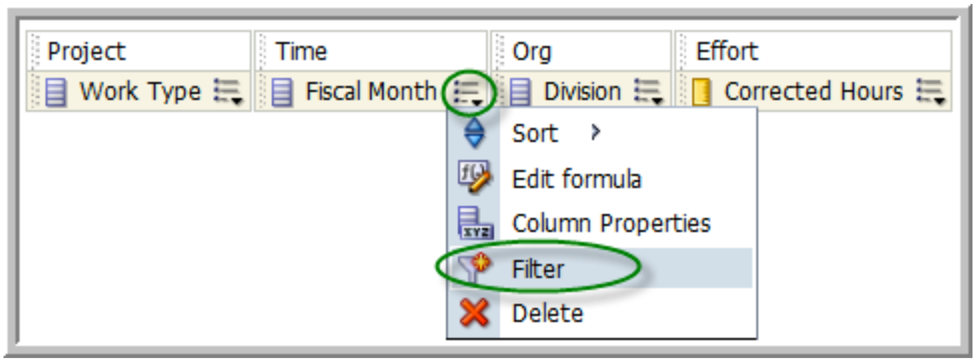


Exercise 1b: Creating and saving simple filters

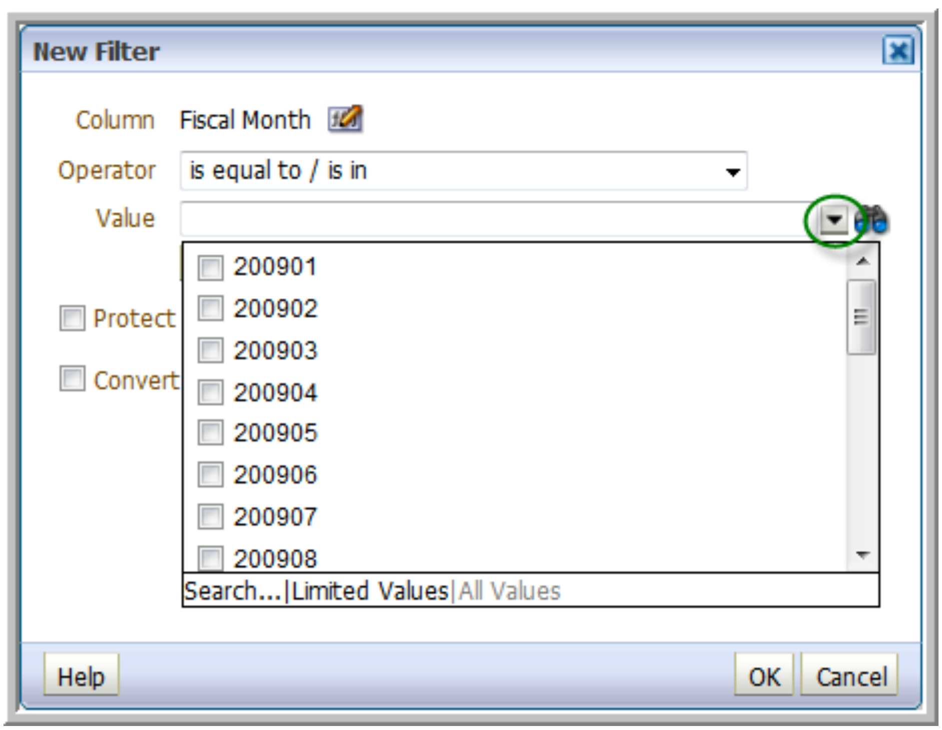
Simple Filters

In this exercise, you will create and save a filter to limit the data set to a list of selected months.

1. Hover the mouse over the options icon for the **Fiscal Month** column, then click the **Filter** option from the dropdown list.

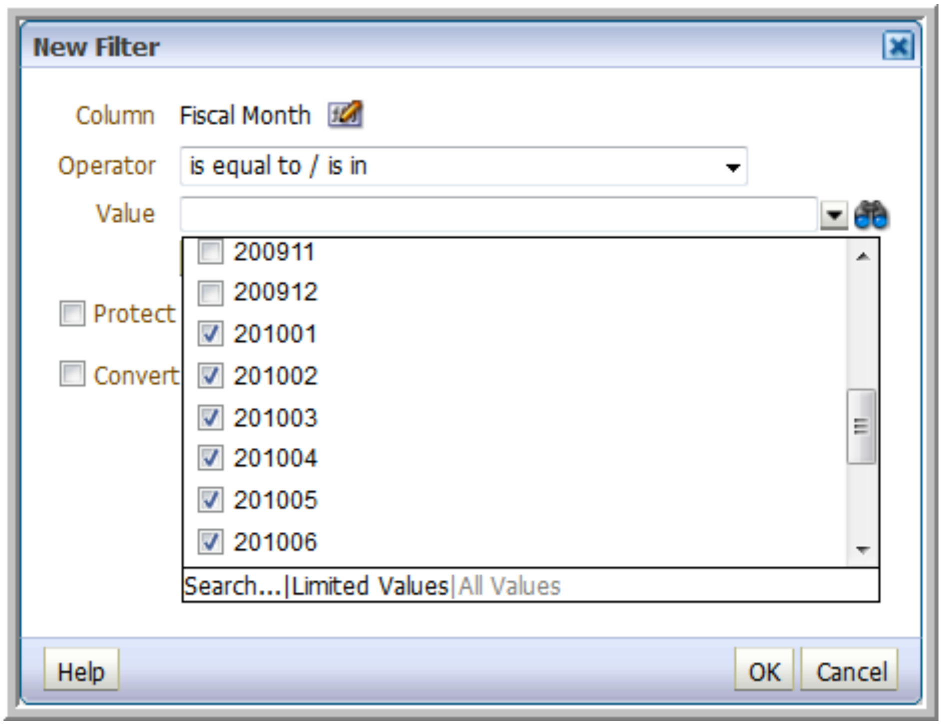


2. In the **New Filter** dialog, click the dropdown arrow next to the Value field.

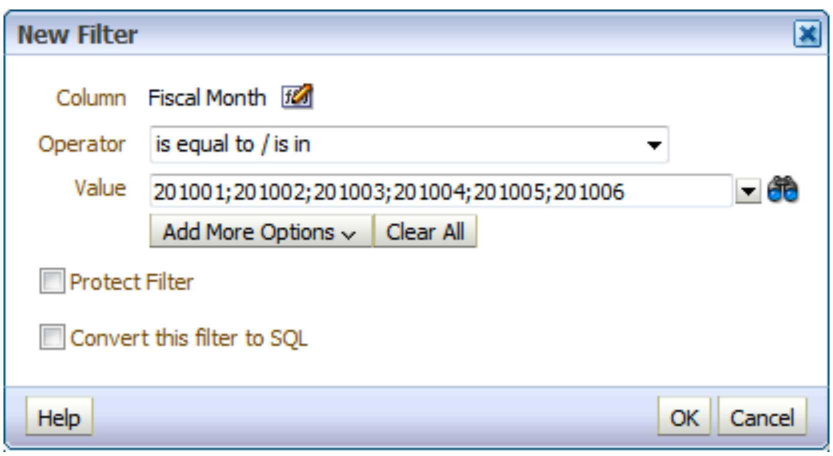


3. Scroll down to find the first Fiscal Month for the report (201001).

4. Click on that value (201001), and on the next 5 values as well, ending with 201006. There will be six Value fields on the left side of the Create/Edit filter dialog.

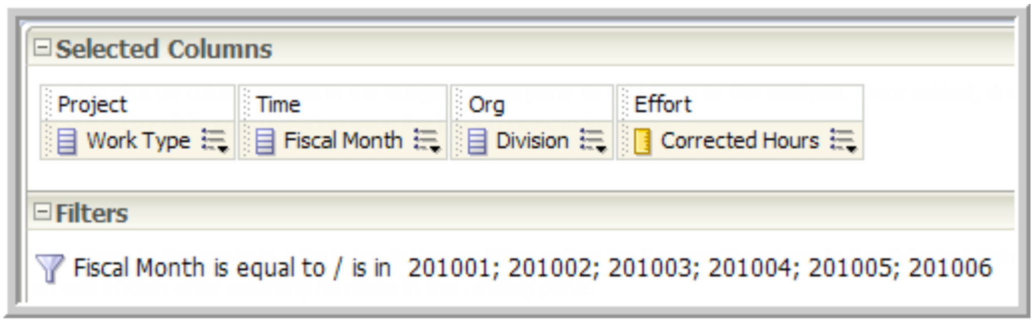


5. Click that same dropdown-arrow again, and confirm that your screen looks like this:

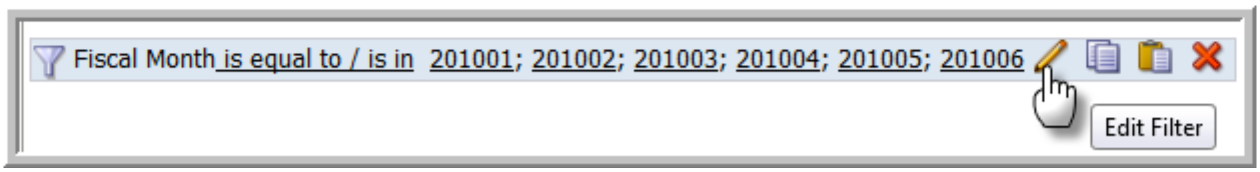


6. Click **OK** to complete the creation of this filter.

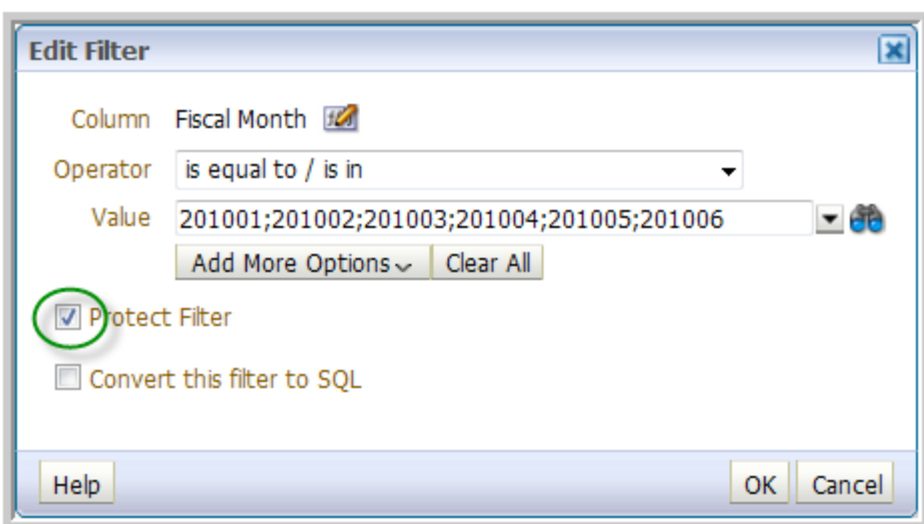
7. Confirm that your criteria screen looks like this:



8. Hover your mouse over the filter until you see a series of icons appear to the right of the filter condition. From that set of icons, click the Edit option. The edit icon is a yellow pencil.



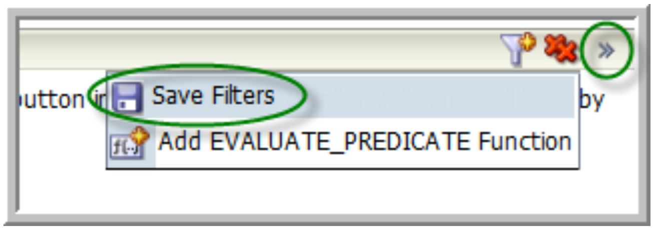
9. Select the **Protect Filter** option and click OK.



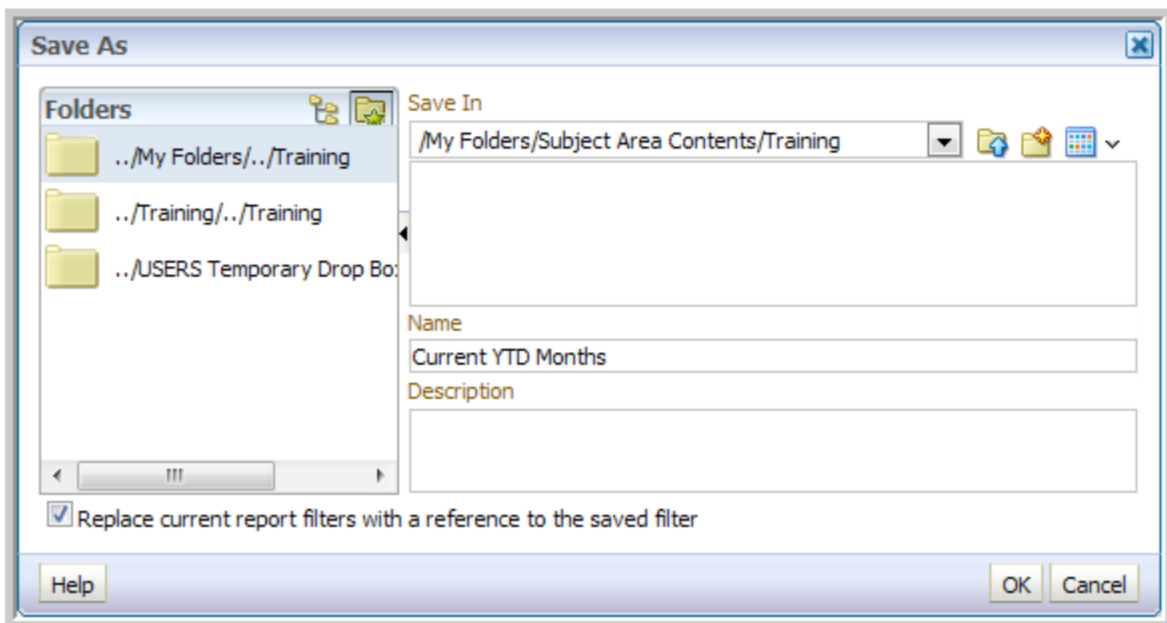
When a filter is not "protected", OBIEE will ignore it in favor of an implied filter imposed when using a Navigation Link to open the analysis or to open a dashboard page containing the analysis. Navigation Links and the Protect Filter option will be more fully explained in the later lesson on Drilling and Navigation.

Saving Filters

1. Saving a filter allows you to reuse it with other analyses. Save this filter by clicking on the **More Options** » icon at the far right of the Filters header, and selecting **Save Filters**.



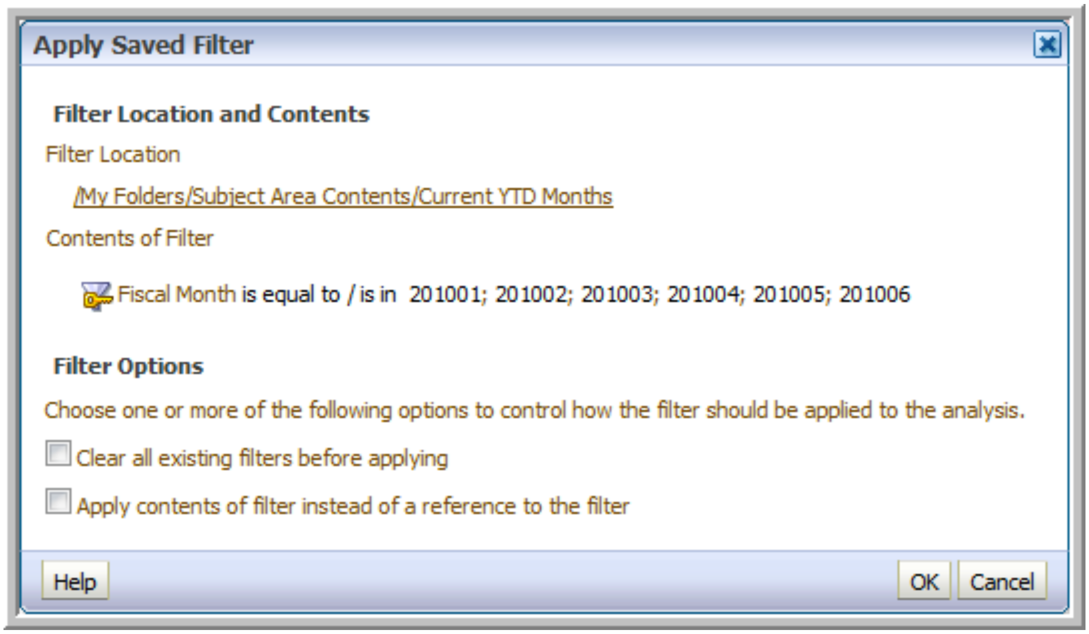
2. On the Save Filter dialog, the Save In location should already point to /MyFolders/Subject Area Contents / Retrospectives. Name the filter **Current YTD Months**, and click **OK**.



The filter has now been saved for reuse with other Answers analyses.

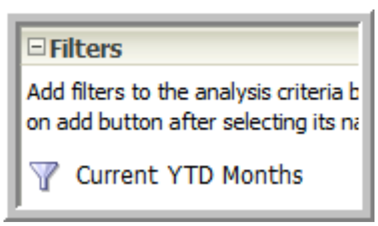
In a later lesson, we will learn how to use pre-built **Repository Variables** to allow the **Current YTD Months** filter to dynamically change to a different set of Fiscal Months as we move forward in time.

3. To demonstrate the use of Saved Filters:
    a. Remove all filters from the analysis by clicking the **Remove Filters** icon located at the far right side of the Filters header.
    b. From lower part of the selection panel in the Catalog area, drilldown under **My Folders / Subject Area Contents / Training**, and double-click the **Current YTD Months** filter you just saved. The Apply Saved Filter dialog box is displayed.



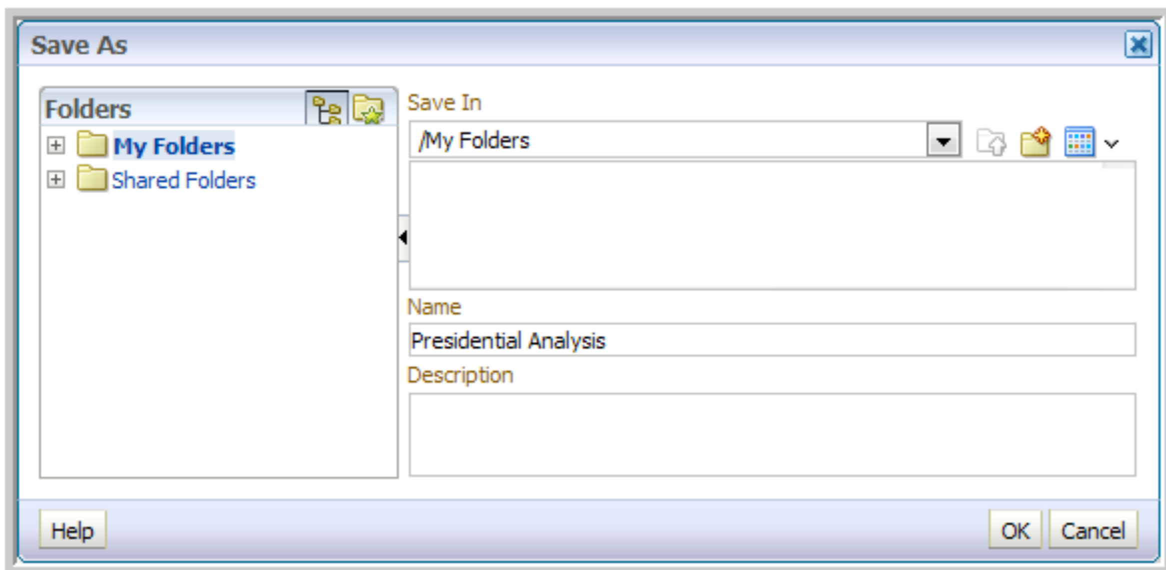
4. Click **OK** in the Apply Saved Filter dialog box to add the saved filter to your analysis.

    The Filters section of your analysis will look like this:



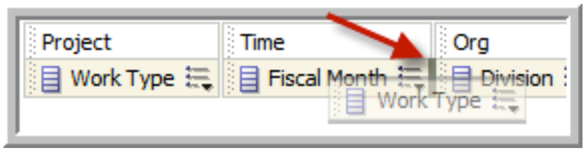
5. OBIEE does not have any periodic automatic save, **so save early and save often!** Click the **Save Analysis** icon, located above and to the right of the criteria canvas.

6. In the Save Analysis dialog box, click on **My Folders**. In the Name field, enter **Presidential Analysis** and click **OK**.

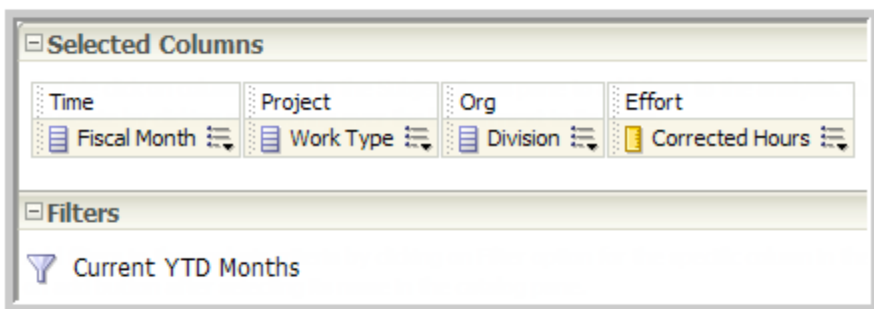


Rearranging and viewing the table

1. You can reorder the columns in your analysis by clicking and dragging them. Click on the words **Work Type**, then hold the mouse button and drag the column to the right of the **Fiscal Month** column. When you've reached a valid insertion point, a gray vertical line will appear, and you may release the mouse button to drop the column at that location.



The analysis should look like this:

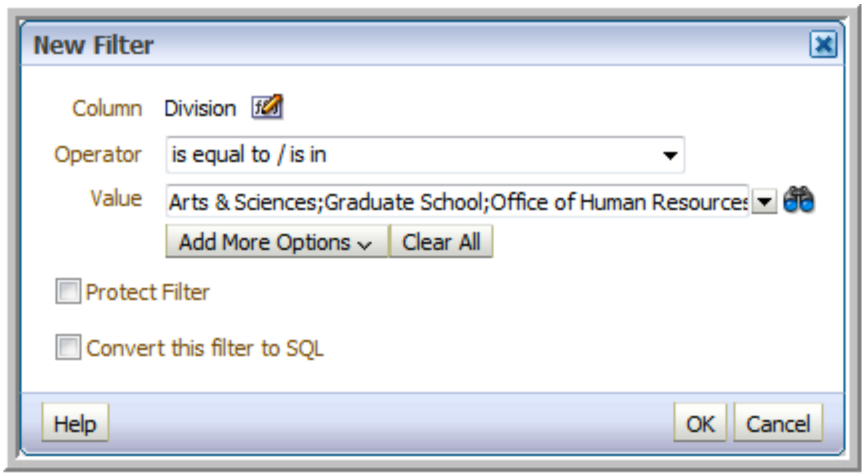


Adding additional Filters

Suppose that our data of interest only includes three values of Work Type from the Project dimension, and three values of Division from the Org dimension. Let's add two more filters to the analysis:

1. Click the Filter icon for the Division column, then select these three values from the list: Arts & Sciences, Office of Human Resources, and Graduate School. You may either:
    a. Select the values from the list using the mouse
    b. Click the search icon next to the Value box, and type the first few characters of the value into the empty box next to the word Starts, and click Search.
    c. Type the precise upper and lower case values manually, separating multiple values with semicolons.

2. When the three Divisions are selected and visible in Value box, click OK.



3. Likewise for Work Type, click the Filter icon for the Work Type column, select these three values: **Non Billable**, **Operational Improvement**, and **Operational Support**, and click OK.

4. The current set of filters should look like this:

Current YTD Months
AND Division is equal to / is in Arts & Sciences; Graduate School; Office of Human Resources
AND Work Type is equal to / is in Non Billable; Operational Improvement; Operational Support

Now that we've created a filtered analysis, let's take a look at the results.

5. Click the **Results** tab to view the initial table of results for your analysis.

Fiscal Month	Work Type	Division	Corrected Hours
201001	Non Billable	Arts & Sciences	899
		Graduate School	1,654
		Office of Human Resources	2,472
	Operational Improvement	Arts & Sciences	35
		Graduate School	190
		Office of Human Resources	1,392
	Operational Support	Arts & Sciences	1,404
		Graduate School	1,536
		Office of Human Resources	2,311
201002	Non Billable	Arts & Sciences	864
		Graduate School	1,562
		Office of Human Resources	2,097
	Operational Improvement	Arts & Sciences	95
		Graduate School	239
		Office of Human Resources	1,350
	Operational Support	Arts & Sciences	1,311
		Graduate School	1,688

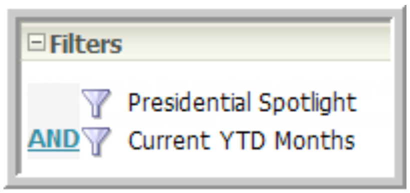
6. Resave Presidential Analysis by clicking the **Save Analysis** icon. Notice that you are not prompted for the name of the analysis when clicking the Save (left) icon. The Save As (right) icon would have presented you with a prompt for a new analysis name.

We'll want to save the combination of three values of Work Type and three values of Org so that we can easily recall them for use as a filter in later exercises.

7. Return to the Criteria tab, and rest your mouse over the **Current YTD Months** filter condition to reveal its options icons. Click on its icon, so that only two filter conditions remain.

8. Click the **Save Filter** button (hint: under the » icon on the Filters header), and save the filter as **Presidential Spotlight** under My Folders / Subject Area Contents / Training.

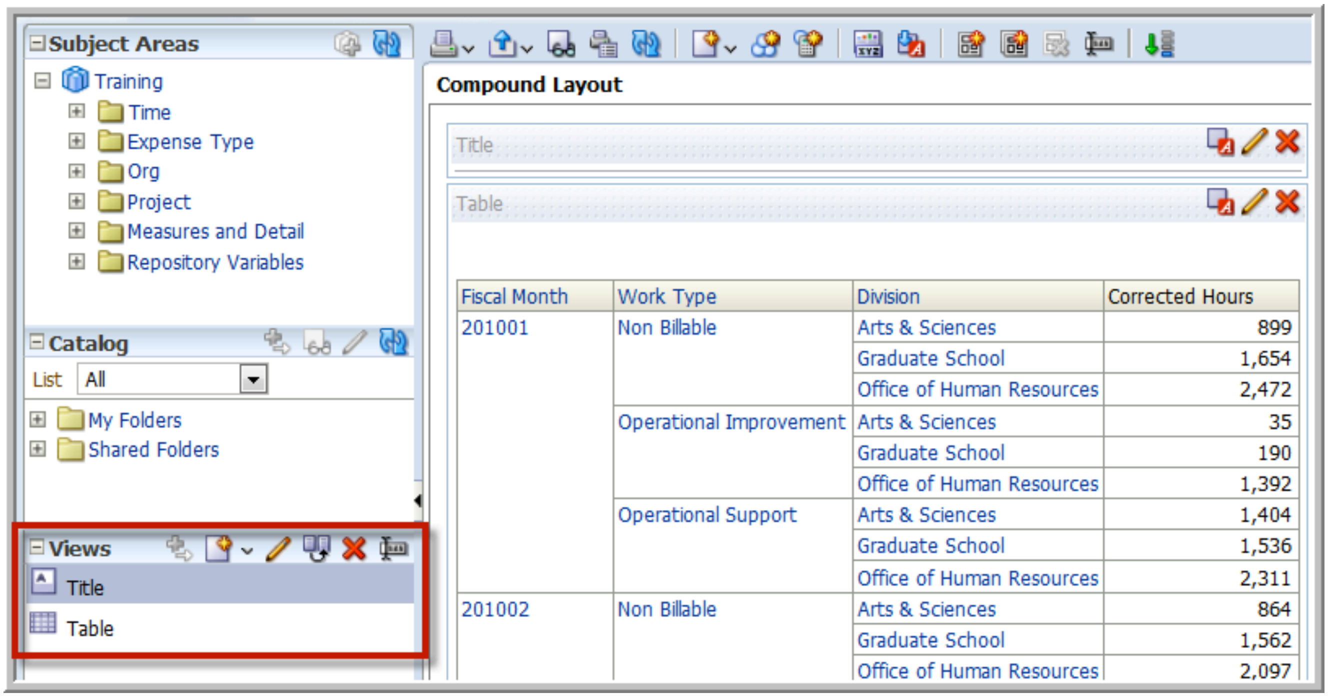
9. From the selection panel, under **My Folders / Subject Area Contents / Training** double-click to add the **Current YTD Months** filter to the analysis again.



10. Click the **Results** tab again to view the results of your analysis. The results should look the same as before.

Exercise 1c: Creating subtotals and grand totals

1. Make sure that you are viewing the **Results** tab, and can see the **Views** section in the bottom left portion of the screen.



Each different **view** of the data for any analysis can be edited and configured separately from all other views. By default, OBIEE creates two initial views, a Title and a Table, as shown here.

Editing a View

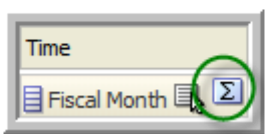
To edit any given view, either of two methods may be employed.

- Highlight the name of the view in the Views area at the bottom left of the screen, then click the edit icon in the Views header.

- Or, if the view is visible on the right side of the screen as a component of the Compound Layout, you may click on the edit icon on the header for that view.

2. Open the Table view in the editor using either of the methods described above. The editor is divided into two sections. The top section shows the view results. The bottom (Layout) section allows us to modify the view.

3. Add subtotals after each value of **Fiscal Month** by clicking the aggregation icon on the **Fiscal Month** tile, and choosing **After** from the popup list.



The fact columns are aggregated each time the value in the Fiscal Month column changes. In this case, the default aggregation rule (SUM) is applied. Default aggregation rules are set based on business rules defined in the OBIEE repository metadata, but can be overridden in an Answers analysis using controls in the Edit Formula dialog box, which is accessed through the Edit Formula option on the Criteria tab.

4. Likewise, we can add a row of grand totals to the table view. Find the aggregation icon next to the words **Columns and Measures,** click it, and select **After** from the popup menu.

5. Scroll down to the bottom of the Results pane and click the All Rows icon to display the first 500 rows of the table. Scroll down to verify that the grand total is present.

		Graduate School	38
		Office of Human Resources	83
201006 Total			**407**
Grand Total			**53,325**

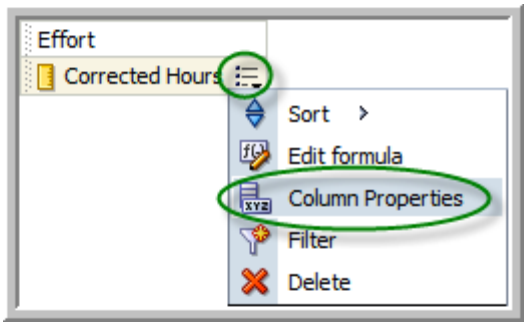
6. Click the **Done** button at the top right of the screen to conclude editing this view.

Exercise 1d: Formatting table data

Cornell's OBIEE Developers have already assigned a default data format for the **Corrected Hours** column, in this case, no decimal places, and with commas. Let's presume that for this report, you'd like to display the column with two decimal places. You may override the default for any given column on any given report. Changing data formats occurs on the Criteria tab.

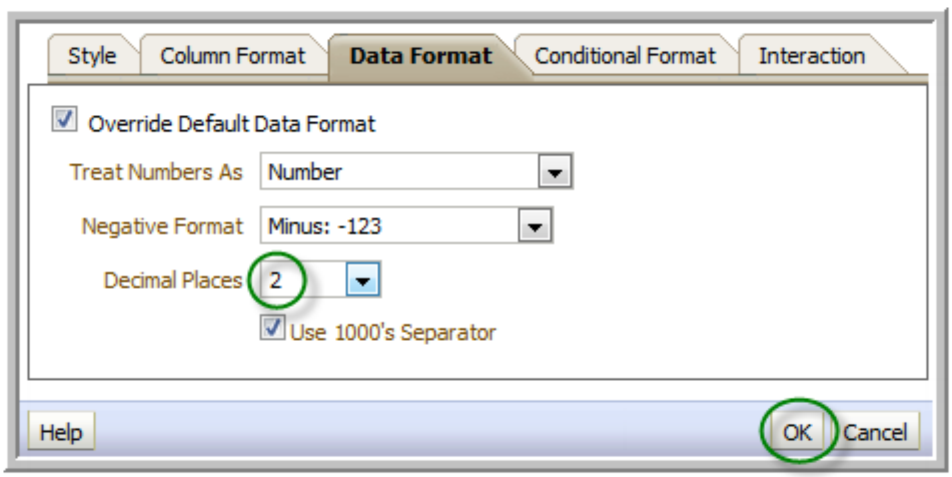
1. Click on the Criteria tab (top left of the screen, under the Cornell logo.)

2. Hover the mouse over the column options icon for the **Corrected Hours** column, and select **Column Properties** from the dropdown list.



3. In the Column Properties dialog box, select the **Data Format** tab.

4. Check the **Override Default Data Format** checkbox, and set the format as shown here. Click OK when finished.



5. Click the Results tab to verify that the data values are displayed correctly.

Fiscal Month	Work Type	Division	Corrected Hours
201001	Non Billable	Arts & Sciences	899.00
		Graduate School	1,653.90
		Office of Human Resources	2,471.65
	Operational Improvement	Arts & Sciences	35.20
		Graduate School	190.00
		Office of Human Resources	1,392.20
	Operational Support	Arts & Sciences	1,404.40
		Graduate School	1,535.90
		Office of Human Resources	2,310.65
201001 Total			**11,892.90**

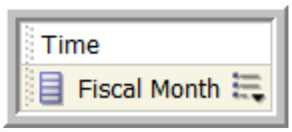
6. Resave the **Presidential Analysis**.

Exercise 1e: Sorting the rows of the query

By default, the table of results is sorted in ascending order, starting with the leftmost column and working toward the right. Let's experiment with sorting before applying our preferred sort for this analysis.

1. Return to the Criteria tab.

2. Hover the mouse over the column options icon for the **Fiscal Month** column, and select Sort … Sort Ascending to set the primary sort order.



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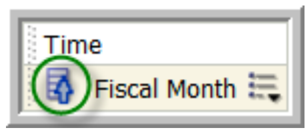
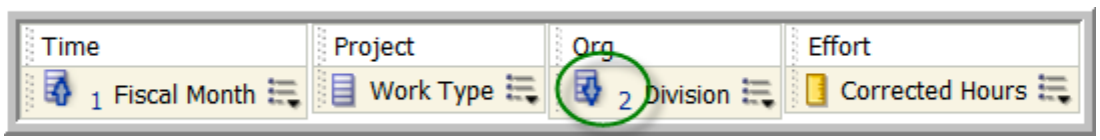
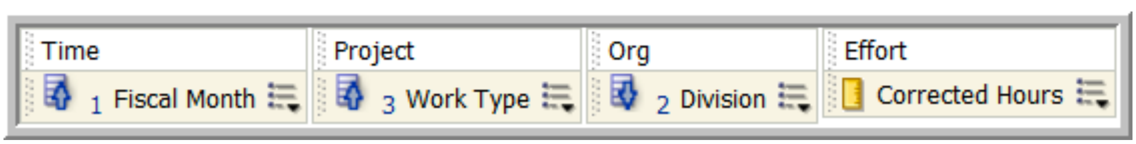


3. For the **Division** column, select **Sort … Add Descending Sort**. Selecting one of the **Add** sort options will keep any existing sorts and add another one. The top two sorting options (without the Add) will first remove all existing sorts then apply the selected sort order. Notice the downward pointing arrow, indicating a descending sort. Also note that the number 2 is displayed, indicating that this is the 2nd sort order.



4. Using the technique learned above, add an ascending sort for the **Work Type** column. The arrow points up (ascending order), and the number 3 indicates that this is the third sort.



Helpful Hint: Notice that each time the sort options are displayed, the bottom two options will allow us to remove a single sort, or to remove all sorts from the analysis. Also note that all sorting operations are performed on the Criteria tab.

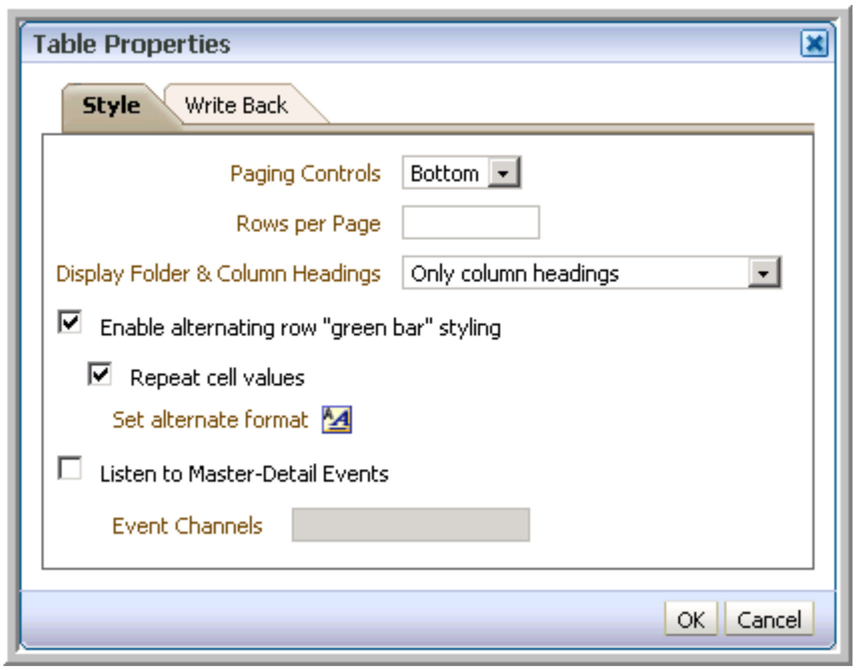
Helpful Hint: The "default" **default sort order** is ascending alphabetical order for text fields, and chronologically from oldest to newest for date fields. However, that default sort order for any column may be set differently in the **repository**, so that ascending alphabetical is not the default. If that is the case, clicking the Sort icon for a given column will sort in the order specified in the repository, and not alphabetically.

To sort such a column alphabetically, simply edit its formula and append a null to the column name (i.e. the column name plus the pipe symbol || plus two single quotes). You will then be able to sort the column alphabetically.

An example of what needs to be sorted in the underlying repository is Time, where you do not want Months to sort alphabetically: April should not sort before February.

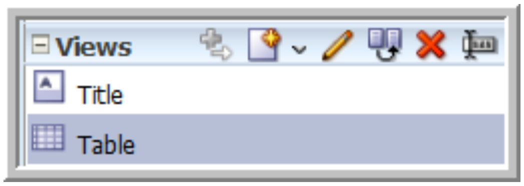
Other Places to Explore

1. When editing a table view, the Table Properties icon (circled above) lets you control the general formatting of that table view. You may
    a. Choose where to place the paging controls (top, bottom, hidden)
    b. Enter a default number of rows to display for each page of data (default = 25)
    c. Select alternate displays of folder and column headings
    d. Listen to a Master-Detail Event (covered in a later lesson.)



2. On the Criteria tab, the Column Properties icon under a column's **Options** icon lets you control column formatting.
    a. Style Tab: Select the font family, size, color, style for the column, add borders, and apply text wrap.
    b. Column Format Tab: Change the column heading and its display properties (font, size, color), hide a column
    c. Data Format Tab: Set the data format for the column (if applicable)
    d. Conditional Format Tab: Apply conditional formatting to the values in the column, for example if **Corrected Hours** is greater than 10,000,000 display it in Green.
    e. Interaction Tab: Determine what happens when a user clicks on a column heading or on a value in the column (Drill or Navigate)

3. The **Views** section on the **Results** tab allows you to create a new view, edit the highlighted view, duplicate the highlighted view, delete the highlighted view, or rename the highlighted view.



4. The Help icon is context sensitive, and can be found on just about any webpage in OBIEE.

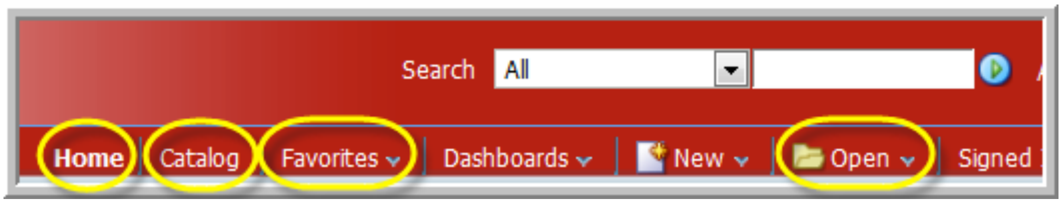
Exercise 1f: Creating custom formulas

Frequently, users of OBIEE Answers may need to create columns of data whose contents are derived from the contents of other columns. In this exercise, you will

- Make a copy of an Answers analysis
- Modify columns and filters as needed
- Create a custom formula
- Apply a filter on the custom formula

Make a copy of an Answers analysis

1. The Presidential Analysis report should already be open. If not, there are four different ways to open an existing report for editing, all of which involve clicking a link on the toolbar.



You may:

a. Click the **Open** link and select the desired analysis from the dropdown list. The Open link will display the most recently accessed 6 items. Clicking an item's name will open it in the Results tab, ready for editing.

b. Click the **Home** link. The **Recent … Others** section on the Home page will display the most recently accessed 9 items. Clicking an item's Edit link will open it in the Results tab, ready for editing.

c. Click the **Catalog** link, and navigate to find the desired analysis. In these exercises, all of your content can be found under My Folders, which is selected by default in the Folder list at the left side of the screen. Clicking an item's Edit link will open it the Results tab, ready for editing.

d. Click the **Favorites** link and select the desired analysis from the dropdown list. The Favorites list contains a list of analyses that you have tagged as **your** favorites. We'll learn how to save an analysis as a favorite later in these lessons.

2. We want to work with a copy of Presidential Analysis. Click the **Save As**  icon (to the right of the Save icon) and save the analysis in **My Folders** with a new name, **Custom Analysis**.

Modifying columns and filters as needed

For this new report:

- We won't need the **Work Type** column.
- We would like to see the **Department** column instead of the **Division** column.
- We want to include only data for the most recent Fiscal Month (201006).
- We don't need the subtotals by **Fiscal Month.**

Remove subtotals from the Fiscal Month column.

1. Edit the Table view. In the Layout area, click the aggregation icon for the **Fiscal Month** column, and select **None**. This will remove the green checkmark from the icon, and remove the subtotals from the column.

2. Click the **Done** button to conclude editing the Table view.

Remove the Work Type column

3. Return to the Criteria tab.

4. Remove the **Work Type** column from the analysis by clicking the Delete option under its options icon.

Change Division to Department

Although we could delete the **Division** column, then add **Department** and drag it to the appropriate position in the criteria list, there's a better way to replace one column with another.

5. Choose **Edit Formula** from the options dropdown for the **Division** column.

6. Delete the existing formula from the **Column Formula** box.

7. In the **Subject Areas** panel, drill down to see all of the columns in the **Org** table.

8. Click to highlight the **Department** column and click the icon to add it to the Column Formula in the dialog.

9. Click **OK** to close the Edit Column Formula dialog and click **OK**. Notice that the **Presidential Spotlight** filter is still in effect. When we view the results, we will only see the Departments that are associated with the Divisions referenced in that filter.

Change the filter condition for Fiscal Month

10. Remove the **Current YTD Months** filter (click its Remove Filter ✖ icon.)

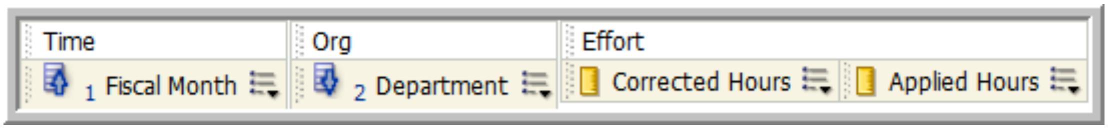
11. Using the simple technique learned earlier, filter the Fiscal Month column to include only the 201006 period.

Add the Applied Hours column to the analysis

12. Add the **Applied Hours** column to the analysis from the **Measures and Detail … Effort** table

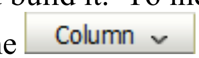
Create a custom formula

Let's presume that you would like to see the difference derived by subtracting Applied Hours from Corrected Hours, and that such a fact or measure column has not been created for you in the selection panel. In this step, we'll create that fact "on the fly". In Answers, there isn't a button or icon called "Add a blank column". Instead, we simply add an existing column to the criteria canvas, then modify its formula. Our current report columns should be:



1. Double-click **Applied Hours** in the selection panel to add it to the criteria canvas again. (Actually, it doesn't matter what column you add, because we're going to change its formula and heading.)

2. Click on the **Edit Formula** option for the newly added column.

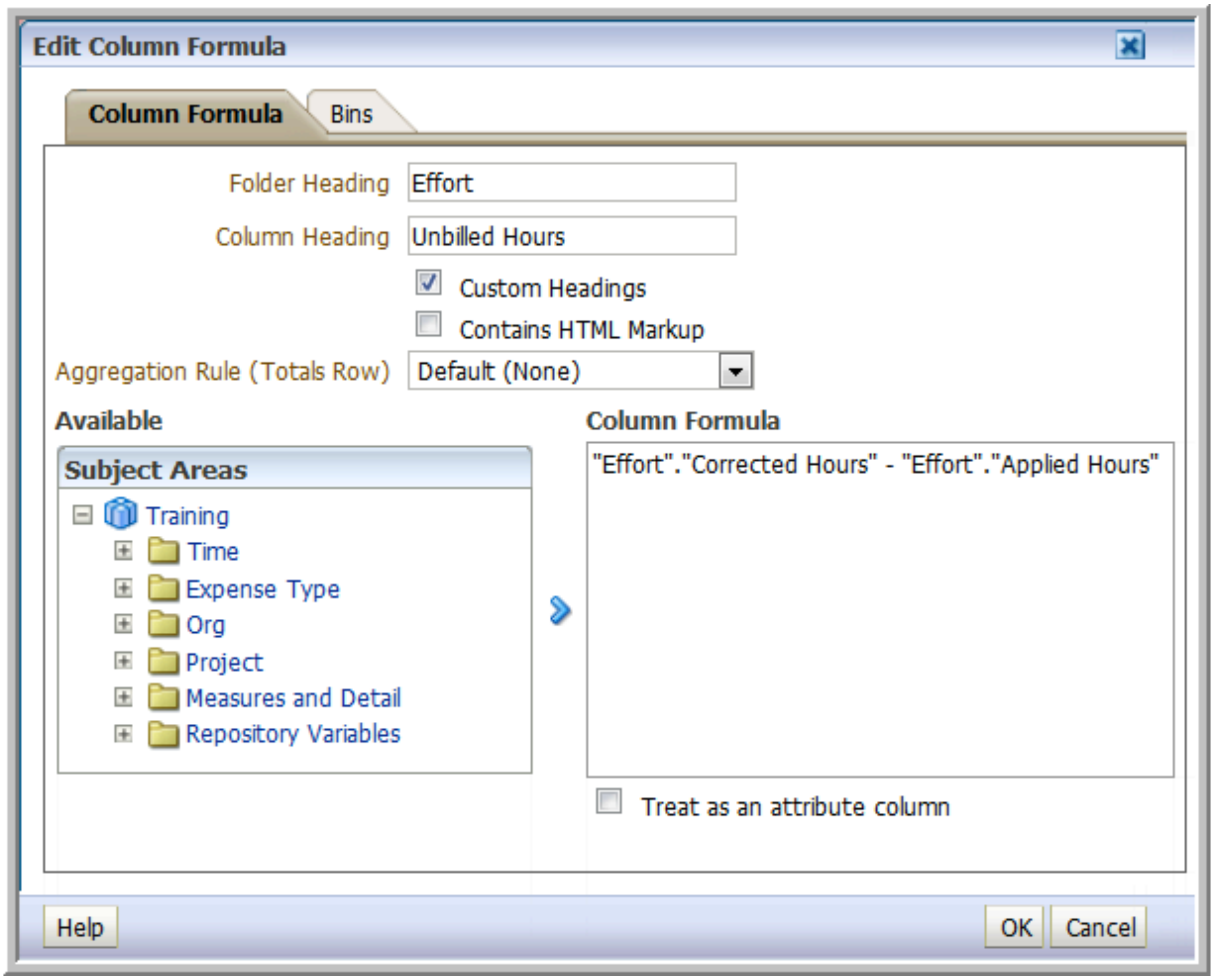
3. Create the new formula exactly as shown in this example. You may type it in, or you may use the guide buttons to help you build it. To include a column name that's already in the analysis, the best practice is to click the  button, to avoid typos. This formula computes the difference between Corrected Hours and Applied Hours, and will be called Unbilled Hours. (Note: Ideally, a simple formula such as this would be handled in the repository definitions.)

   The formula is:
   "Effort"."Corrected Hours" - "Effort"."Applied Hours"

Helpful Hint: Notice that the table name **Effort** does not have a space in the name, and therefore does not have to be surrounded by double quotes, while the **Applied Hours** column **does** have a space in the name, and must therefore be delimited by a set of double quotes. However, if you wish to place a set of double quotes around the table name **Effort**, to be consistent, it will not harm anything.

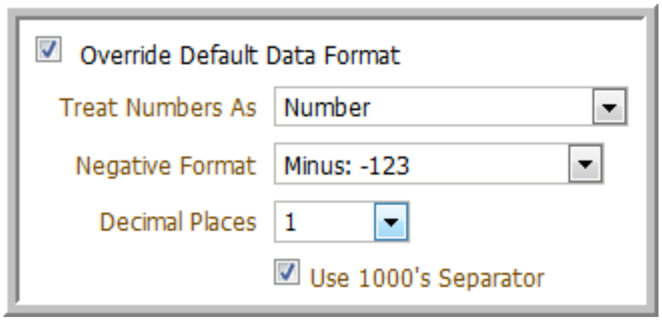
Best Practice: Avoid syntax errors that you might get when hand-typing long table or column names, and instead let OBIEE handle it for you. For columns already in the Criteria, use the Column button below the formula entry box to select and add columns to the formula, and for Columns not in the Criteria, simply click on each Column name in the directory / selection panel.

4. Click the **Custom Headings** checkbox and enter **Unbilled Hours** as the Column Heading. The Column Formula dialog box should look like this:



Click **OK** when finished.

5. Click the Column Properties option for the **Unbilled Hours** column. On the **Data Format** tab, fill in the blanks following this example, then click **OK**.

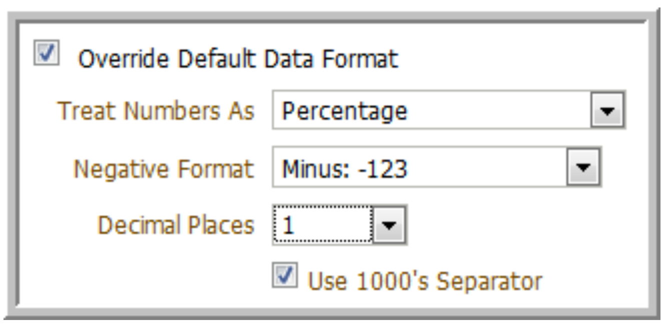


6. Now add another new column (Unbilled %) with this formula:

   ("Effort"."Corrected Hours"-"Effort"."Applied Hours")/"Effort"."Corrected Hours"*100

7. Apply a custom heading of **Unbilled %** for the new column and click **OK** to save it.

8. Change the data format for the **Unbilled %** column as shown here



9. Return to the Results tab to see the table view.

Fiscal Month	Department	Corrected Hours	Applied Hours	Unbilled Hours	Unbilled %
201006	Recruitment & Employment Ctr	130.00	83	47.5	36.5%
	HR Info Systems & Records Adm	170.70	86	84.3	49.4%
	Graduate School Administration	50.90	39	12.0	23.6%
	College of Arts and Sciences	7.80	0	7.8	100.0%
	A&S Admissions	7.90	2	5.9	74.7%
	A&S Academic Advising Center	40.00	20	20.0	50.0%
Grand Total		**407.30**	**230**	**177.5**	**43.6%**

Sorting and filtering on the custom formula

Custom formulas are treated the same as repository-based formulas. You may modify custom formulas, format their displays, sort on them, and use them in filter conditions.

Sort the results based on the values in the Unbilled % column.

Currently, our results are sorted using two sort orders established earlier in the lesson. We would like to remove those sort orders, and establish a descending sort based on the **Unbilled %** column. We can do that quite easily.

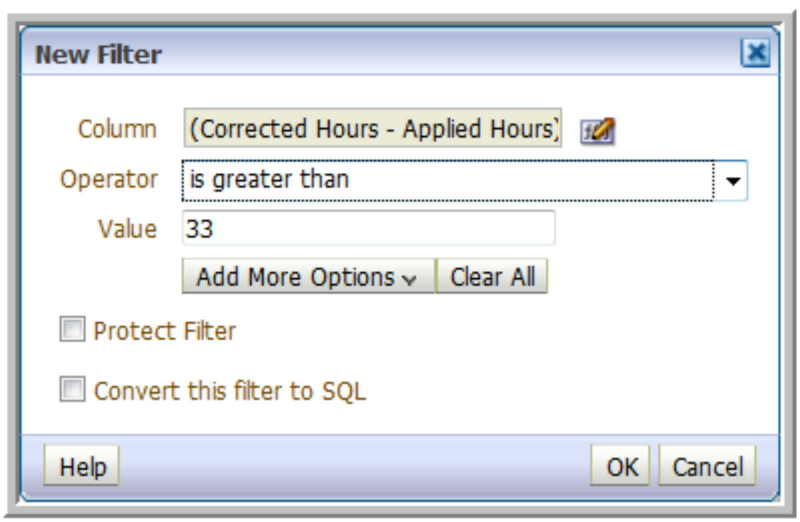
1. Return to the Criteria tab.

2. Under the Options icon for the **Unbilled %** column, select **Sort … Sort Descending**. This option will remove all existing sorts from the analysis, then apply a descending sort on the selected column.

Filter the report to only show rows with high values of Unbilled %.

3. Choose the **Filter** option for the **Unbilled %** column.

4. Display only those rows where **Unbilled %** is more than 33% by selecting the '**is greater than'** operator, and entering 33 as the value, and clicking **OK**.



5. Confirm that the filters look like this:

Presidential Spotlight
AND Fiscal Month is equal to / is in 201006
AND (Corrected Hours - Applied Hours) / Corrected Hours * 100 is greater than 33.0

Notice the third filter condition. Although that filter was **derived** from a custom column, the filter itself is not **referring to** that column. This filter is its own separate object. If we were to change the formula for the Unbilled % column, **this filter would not reflect that change.**

6. Display the Results tab to see the final product.

Fiscal Month	Department	Corrected Hours	Applied Hours	Unbilled Hours	Unbilled %
201006	College of Arts and Sciences	7.80	0	7.8	100.0%
201006	A&S Admissions	7.90	2	5.9	74.7%
201006	A&S Academic Advising Center	40.00	20	20.0	50.0%
201006	HR Info Systems & Records Adm	170.70	86	84.3	49.4%
201006	Recruitment & Employment Ctr	130.00	83	47.5	36.5%
Grand Total		**356.40**	**191**	**165.5**	**46.4%**

7. Resave the **Custom Analysis**.

8. For use with a later exercise, also save the analysis as **Worst Performance**.

Lesson 2: Filters

In the previous lesson, you learned to create simple analyses by selecting existing columns from a subject area, and you created your own custom data columns as well. You also learned the simplest method of creating a filter (manual selection). In this lesson, you'll learn additional techniques for creating analysis filters and custom formulas. At the conclusion of this lesson, you will have learned the basic techniques for creating filtered Answers analyses, and will be ready to start creating the different views of the analysis data.

Exercise 2a: Filtering using Repository Variables – part 1

In a previous exercise, you manually selected values of Fiscal Month and saved them as the **Current YTD Months** filter. In this exercise, you will create and save a filter in which the appropriate values of Fiscal Month will be **dynamically** determined.

1. Click the New Analysis icon to create a new Answers analysis from the **Training** subject area.

2. In the Selection panel, drill on the **Time** folder and double-click the **Fiscal Month** column to add it to the analysis.

3. Click the filter icon for the **Fiscal Month** column.

This filter will reference two **variables** that have been defined in the OBIEE Repository. One holds the value of the first Fiscal Month of the current year. The other holds the value of the most recently loaded Fiscal Month. A **variable** is a single-cell data container that holds a date, a character string, or a number.

4. Select **is between** as the **Operator**.

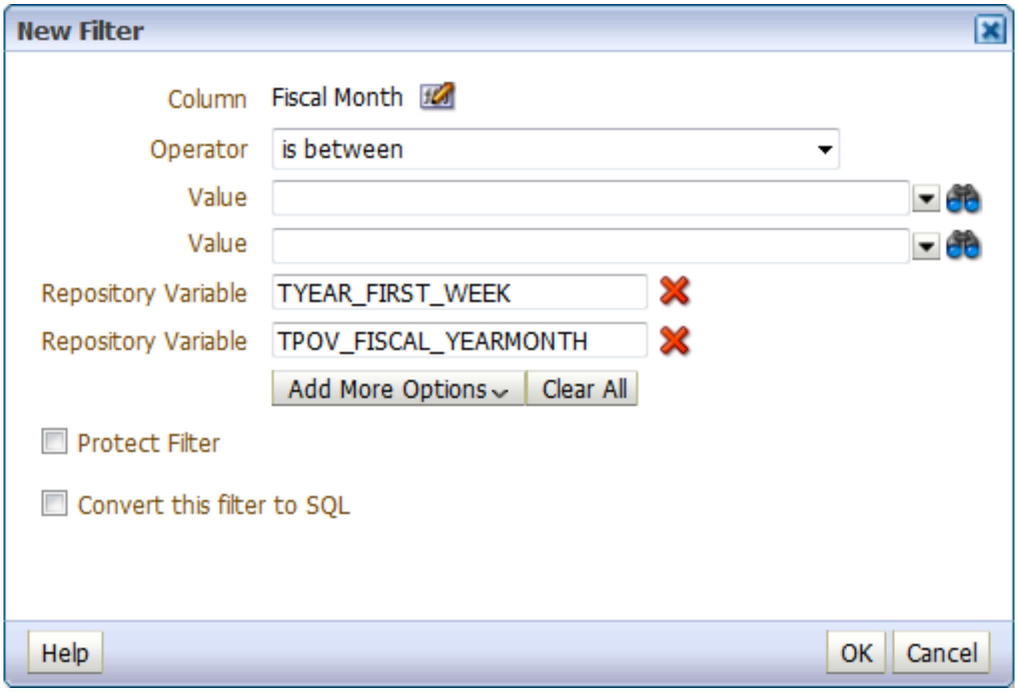
5. Click **Add More Options > Repository Variable** below.

6. In the Repository Variable field, type **TYEAR_FIRST_WEEK**, which is the name of the first repository variable.

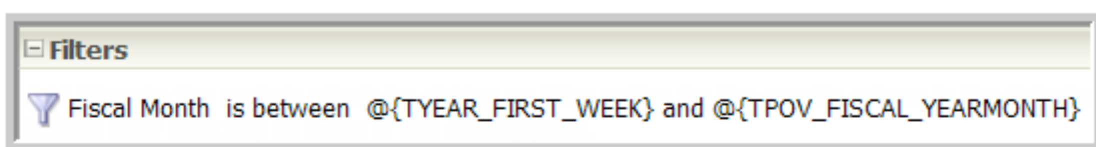
7. Click the **Add More Options > Repository Variable** button again, and type **TPOV_FISCAL_YEARMONTH into the new repository variable field.**

Note: The 'T' in front of repository variable names is for the Training Subject Area.

Your screen should look like this:



These two **Repository Variables** are automatically updated by the OBIEE Server every night at midnight. They contain dates, as does the Fiscal Month column. Click **OK** to close the dialog.



***NOTE**: There is no currently not a dropdown list from which to select values of variables. Repository variable names are not case-sensitive, but the generally accepted standard standard for repository developers is to use UPPER_CASE_NAMES.*

8. Click the **Save Filter** icon, and save the filter using the same name that you used earlier, **Current YTD Months**. You may simply click that name in the list of filters and click **OK.**

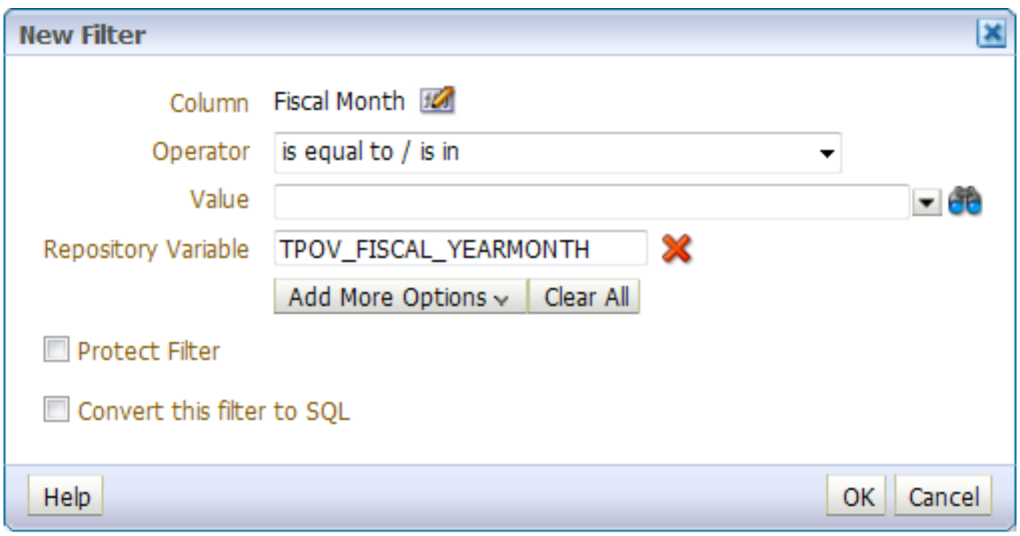
Exercise 2a: Filtering using Repository Variables – part 2

Similar to the YTD range filter that we created in the previous exercise, we might also want to create a filter that contains a pointer to the "most recently closed" Fiscal Month. In this exercise, we'll create such a filter.

1. It isn't necessary to create a filter as part of an analysis. Click **New** > **Filter**, and choose the **Training** subject area.

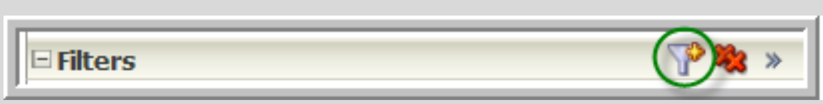
2. In the Selection panel, drill on the **Time** folder and double-click the **Fiscal Month** column to add it to the filter.

3. Select the **is equal to / is in** operator, add a repository variable field as described in the previous exercise, and enter **TPOV_FISCAL_YEARMONTH** as the Repository Variable name, as shown here:



4. Click **OK**, then save the filter under **My Folders** with the name **Current Fiscal Month**.

Helpful Hint: We do not need to add a particular column to the analysis in order to create a filter for that column. When creating an analysis, we can click the Create Filter icon, located on the Filters header, as shown here,

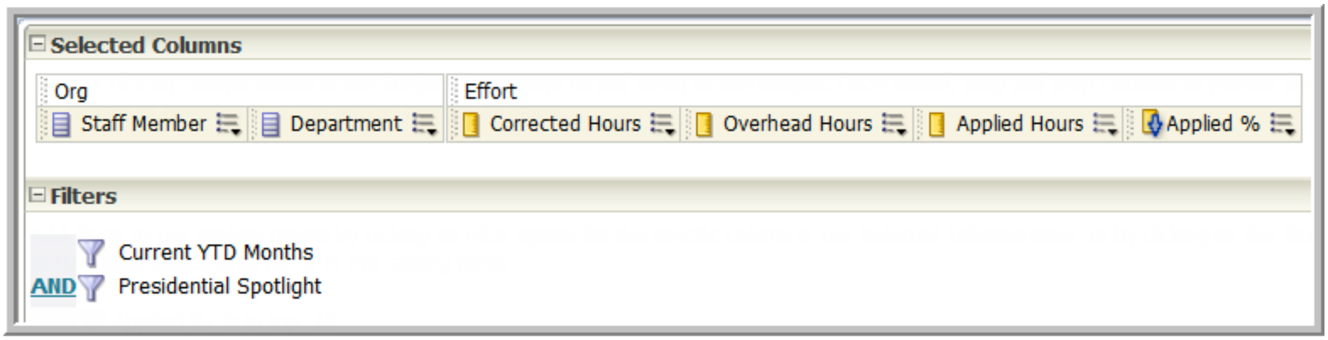


and choose from all columns in the subject area.

Exercise 2b: Creating Top/Bottom filters

In this exercise, you'll find the 10 values of Staff Member with the highest Current YTD Months Applied %.

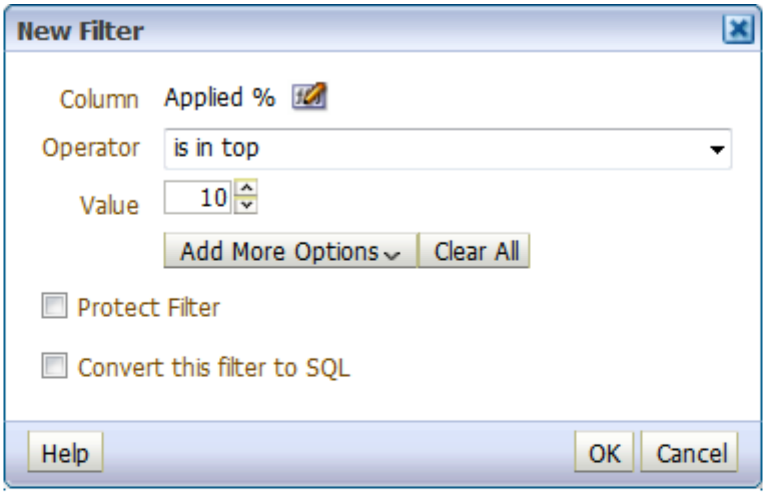
1. Create the following analysis. Note the two filters, and the descending sort on the last column.



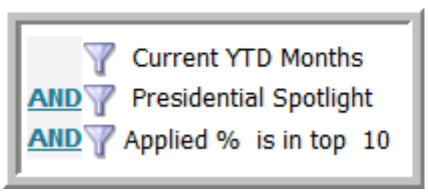
2. Save the report as **Top 10 Analysis**.

3. Click the **Filter** icon for the **Applied %** column.

4. In the Create/Edit Filter dialog, select **is in top** as the Operator, and enter a value of **10**.



5. Your filters should look like this:



6. View the Table of results.

Staff Member	Department	Corrected Hours	Overhead Hours	Applied Hours	Applied %
Liza Haiyang	Recruitment & Employment Ctr	1,004	87	917	91
Stacey Teresa	Graduate School Administration	979	146	833	85
Nicolien Ethan	Recruitment & Employment Ctr	972	177	795	82
Dwane Theodore	Graduate School Administration	932	178	754	81
Karthik Shannon	HR Info Systems & Records Adm	772	158	614	80
Santo Anitra	Office of Human Resources - VP	900	187	713	79
Sarah Ryan	College of Arts and Sciences	993	207	786	79
Monica Peter	Office of Human Resources - VP	465	99	366	79
Amy James	Graduate School Administration	897	193	704	79
Stacey Fred	Graduate School Administration	821	184	637	78

7. Resave the **Top 10** analysis.

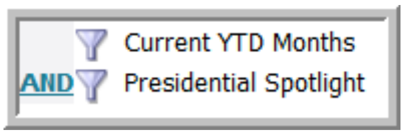
Next Fiscal Month, and in every subsequent Fiscal Month, this analysis will return a different group of 10 Staff Members. When the repository variables are automatically updated at the end of each Fiscal Month, all analyses which use those variables will automatically display new data the next time they're viewed.

Exercise 2c: Grouping filters using AND/OR conditions

Frequently, filters may need to be applied in a specific order, or grouped together so that specific OR or AND conditional groupings can be handled. OBIEE allows the grouping of filters in that manner.

1. Open (if necessary) the **Top 10 Analysis** and use the Save As  icon (to the right of the Save icon) to save it under the new name **Filter Groupings.**

2. Remove the filter for the Applied % column. The Filters should look like this:



3. Create **two** filters for the **Corrected Hours** column. We're interested in finding the Staff Members for whom the YTD Corrected Hours were greater than or equal to 950 or less than or equal to 400. Create the two filters so that the Filters section of the Criteria tab looks like this:

4. Obviously, this filter would never return any rows. As you see, the default operation for multiple filter conditions is AND. Click the last **AND** link, to change it to **OR.**

When an analysis contains three or more filter conditions, the AND operator not only gets changed to an OR, but the filter condition that you clicked also gets **grouped with the filter condition immediately ABOVE it**. Notice the indentation of the two Corrected Hours filters. This indentation indicates that the two filter conditions are grouped together.

5. Now that we've selected our **outlier** Staff Members, we'd like to further limit the returned rows to only those in which the Applied % is greater than 60%. Click the **Filter** icon for the **Applied %** column, and create an **is greater than 60** filter.

6. The result of adding this filter looks like this.

Current YTD Months
AND Presidential Spotlight
AND Corrected Hours is greater than or equal to 950
OR Corrected Hours is less than or equal to 400
AND Applied % is greater than 60

Helpful Hint: To **ungroup** filter conditions, hover the mouse over any filter in the group, then select Edit Filter Group … Ungroup.

7. View the results in the Table view:

Staff Member	Department	Corrected Hours	Overhead Hours	Applied Hours	Applied %
Liza Haiyang	Recruitment & Employment Ctr	1,004	87	917	91
Stacey Teresa	Graduate School Administration	979	146	833	85
Nicolien Ethan	Recruitment & Employment Ctr	972	177	795	82
Sarah Ryan	College of Arts and Sciences	993	207	786	79
Stefanie Michelle	HR Info Systems & Records Adm	1,016	234	782	77
Nicolas Eunmi	HR Info Systems & Records Adm	977	276	701	72
Jeffry Colleen	Office of Human Resources - VP	391	131	260	66
Tetsuko Sidney	Recruitment & Employment Ctr	978	348	630	64
Steven David	Graduate School Administration	987	366	621	63

In a later lesson, we'll learn how to use Variables instead of hard-coded values for the two Corrected Hours filters.

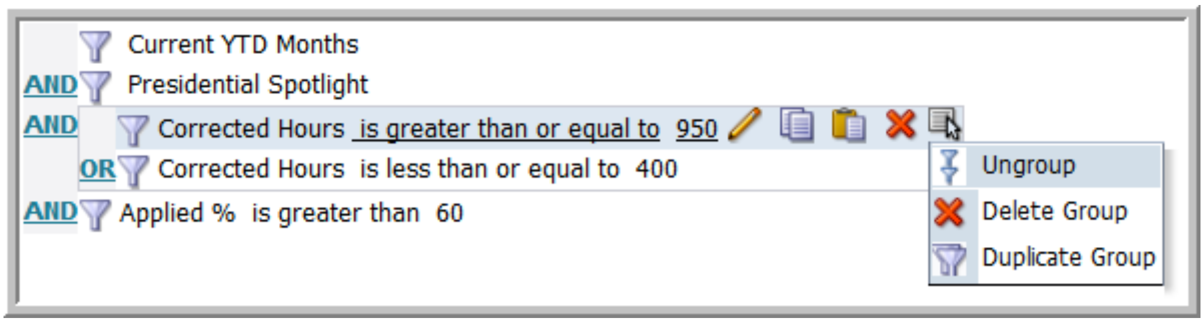
8. Resave the **Filter Groupings** analysis.

Exercise 2d: Filtering using SQL

There may be circumstances under which you simply cannot use the mouse-click functionality of OBIEE to create a filter that you need. In those situations, you can use a SQL expression as the filter condition. In this exercise, we create just such a filter.

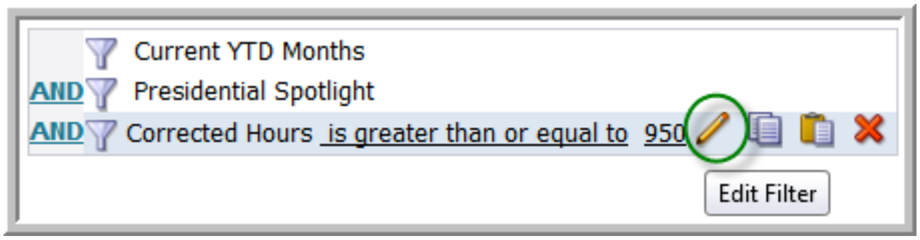
1. Starting with the **Filter Groupings** analysis completed in the previous exercise, go to the **Criteria** tab

2. Hover the mouse over the two grouped Corrected Hours filters, then select Edit Filter Group … Ungroup.

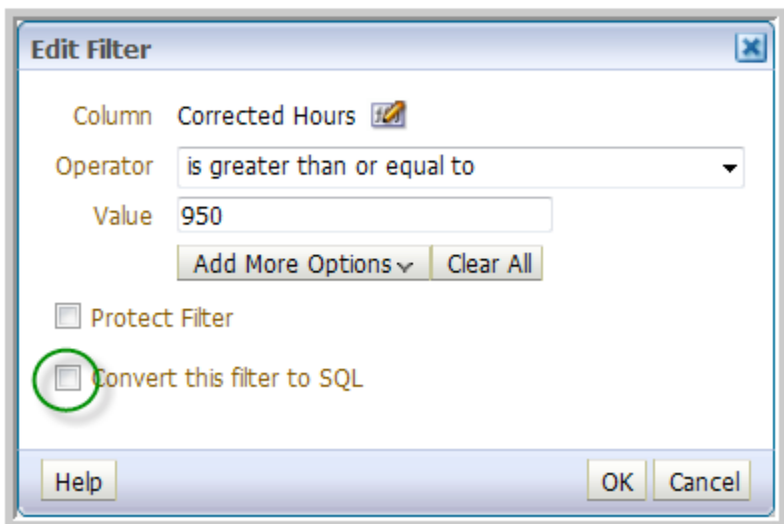


3. Remove the filter on Applied % as well as the second filter on Corrected Hours (less than or equal to 400). These filter criteria will remain:

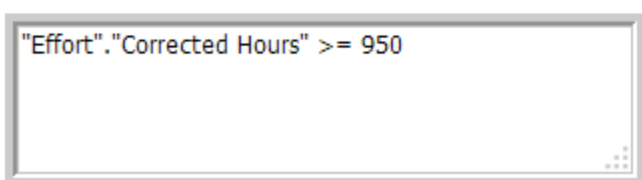
4. Select **Edit Filter** for the last filter condition (Corrected Hours >= 950)



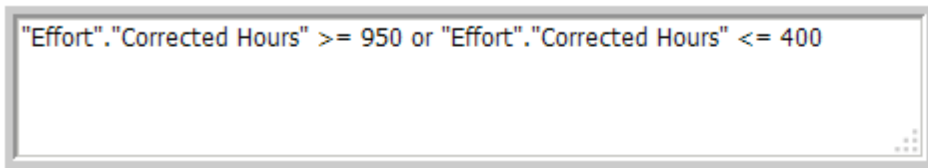
5. Select the **Convert this filter to SQL** and click **OK**.



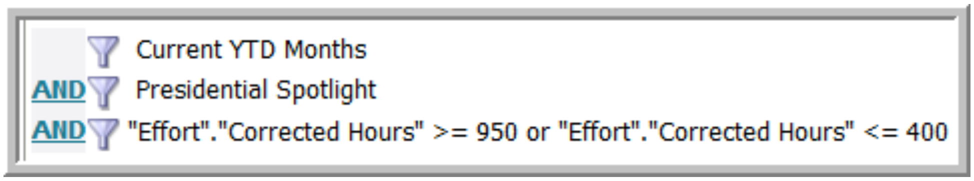
6. The results of converting the filter to SQL look like this. Do NOT click OK on this screen yet.



7. In that same box, type the word **OR** after the existing text**,** then either type or copy/paste from the existing SQL so that you end up with this. Click **OK**.



8. At this point, you end up with a set of filters that looks like this:



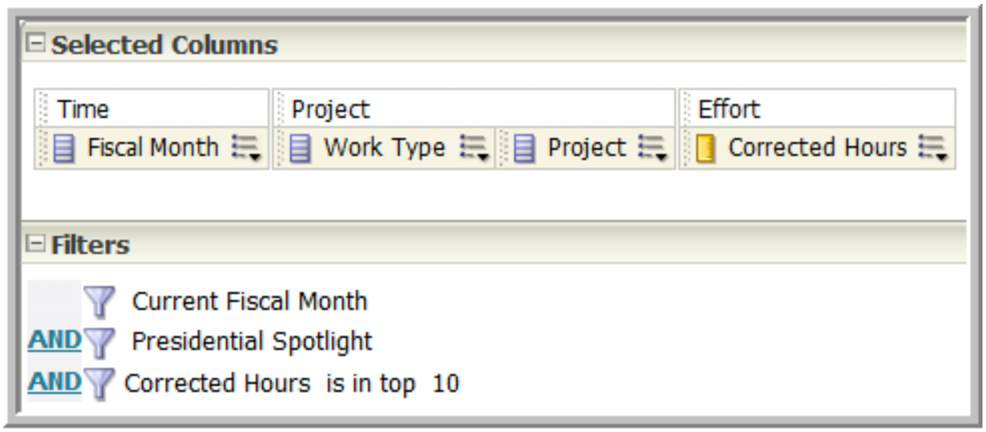
9. Save the analysis as **SQL Filter**.

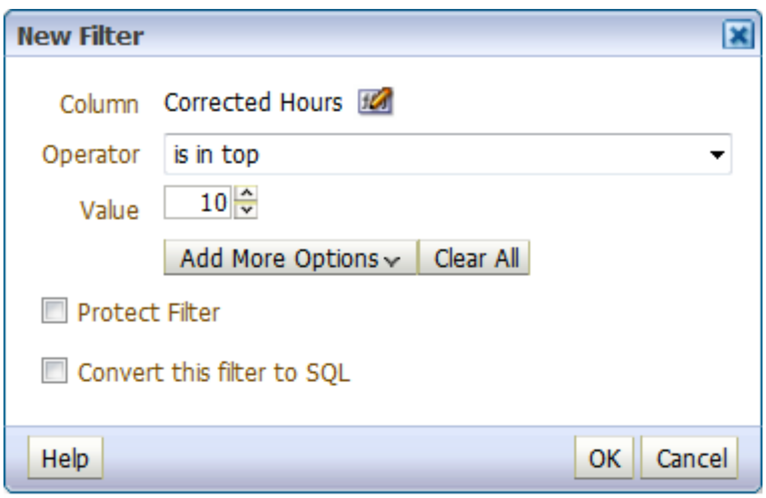
As you might imagine, you can use any sort of complex SQL statement that you need. Just start with any ordinary filter condition, then change it to suit your needs. Note that the table and column references in the filter are references to the tables and columns in the selected Subject Area in Answers.

Exercise 2e: Filtering based on a saved Answers analysis

Suppose you wanted to find the 10 Projects with the greatest Corrected Hours for last Fiscal Month, and then view the Corrected Hours for those same **Projects** for the Current YTD Months period. This is accomplished by writing two analyses, in which the first analysis serves as the filter for the second analysis.

1. Create a new Answers analysis as shown here. (Remember: **Current Fiscal Month** and **Presidential Spotlight** are existing saved filters.)



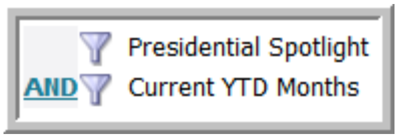


2. Click the **Results** tab and notice which Projects are selected. Close the preview window.

3. Save the analysis as **Current Top 10 Projects.**

4. Now create the second analysis. Start with the current analysis (Current Top 10 Projects) and save it under a new name, **Filter On Other Analysis**.

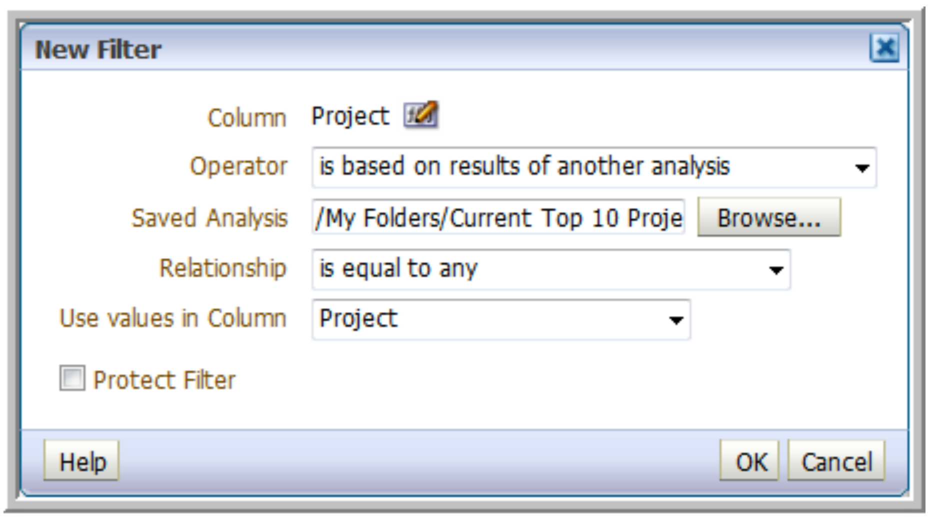
5. We want to keep all of the existing columns, but we need a different set of filters. Delete and add filters as needed so that you have these two filters:



6. So, which Projects do we want to see? We're interested in the 10 Projects that were selected in our **Current Top 10 Projects** analysis. Start a filter for the **Project** column.

7. The operator for this filter will be the last option in the dropdown list, **is based on results of another analysis.**

8. Browse to, and select, the **Current Top 10 Projects** analysis as shown. If **Use Values in Column** defaults to a different field, change to Project as shown below.



9. The finished filter set will look like this:

Presidential Spotlight
AND Current YTD Months
AND Project is equal to any Project in Current Top 10 Projects

10. Display the Results tab. You should see Current YTD Months of Corrected Hours for the same Projects that were selected as the Current Top 10 Projects.

Fiscal Month	Work Type	Project	Corrected Hours
201001	Non Billable	Leave	2,565
		Non Billable Time - Admin Work, Desktop Supt, Town Mtngs, etc.	1,044
		Non Billable Time - Training & Conf (ELP, CPMM)	310
	Operational Improvement	PS Op Improvement - Payroll	34
		Pinnacle Operational Improvements (including Special Requests)	233
		SP - COG Facilities Space Inventory System Development	401
	Operational Support	Accounting - Operational Support	172
		Blackboard Operational Support	131
		Database Infrastructure - Operational Support	188
		Hosting - CMS Hosting Service	129
201002	Non Billable	Leave	2,723

11. Save the analysis as **Filter On Other Analysis**.

Exercise 2f: Filtering Within an Answers Column Formula

Let's suppose that you have a very simple report that looks like this:

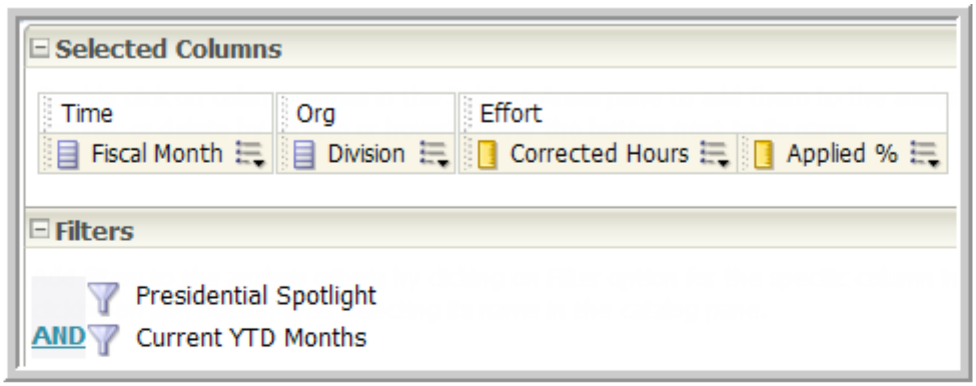
Fiscal Month	Division	Corrected Hours	Applied %
201001	Arts & Sciences	2,339	62
	Graduate School	3,380	51
	Office of Human Resources	6,175	60
201002	Arts & Sciences	2,270	62
	Graduate School	3,489	55
	Office of Human Resources	5,792	64
201003	Arts & Sciences	1,870	53
	Graduate School	2,685	61
	Office of Human Resources	4,570	67
201004	Arts & Sciences	2,244	67
	Graduate School	3,241	67
	Office of Human Resources	5,629	70
201005	Arts & Sciences	1,892	54
	Graduate School	2,607	54
	Office of Human Resources	4,735	55
201006	Arts & Sciences	56	39
	Graduate School	51	76
	Office of Human Resources	301	56

Let's further suppose that you would like to see the report like this in the Table view:

Time	Arts & Sciences		Office of Human Resources		Graduate School	
Fiscal Month	Corrected Hours	Applied %	Applied %	Corrected Hours	Corrected Hours	Applied %
201001	2,339	61.6%	60.5%	6,175	3,380	51.1%
201002	2,270	61.9%	63.9%	5,792	3,489	55.2%
201003	1,870	52.6%	66.6%	4,570	2,685	61.3%
201004	2,244	67.1%	70.2%	5,629	3,241	66.8%
201005	1,892	54.4%	55.4%	4,735	2,607	54.2%
201006	56	39.5%	56.2%	301	51	76.4%

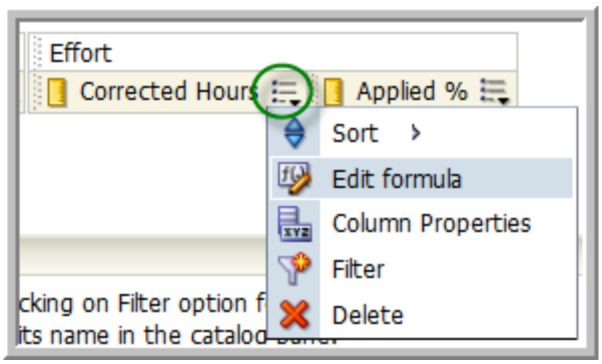
Although the above view is **very** easy to produce using a Pivot Table, it's not directly available in the Table. However, it can be accomplished using **column-based filters**.

1. Create this new analysis:

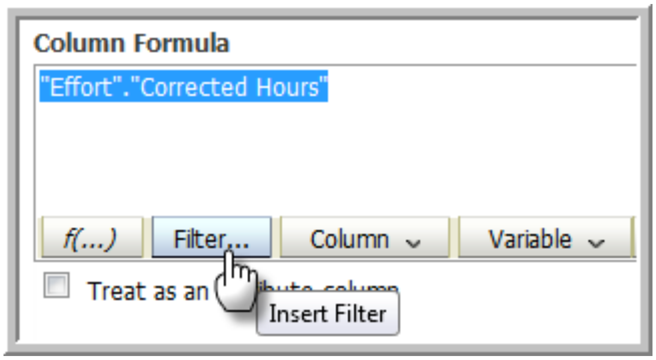


In these next steps, we'll convert the data columns so that they only return information about the Arts & Sciences Division.

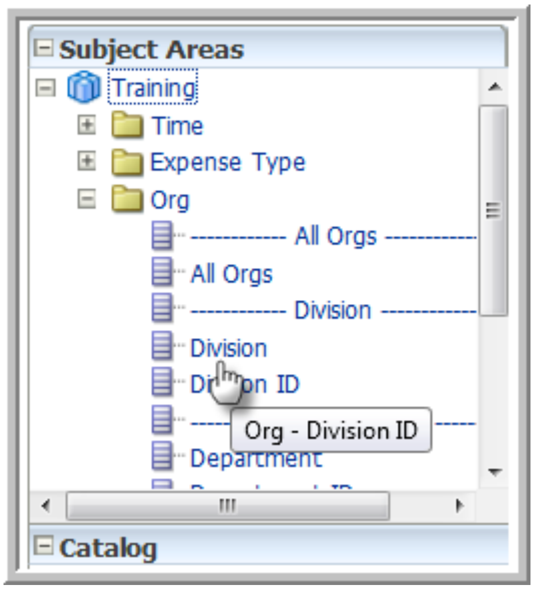
2. Return to the Criteria tab and modify the formula for the Corrected Hours column.



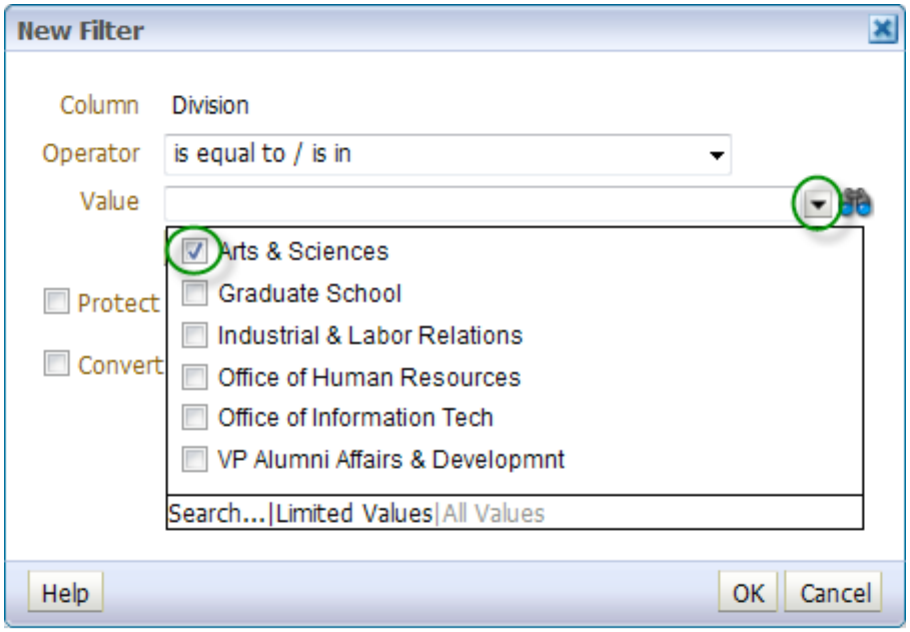
3. With the formula highlighted as shown below, click the **Filter** (Insert Filter) button on the edit screen.



4. With the **Insert Filter** dialog displayed, double-click Division from the selection panel.

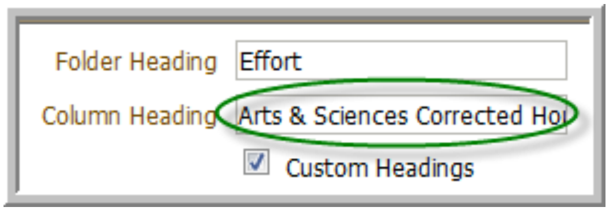


5. On the Create/Edit Filter dialog, select Arts & Sciences from the Value dropdown.



6. Click **OK** (twice) to close the Insert Filter dialog.

7. The filtered column formula should look like this. Change the Custom Heading to **Arts & Sciences Corrected Hours** and click OK.



8. Repeat the same process for the **Applied %** column.

9. Remove the **Division** column from the analysis.

10. Confirm that the results look like this:

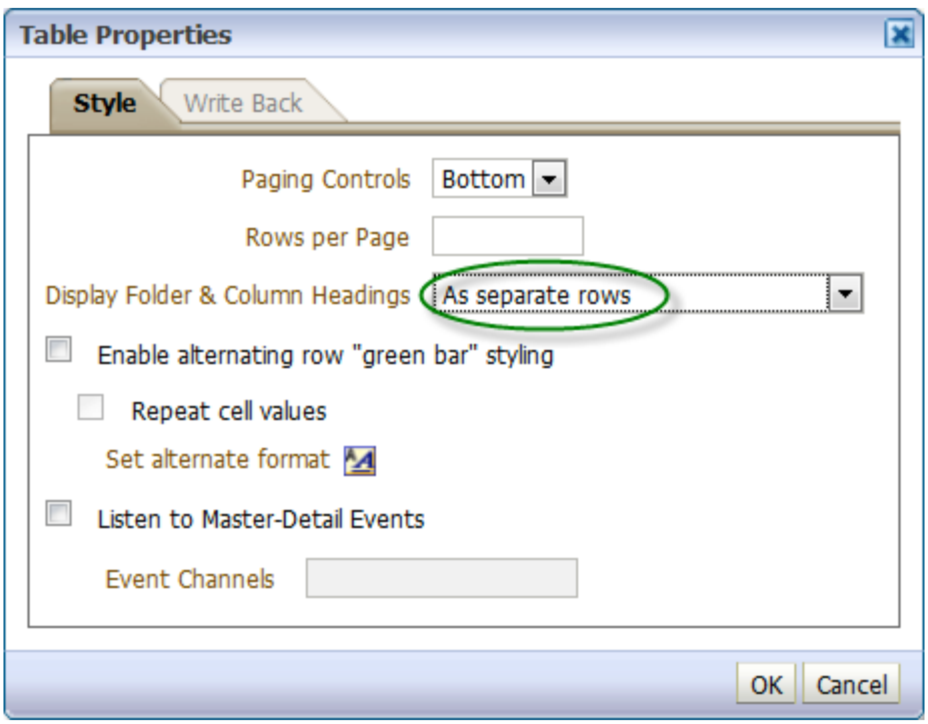
Fiscal Month	Arts & Sciences Corrected Hours	Arts & Sciences Applied %
201001	2,339	62
201002	2,270	62
201003	1,870	53
201004	2,244	67
201005	1,892	54
201006	56	39

The column headings are too wide, and there's no way to force them to wrap. But we **can** use some features of the table to help us adjust the column widths. In an earlier lesson, we learned how to edit a view (in this case, the "table" view). Let's return to the table editor.

11. On the Results tab, use one of the Edit icons (the pencil) to open the Table for editing.

12. In OBIEE 11g, any time we want to adjust the properties of a view, we're going to look in the toolbar for an icon that has **xyz** on it, like the one circled in this screenshot. Click on that **Table View Properties** icon now.

13. The default setting for **Display Column & Table Headings** is 'Only column headings'. Table headings aren't typically shown in the Table view. Change that setting to 'As separate rows'.



14. Click **Done** (top right) to indicate that you are finished editing the view.

15. Now let's change the table and column headings for each of the data columns in our report. Return to the Criteria tab, and edit the formula for the first data column, **Arts & Sciences - Corrected Hours.**

16. Change the **Folder Heading** to Arts & Sciences, and the Column Heading to Corrected Hours. Click OK.

Folder Heading	Arts & Sciences
Column Heading	Corrected Hours

17. Repeat the previous step for the Applied % column.

18. View the results.

Time	Arts & Sciences	
Fiscal Month	Corrected Hours	Applied %
201001	2,339	62
201002	2,270	62
201003	1,870	53
201004	2,244	67
201005	1,892	54
201006	56	39

19. Repeat the above procedure to create the two similar Office of Human Resources columns and the two Graduate School columns, with their associated table names and column names.

20. Display all of the Applied % columns with 1 decimal place and a percent sign, and display all of the Corrected Hours columns with commas, no decimals, and no dollar sign.

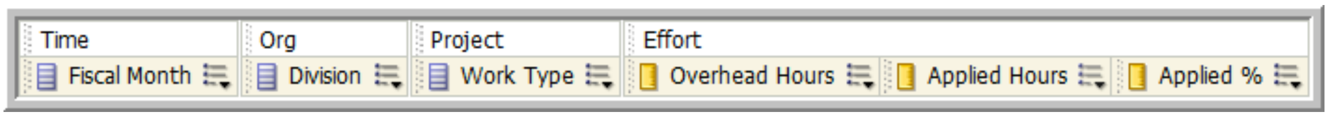
Time	Arts & Sciences		Office of Human Resources		Graduate School	
Fiscal Month	Corrected Hours	Applied %	Applied %	Corrected Hours	Corrected Hours	Applied %
201001	2,339	61.6%	60.5%	6,175	3,380	51.1%
201002	2,270	61.9%	63.9%	5,792	3,489	55.2%
201003	1,870	52.6%	66.6%	4,570	2,685	61.3%
201004	2,244	67.1%	70.2%	5,629	3,241	66.8%
201005	1,892	54.4%	55.4%	4,735	2,607	54.2%
201006	56	39.5%	56.2%	301	51	76.4%

21. Save the analysis as **Column Filters**. We'll use this analysis in a later exercise.

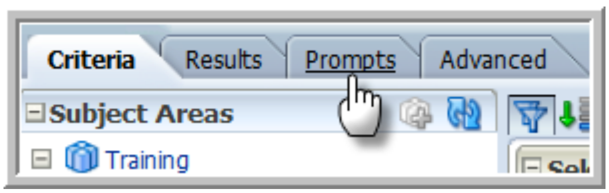
Exercise 2g: Column Filter Prompts

Frequently, the developer of an analysis might wish to allow a user to select a set of filter conditions at run time, rather than hard-coding the filter conditions into the analysis. In addition, to avoid the unnecessary overhead of running large, unfiltered analyses, we might like to require the user to select one or more filter conditions before the analysis is executed. We can accomplish that through the use of a **Column Prompt**.

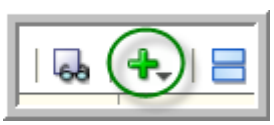
1. Create this simple, unfiltered analysis in Answers, but do not display its results:



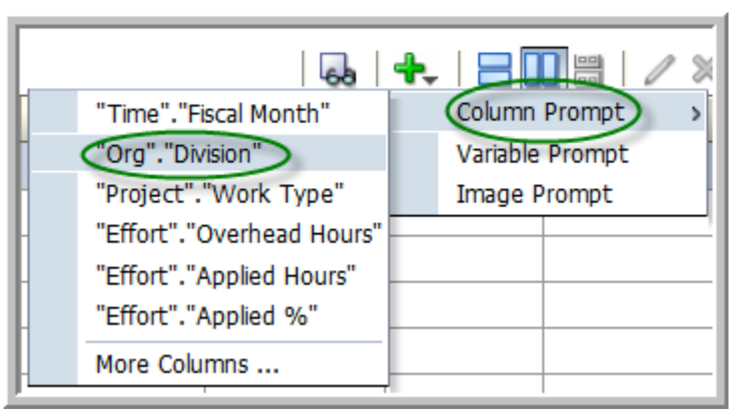
2. Click the Prompts tab.



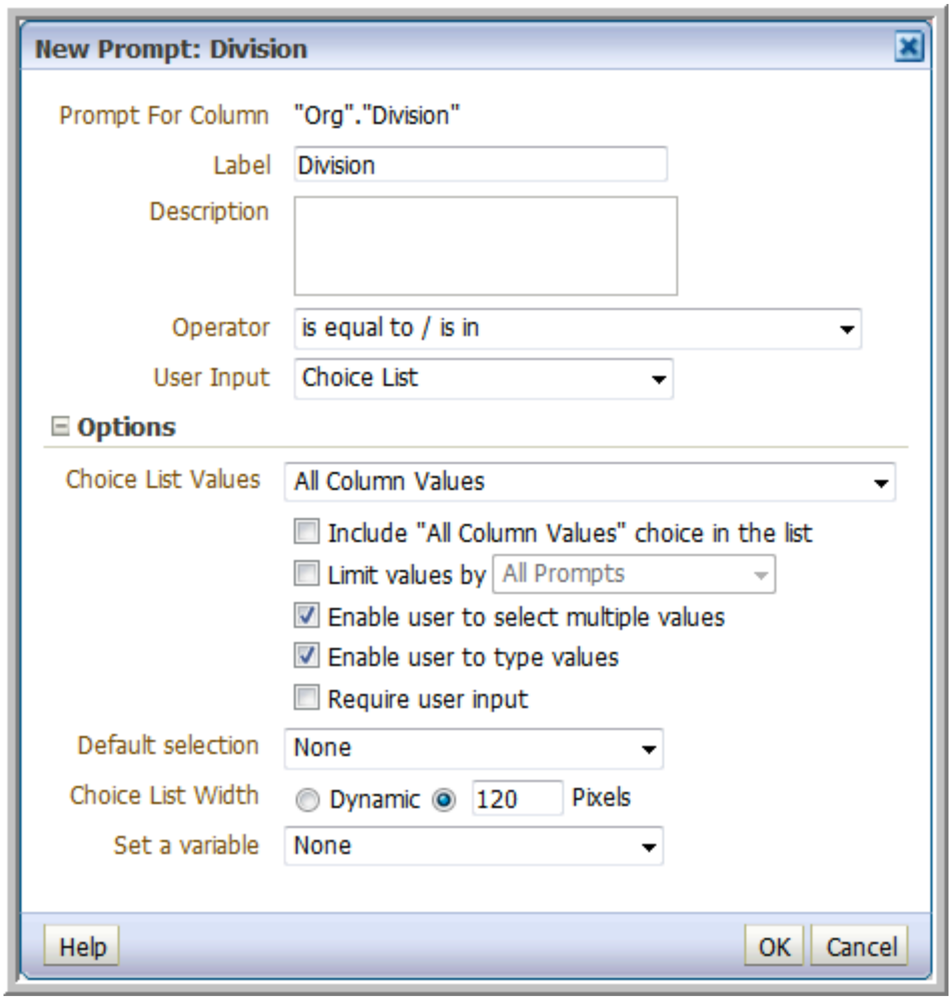
3. In OBIEE 11g, you'll look for one of two symbols when creating a new object. One is a yellow plus sign with an orange surround, like the one on this New View icon: The other is a green plus sign that you see on this screen. Click that icon now.



4. From the dropdown menu, choose **Column Prompt … Org.Divison**.



5. Complete the Column Filter Prompt Properties dialog box as shown here, and click **OK**. Some of the options are described below the screenshot.



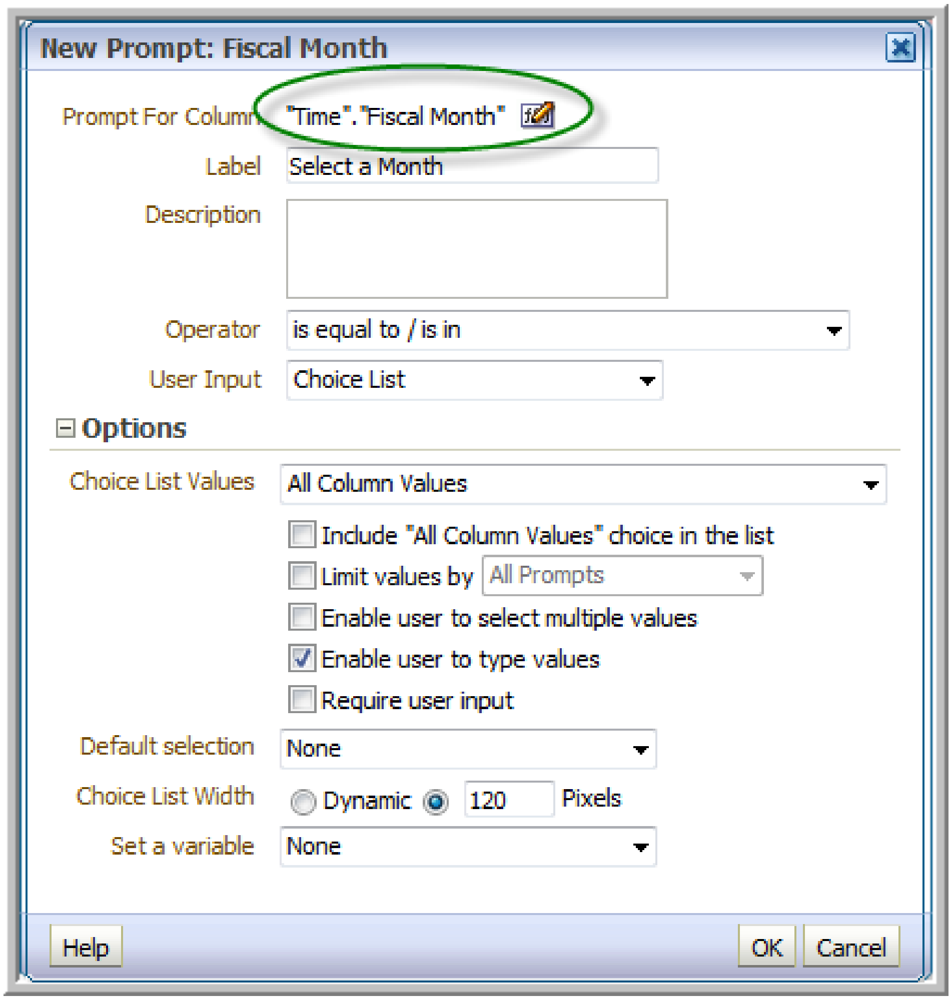
A. User Input: The available choices may be presented as a simple dropdown list, a series of check boxes, radio buttons, and so forth. Leave this setting at **Choice List.**

B. If the **Enable user to select multiple values** box is left unchecked, then only a single value may be selected at any given time. If this box is checked, then the user may select multiple values from the selection list.

C. **Include "All Column Values" choice in the list** permits the user to select all values with a single click.

D. The Default Selection option allows the analysis developer to assign a default value that appears initially when the analysis is displayed.

6. Create a second Column Filter Prompt, starting with the green plus sign, as shown here:



Notice that for this prompt, we want the user to select only one value.

7. After completing the second Column Filter Prompt, notice that multiple prompts can be rearranged using the up and down arrow icons found at the right side of the prompt list when a prompt entry is highlighted.

8. Click the Dashboard Preview icon  to show how the analysis will be rendered on a dashboard, or when invoked for execution from a web address link.

9. Make a selection from each of the prompts, and click Apply to see how a Column Prompt works to filter an analysis prior to its display.

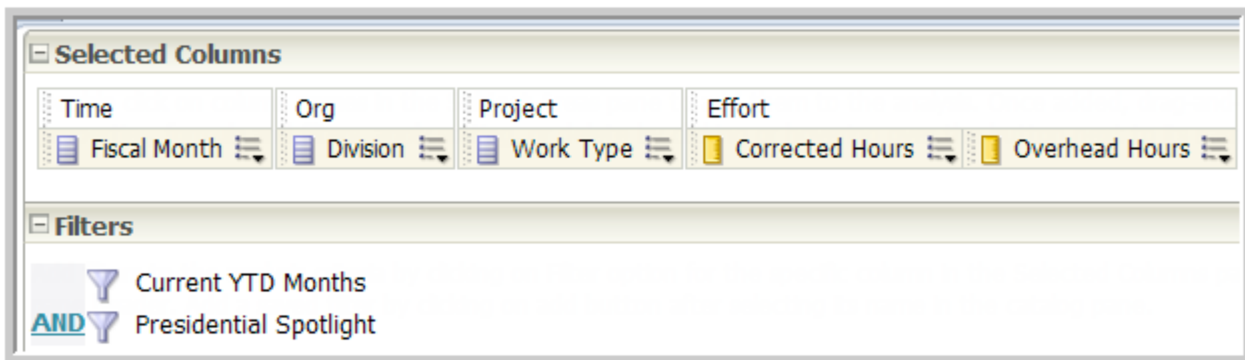
10. Save the analysis as **Column Filter Prompts**.

Lesson 3: Pivot Tables

Now that you've learned how to create filtered Answers analyses, you're ready to start learning how to create the different views of the analysis available in Answers. In this lesson, you will create a **pivot table** to examine your results, and add calculations and formatting to that pivot table.

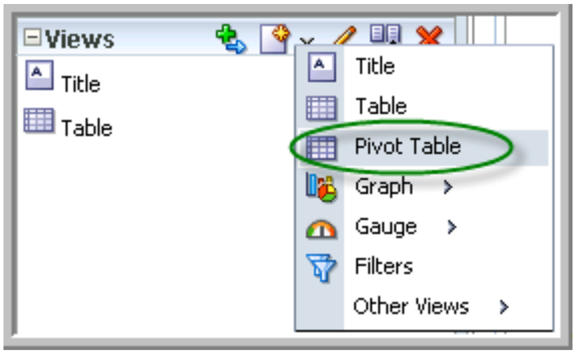
Exercise 3a: Creating a pivot table

1. Create the following new analysis in Answers:



2. Click the **Results** tab to view the table.

3. In the Views Section, click on the New View icon, and select Pivot Table.



Notice the **Done** and **Revert** buttons near the top right of the screen. **Revert** will remove any modifications made since the editor was opened. Also notice that when those two buttons are present you are in **edit** mode, and cannot create other views until clicking **Done** to leave edit mode.

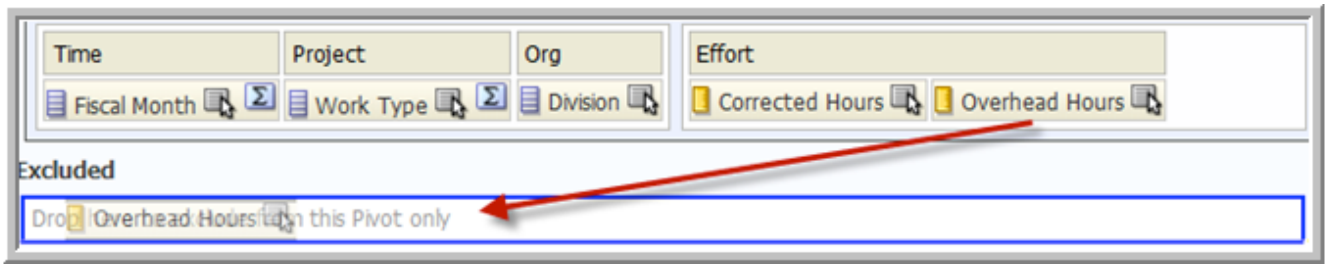
4. Just as you can rearrange the order of columns in a table, you can also rearrange columns in a Pivot Table View. **Hover** your mouse over the Work Type column to display the column anchor at the top of the column.

5. Move your mouse over the column anchor so that the cursor changes to a 4-way arrow. Left-click on the column anchor, the hold and/drag/drop it to the left of the Division column, looking for the blue-gray insertion line just as with the table view. Release the mouse button to drop the column in the new position.

6. Demonstrate the use of the **Display Results** option by clicking on the show results icon in the toolbar. This option allows you to display / not display the results of any layout modifications you make as you work in the Pivot Table layout. For large layouts which take a while to refresh, you may wish to uncheck the Display Results box while you are rearranging and repositioning objects in the pivot table layout canvas. For this training class, **select** (highlight) the icon so that the results are displayed each time you make a change to the pivot table layout.

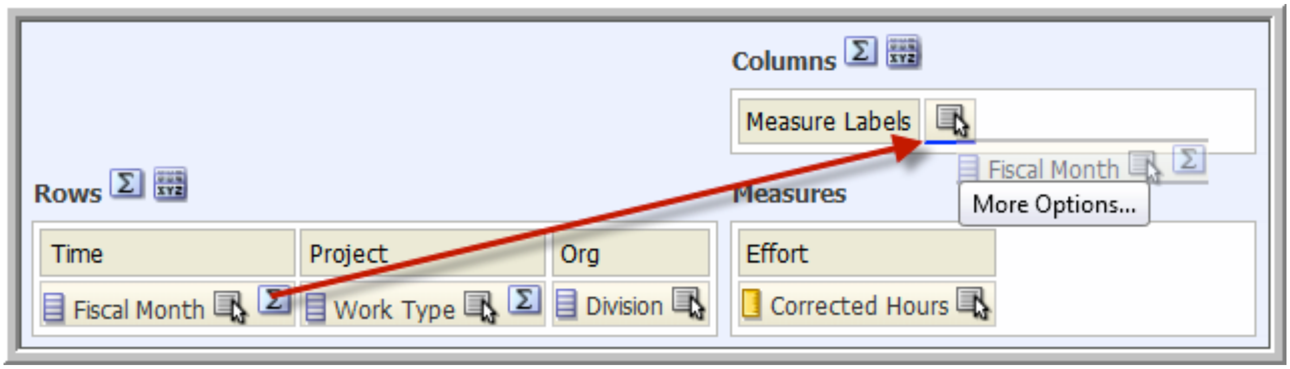
   Also, if you want more room to view your results, you have the ability to Show/Hide the Layout Pane by clicking on the layout icon, and to Show/Hide the Selection Step Pane by clicking on this icon .

7. Drag the **Overhead Hours** column from the Measures area to the **Excluded** area in your layout controls. When you see a blue line appear around the **Excluded** control, you have a valid insertion point and can drop the column. Dragging an object to the Excluded area removes it from the visible portion of the Pivot Table.



Helpful Hint: A new feature in OBIEE 11g allows columns to be excluded from Table views as well as Pivot Table views.

8. Now let's arrange Fiscal Months to go across the page. Drag the Fiscal Month column from the **Rows** section and drop it below the **Measure Labels** in the Columns area in your layout controls. When you see a blue line appear, you have a valid insertion point and can drop the column.



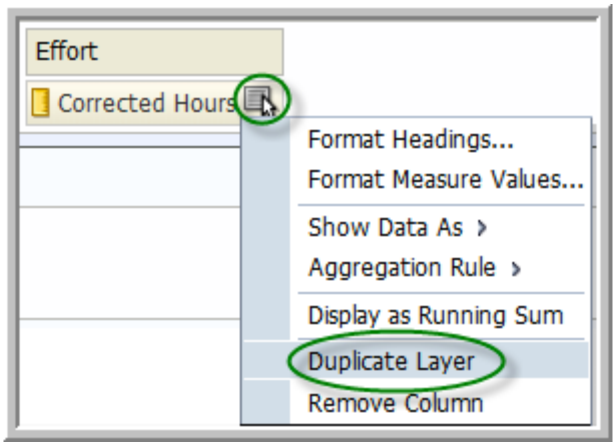
9. Your pivot table results should look like this:

		Corrected Hours					
		201001	201002	201003	201004	201005	201006
Work Type	Division						
Non Billable	Arts & Sciences	899	864	886	738	863	34
	Graduate School	1,654	1,562	1,039	1,077	1,195	12
	Office of Human Resources	2,472	2,097	1,539	1,729	2,128	132
Operational Improvement	Arts & Sciences	35	95	34	29	19	
	Graduate School	190	239	493	404	235	1
	Office of Human Resources	1,392	1,350	1,156	1,239	781	86
Operational Support	Arts & Sciences	1,404	1,311	950	1,478	1,010	22
	Graduate School	1,536	1,688	1,154	1,760	1,177	38
	Office of Human Resources	2,311	2,346	1,875	2,661	1,825	83

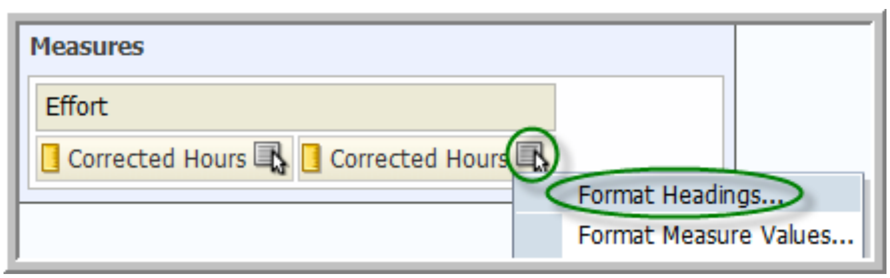
Exercise 3b: Adding pivot table calculations

Assume that you want to add a measure to your pivot table to display the percentage of Corrected Hours represented by each Division and Work Type. To accomplish this, you can add a **pivot table calculation.**

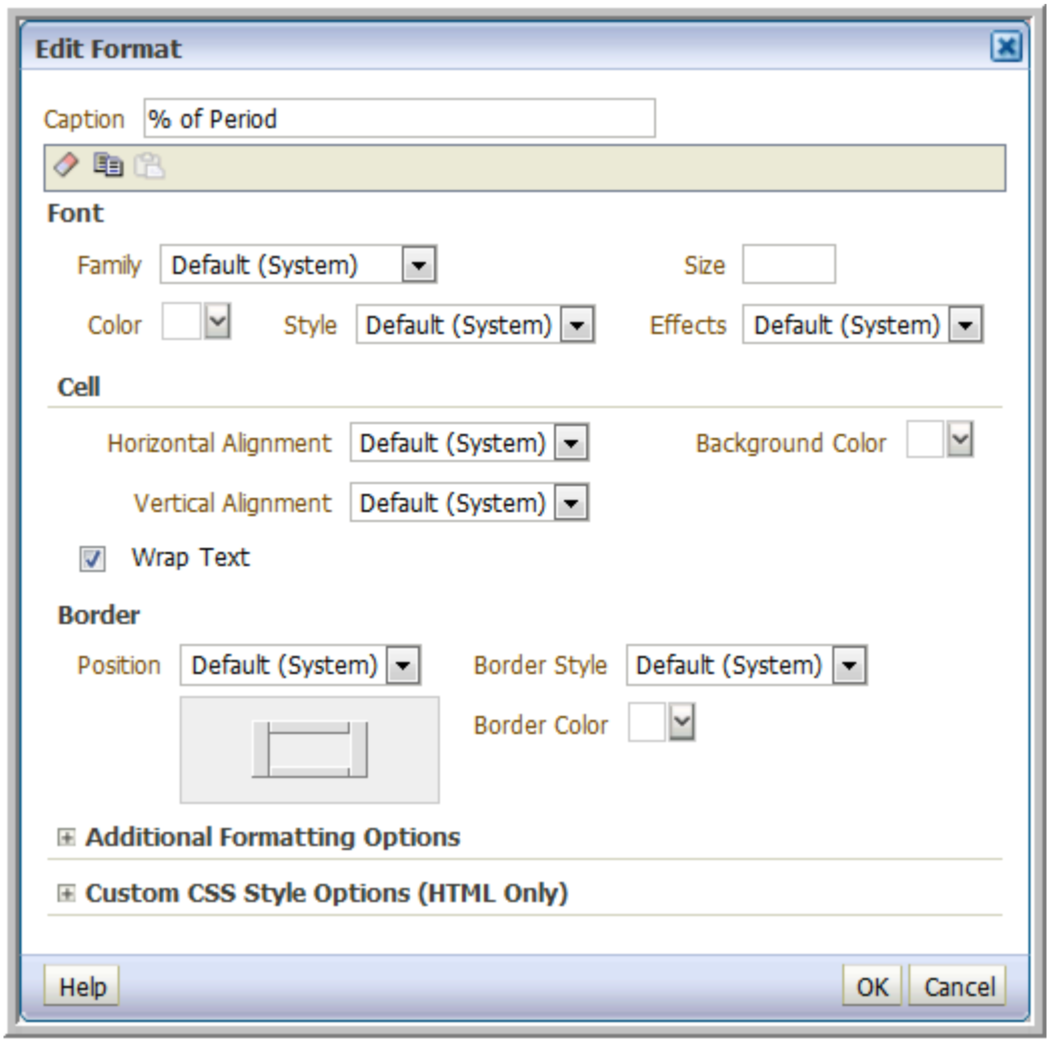
1. Duplicate the Corrected Hours measure by clicking the **More Options** icon for the **Corrected Hours** measure and selecting **Duplicate Layer**.



2. Next, we'll set the name for this new layer. Click the **More Options** icon for the new measure (the duplication) and select **Format Headings**.

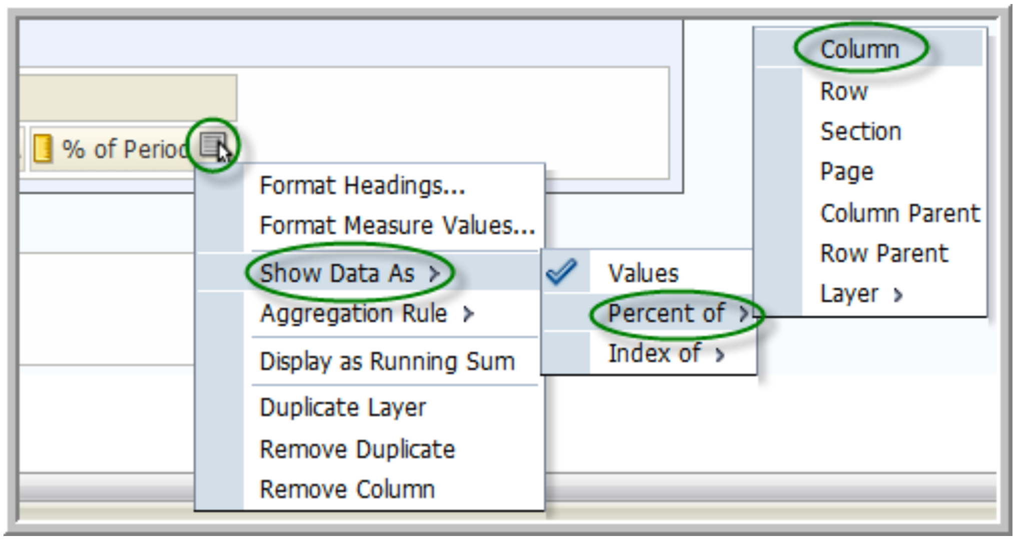


3. In the Edit Format dialog box, type **% of Period** as the caption.



Also note the other formatting options available in the dialog box. You can set font, cell, and border properties on this screen, as well as more options on the **Additional Formatting Options** screen. Click **OK** when you're ready.

4. Click the **More Options** icon for the duplicated measure and select **Show Data As … Percent of … Column**.



This setting means that the measure will be displayed as a percentage of the total for the column in which the measure resides. You can present a measure as a percentage of the total amount for any dimension present in the pivot table layout, for example a row or a section.

In this example, selecting **Percent of Row** would compute each Fiscal Month as a percentage of the total for all selected Fiscal Months.

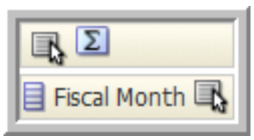
You can also set alternate aggregation rules for the measure using the Aggregation Rule option (the default is Sum).

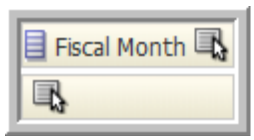
5. Create subtotals for each value of **Work Type** by clicking the **Total** **sigma (sum)** icon in the Rows areas of the Layout pane for the **Work Type**column and selecting **After**.

   Note that this is <u>not</u> the **Total** icon that appears after the **Rows** title above the columns, which would add a Total at the very bottom of each Column, for ALL rows in that column. We will use that icon in the next exercise.

   Note that you have formatting options available for these totaling rows.

6. To display the **Corrected Hours** and **% of Period** together for each Fiscal Month, going across the page, drag and drop the Fiscal Month column above the Measure Labels column.



becomes


7. Your top left of the pivot table results should now look like this:

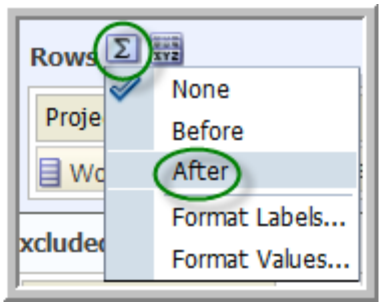
		201001		201002		201003	
		Corrected Hours	% of Period	Corrected Hours	% of Period	Corrected Hours	% of Period
Work Type	Division						
Non Billable	Arts & Sciences	899	7.6%	864	7.5%	886	9.7%
	Graduate School	1,654	13.9%	1,562	13.5%	1,039	11.4%
	Office of Human Resources	2,472	20.8%	2,097	18.2%	1,539	16.9%
Operational Improvement	Arts & Sciences	35	0.3%	95	0.8%	34	0.4%
	Graduate School	190	1.6%	239	2.1%	493	5.4%
	Office of Human Resources	1,392	11.7%	1,350	11.7%	1,156	12.7%

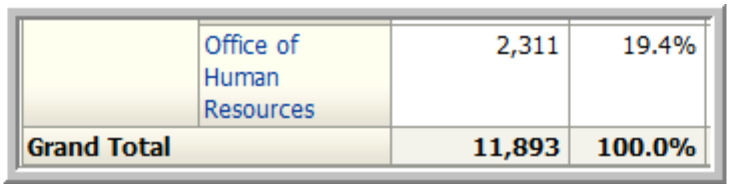
Note that there are many other features of pivot tables, such as section and page controls.

8. Save the analysis as **Presidential Recap**.

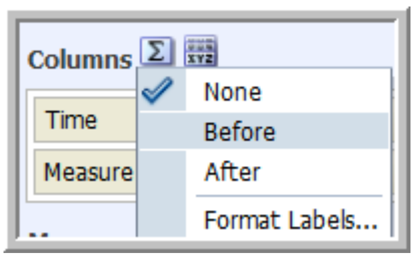
Exercise 3c: Adding pivot table totals

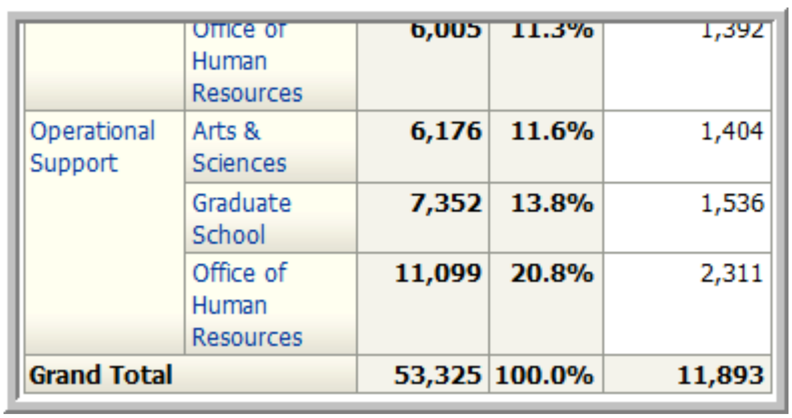
1. In the previous exercise we learned how to add a subtotal for each value of a dimension listed in the **Rows** area. To add a **Grand Total** to the report, click on the **sigma (sum)** icon immediately to the right of the word **Rows.** Choose **After** to display the Grand Total at the end of all other rows.





2. Likewise, you can add totals for all columns. Click on the sum icon immediately to the right of the word **Columns**, and select **Before** to add a column of totals to the left of the existing columns.

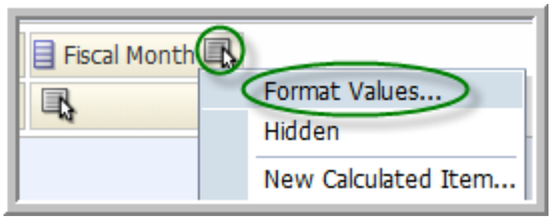




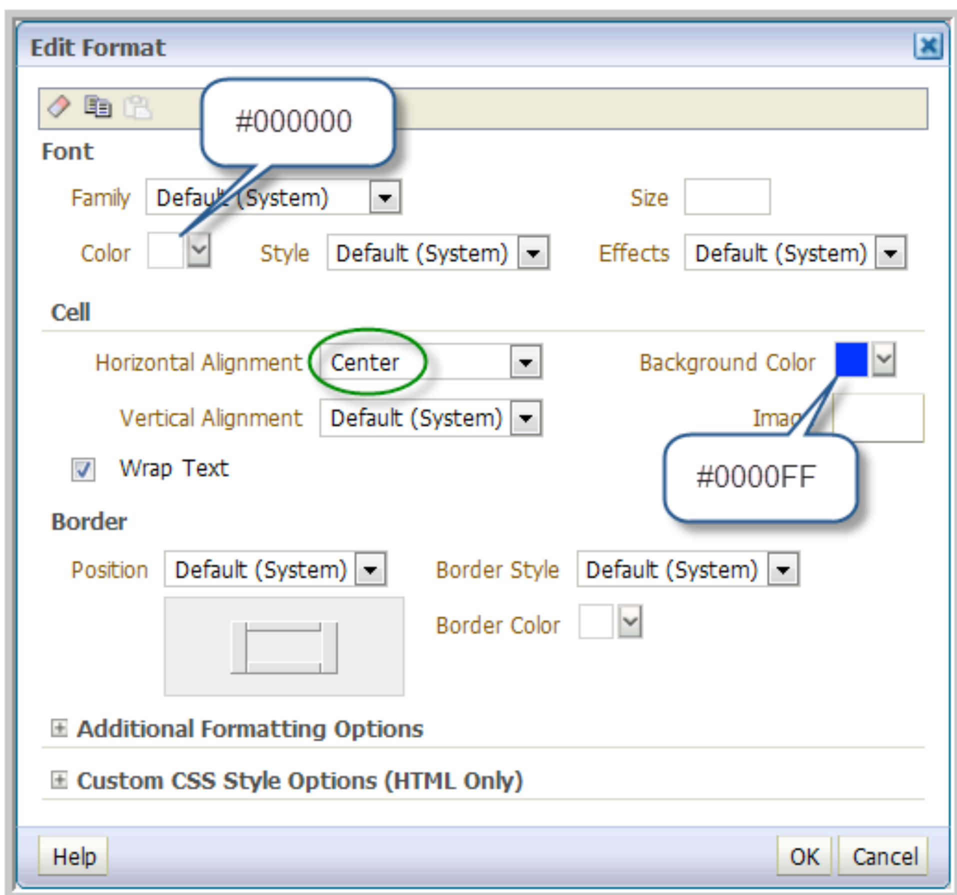
Exercise 3d: Formatting pivot tables

In this exercise, we'll explore some of the many formatting options available for pivot tables.

1. Format the color of the cells in the Fiscal Month column by clicking on the **More Options** button for the Fiscal Month column, and selecting **Format Values**.



2. Set the background color to a nice medium blue by clicking the **Background Color** box and entering #0000FF as the color. Set the Font color to white by clicking the Color box and entering #FFFFFF as the color. (You may enter or select whatever colors you want.) Let's also change the Horizontal Alignment to **Center.**



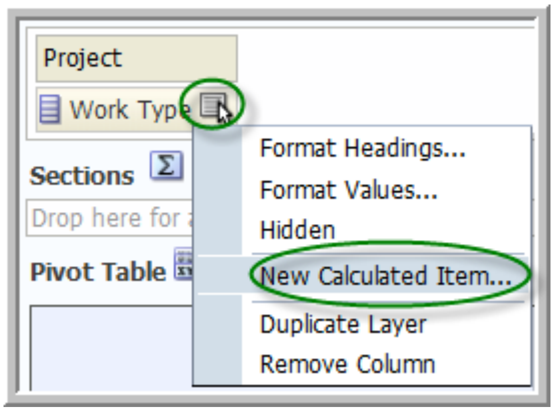
Any column, subtotal, or grand total may be formatted in exactly the same manner.

Exercise 3e: Creating pivot table calculated items

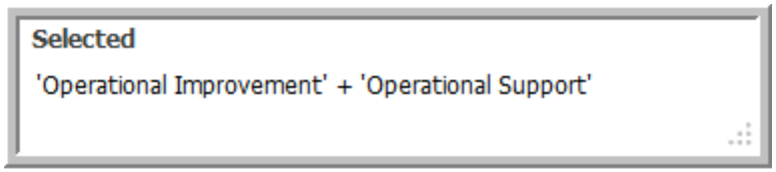
In this exercise, we will move a dimension into the Pivot Table Prompts (i.e. Drop here for Pivot Prompts) area to create a dropdown selection list. In addition, we'll create a new calculated value for **Work Type** (an on-the-fly sum of Operational Improvement and Operational Support that we will call **Billables**), and it will appear in the dimension dropdown list along with the other "real" values.

1. Beginning with the pivot table from the previous exercise, grab the **Work Type** tile and drag it up into the **Pivot Table Prompts** area of the layout panel. This places the values of Work Type into a dropdown box displayed at the top of the pivot table.

2. Click the **More Options** button for the Work Type tile, and select **New Calculated Item.**

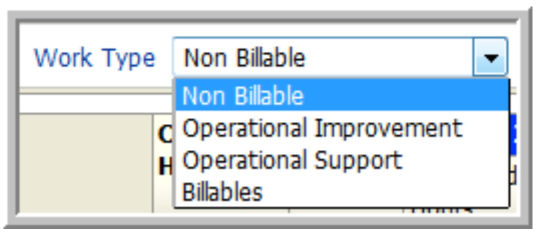


1. Enter **Billables** as the name of the calculated item, and use your mouse to click **Operational Improvement** then the shuttle arrow to move it into the formula. Follow with the plus sign, and shuttle **Operational Support** into the formula to create this:



2. Click OK when the formula is finished.

   Your new value is now available for selection in the dropdown box.



This technique is not limited to the Pages area. No matter where a dimension column is located, its **More Options** button will include a **New Calculated Item** option.

NOTE: A calculated item created in this manner will be present in all views.

3. Resave the **Presidential Recap** analysis.

Lesson 4: Graphs

OBIEE Answers offers several different kinds of graphs for displaying the data returned by Answers analyses. In this lesson, we'll examine a few of those different graph types.

Exercise 4a: Line graphs

1. The **Presidential Recap** analysis should already be open for editing. If it is not, use any of the four methods described on page **Error! Bookmark not defined.** to open it for editing.

2. Click on the **Criteria** tab.

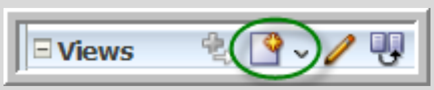
3. Because the data for Fiscal Month 201006 has only a limited amount of data, and isn't contributing any meaningful data to the analysis, let's create a filter condition to remove that Fiscal Month, using techniques used in an earlier lesson. You will be using the **is not equal to / is not in** filter operator, and you may either explicitly select the 201006 value of Fiscal Month, or else use the **TPOV_FISCAL_YEARMONTH** repository variable. The completed filters should look something like this:

4. On the Results tab, click on the **New View** icon (circled in the image below) on the toolbar at the top of the screen.

5. Select **Graph … Line** to create a new Line Graph and automatically add it to the bottom of the Compound Layout.

Helpful Hint: There are two places to find the New View icon. Both are visible when the Results tab is selected, and when there is not currently a view being edited.

The icon on the Views header near the bottom left of the screen (below) creates the new view and opens it in the editor, but does not automatically add it to the compound layout.



The icon on the toolbar at the top of the screen (below) creates the new view and adds it to the bottom of the compound layout, but it does not automatically open the view in the editor.

Since we used the New View icon on the tool bar, the view was not automatically opened in the editor. To edit a view, you may use one of two techniques:

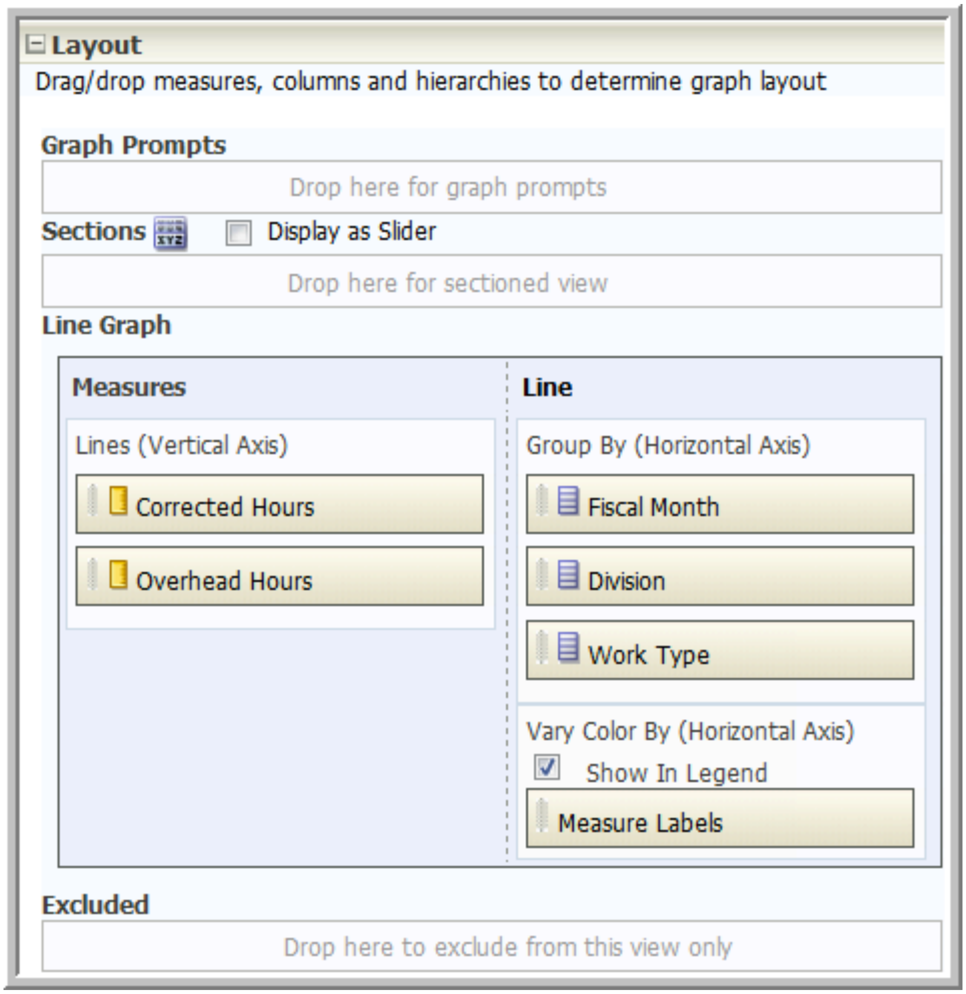
a. Click to highlight the name of the view in the **Views** list (bottom left of the screen) and click the Edit icon on the header of the **Views** list; or,

b. If the view is present in the Compound Layout (right side of the screen), click the Edit icon on the header bar for that view in the Compound Layout.

6. Edit the Graph view using one of the two methods described above.

7. When a graph is created, all of the component columns in the analysis are included. It's up to us to exclude some columns and rearrange the others to create the results we want to see.

   The initial graph layout will look something like this:

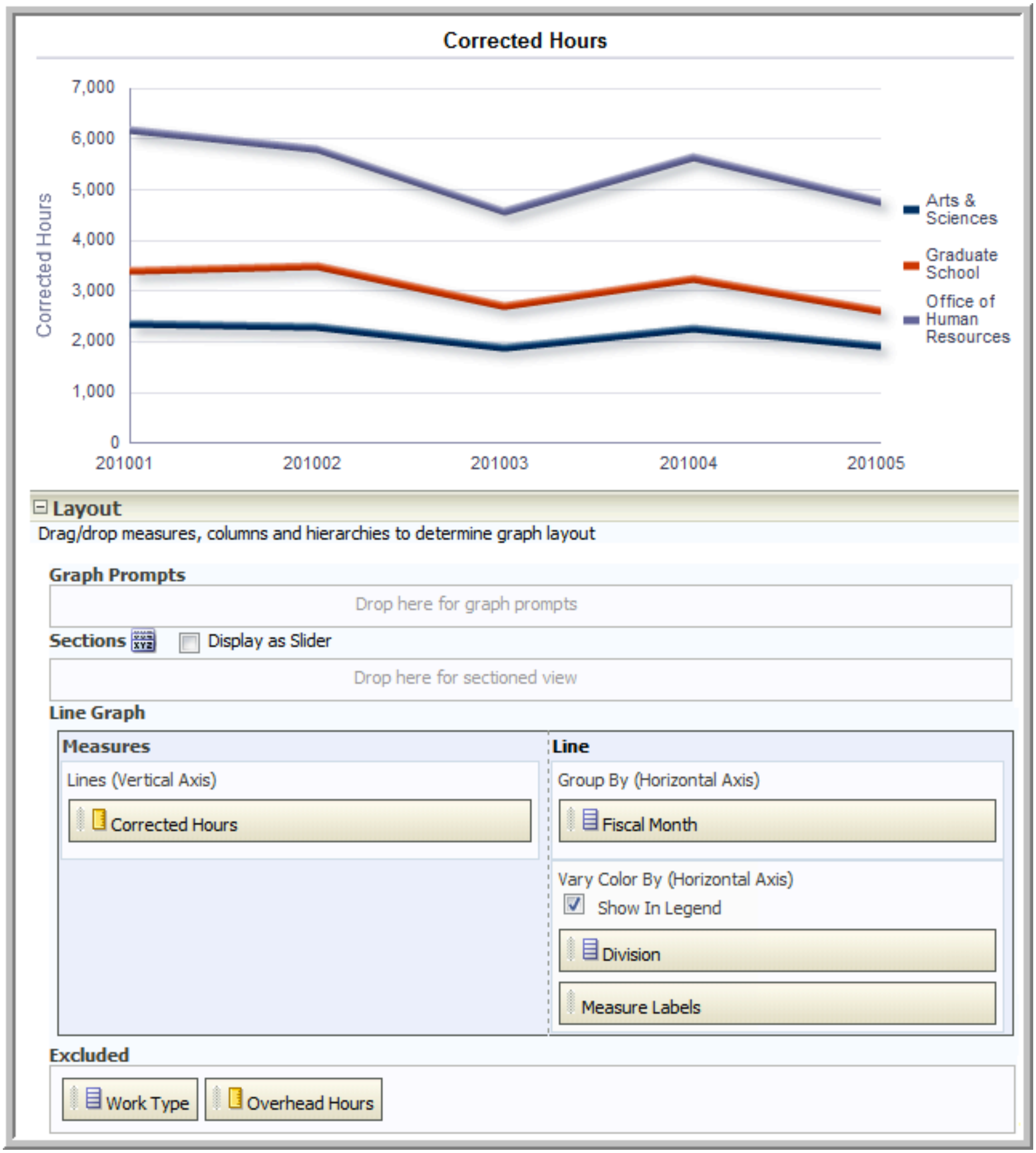


8. First, we only want **Corrected Hours** represented in the graph. Click, hold, and drag the **Overhead Hours** tile into the Excluded area at the bottom of the layout.

9. We only want to see the list of Fiscal Months going across the bottom (x-axis) of the graph. The x-axis contents are controlled by the tiles present in the **Group By (Horizontal Axis)** area of the Layout. Move the **Division** and **Work Type** tiles into the Excluded area to remove them from the x-axis.

10. Finally, we want to see one colored line for each **Division**. Drag the **Division** tile **up**, and drop it directly onto the words **Vary Color By (Horizontal Axis)**. You must drop the tile directly onto those words, which will be highlighted with a light blue background when the mouse is hovering over them.

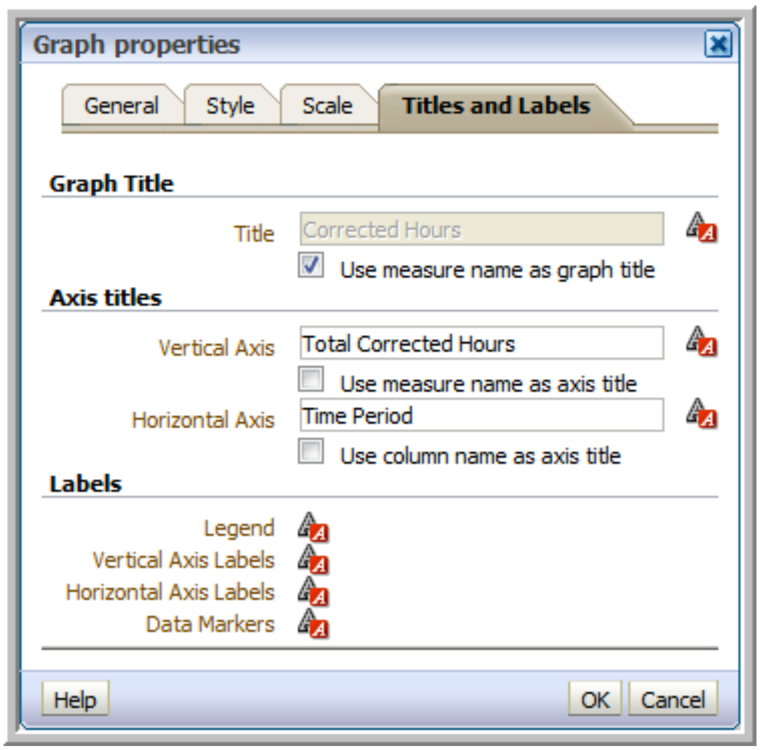
11. Compare your finished layout and graph to this screenshot:



12. There are quite a few properties that can be changed for each graph. Recall that in an earlier exercise, we learned that any time we want to adjust the properties of a view, we're going to look in the toolbar for an icon that has **xyz** on it, like the one circled in this screenshot. Click on that **Graph View Properties** icon now.

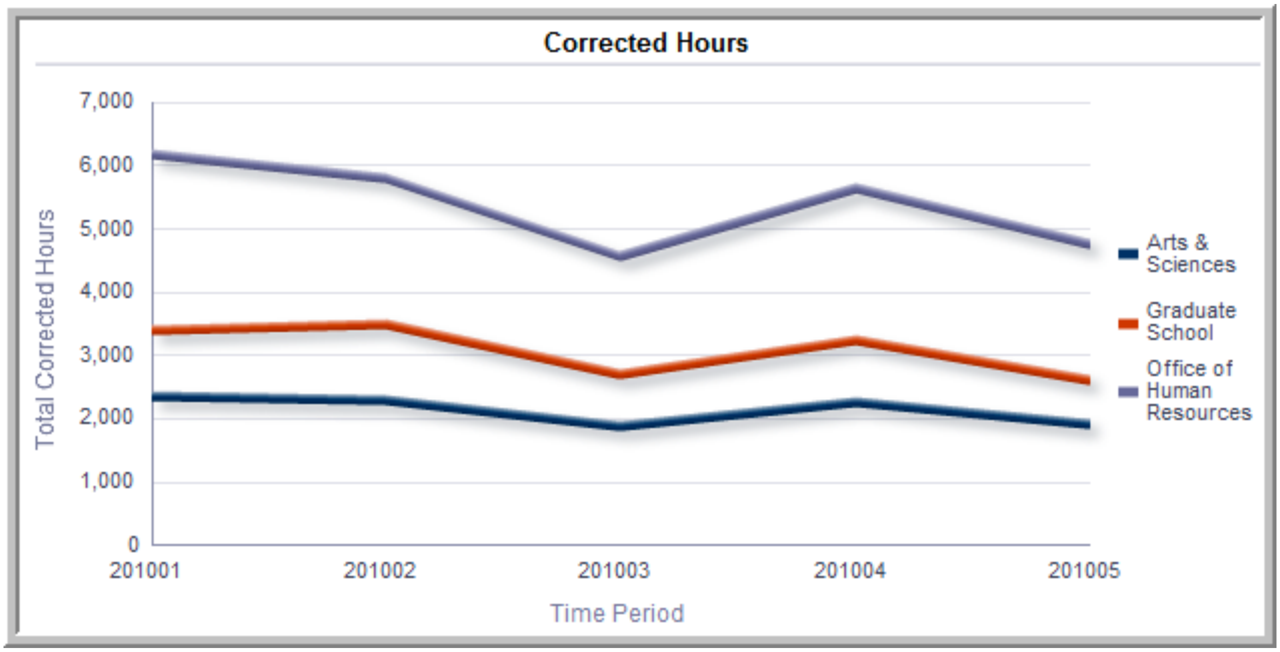
13. Let's change our axis labels. Click the **Titles and Labels** tab.

14. **Untick** the Vertical Axis and Horizontal Axis check boxes as shown here, and change their respective titles to **Total Corrected Hours** and **Time Period**.



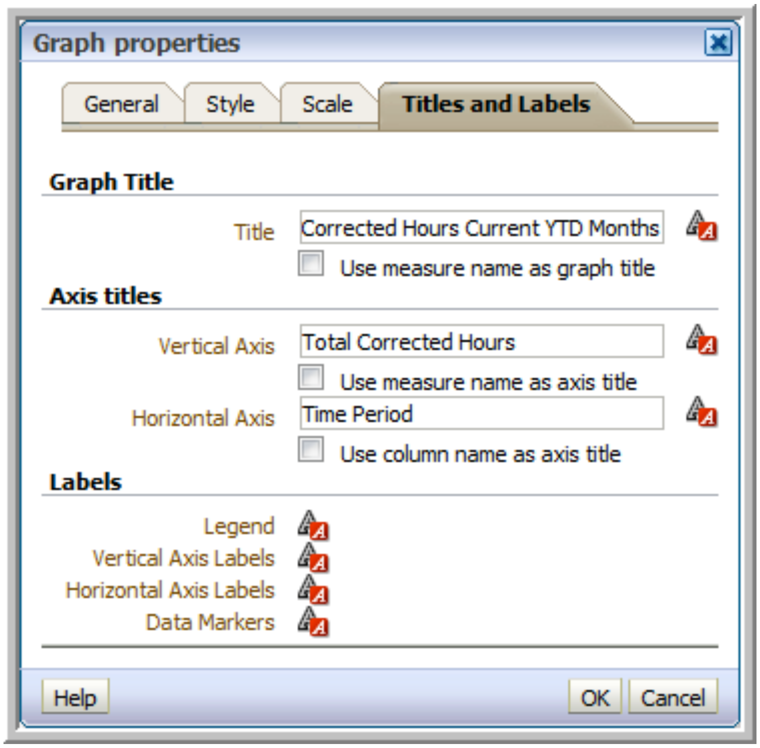
15. Click **OK**

16. Compare your graph to this screenshot:



17. Let's add a title to the graph. Return to **Edit Graph Properties** and the **Titles and Labels** tab.

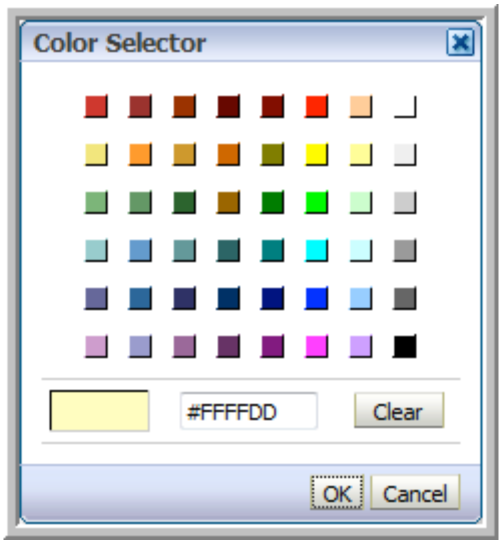
18. Untick the Graph Title checkbox and type **Corrected Hours Current YTD Months** as the graph title. Don't click **OK** this time, because we'll do some more work on other properties.



19. Let's change the graph background color and the color of the grid lines. Click the **Style** tab.

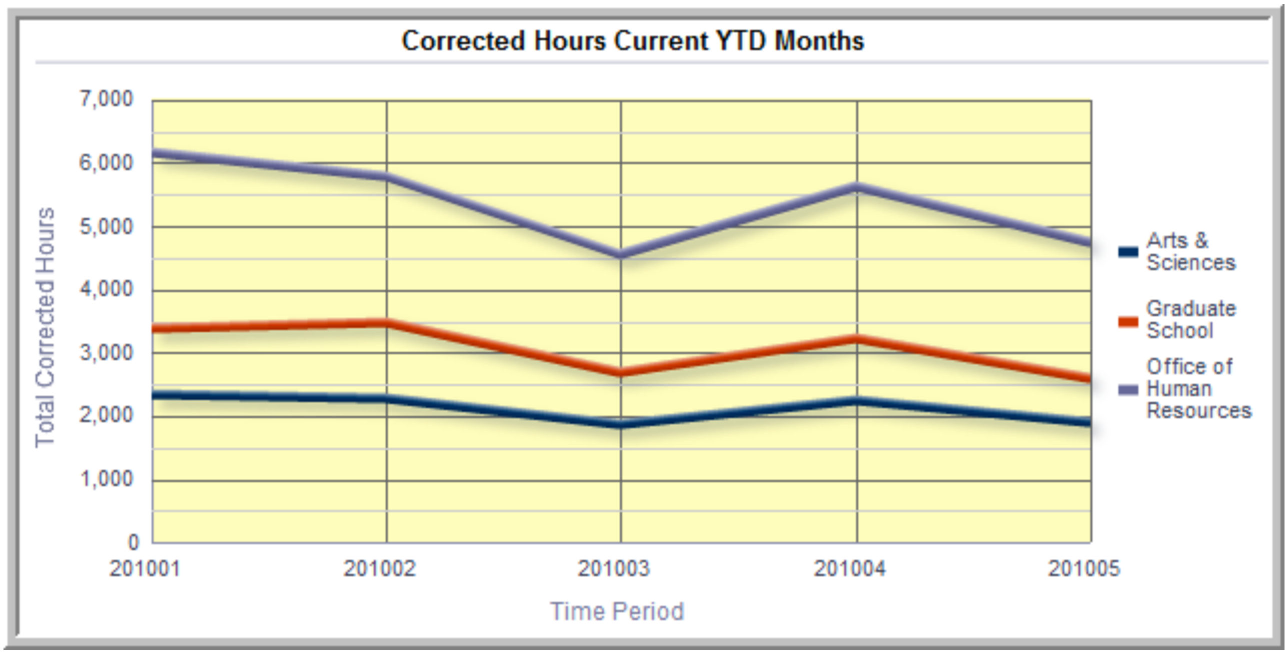
20. Under **Plot Area**, click the dropdown box for the **Background**.

21. In the Color Selector dialog box, type #FFFFDD (a very pale yellow) into the box below the color swatches and click **OK**.



22. Still in the Plot Area:
    a. Click the **Specify** radio button for the Gridlines.
    b. Tick both of the checkboxes for the Major Grid (Horizontal Lines and Vertical Lines) and the one checkbox for the Minor Grid (Horizontal Lines).
    c. Click the **Major Grid Color** dropdown box and set the major grid line color to dark grey (8^{th} column 5^{th} row, #666666).
    d. Click the **Minor Color** box and set the minor grid line color to medium grey (8^{th} column, 3^{rd} row, #CCCCCC).
    e. After you've set both colors, click **OK** to apply your changes and close the Graph Properties dialog.

Your graph should look like this:

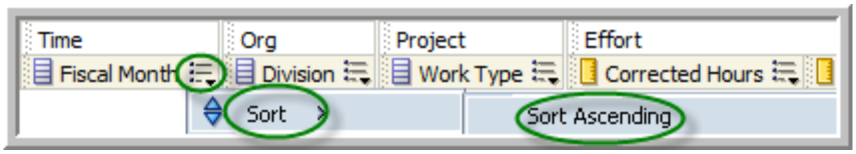


Now let's sort the legend in reverse alphabetical order. In an earlier exercise, you learned that the table of results is, by default, sorted in ascending order starting with the leftmost column and working toward the right. That's what we want for this table. We still want **Fiscal Month** as our primary sort and grouping, then **Work Type**, then **Division**, but we want **Division** sorted in reverse alphabetical order.

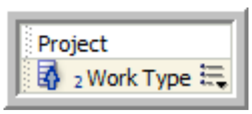
23. Click **Done** at the top right of the editor screen to close the editor and accept your changes.

24. Return to the Criteria tab. All sorting is established on the Criteria tab.

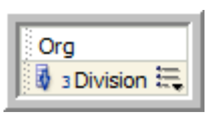
25. If not already set, establish **Fiscal Month** as the initial sort column (ascending).



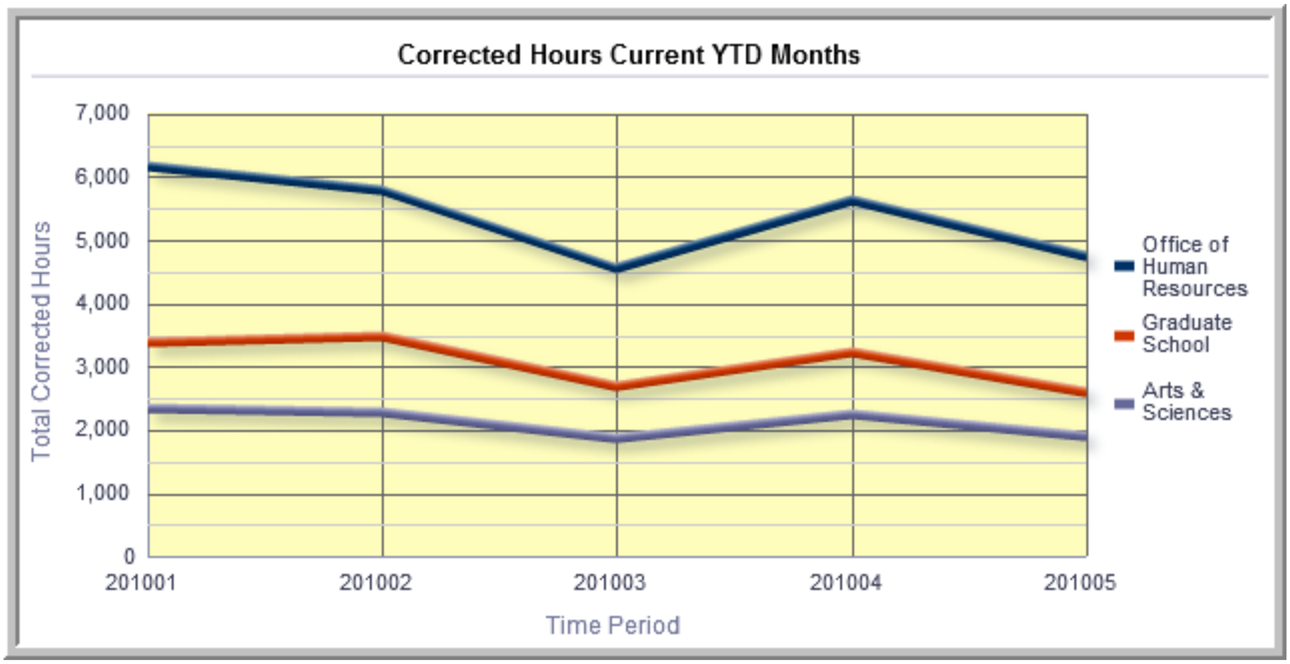
26. **Add** an ascending sort for the **Work Type** column. The arrow points up (ascending sort order), and the number 2 indicates that this is the second sort.



27. **Add** a descending sort for the **Division** column. The arrow points down (descending sort order), and the number 3 indicates that this is the third sort.



28. Return to the Results tab and edit the Graph view to see the results. The legend (Divisions) should be displayed in reverse alphabetical order.



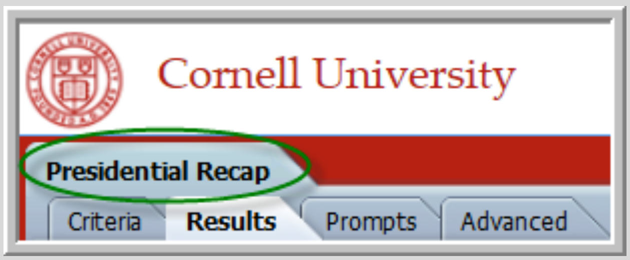
29. Click **Done**.

30. Resave the **Presidential Recap** analysis.

Exercise 4b: Vertical Bar graphs

OBIEE features many different types of graphs. In the previous exercise, we created a line graph. Perhaps we would like to also create a vertical bar graph to display the data in our analysis. Although we could create a new view using the same techniques that we learned in the previous exercise, let's presume that we would like to retain the properties that we established for the line graph, such as the yellow plot background and the axis labels. Instead of starting from scratch, let's make a **copy** of that line graph, then modify its characteristics to suit our needs.

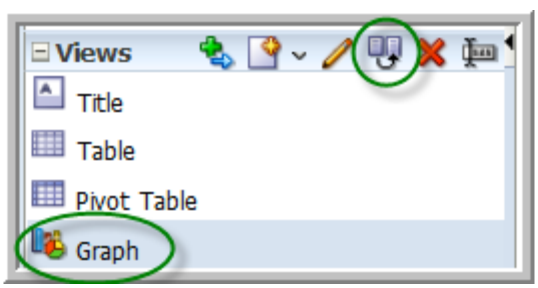
Helpful Hint: How do we know which analysis is currently open for editing? Take a look at the tab at the top left of the working area, just below the Cornell logo.



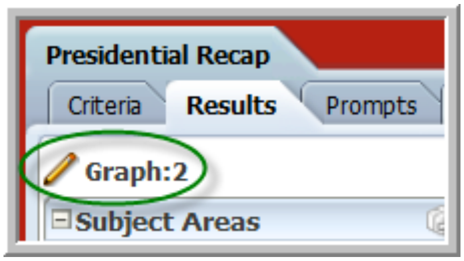
1. If necessary, click the Open icon on the tool bar and select the **Presidential Recap** analysis.

2. Click the **Results** tab so that you can see the **Views** section at the bottom left of the screen.

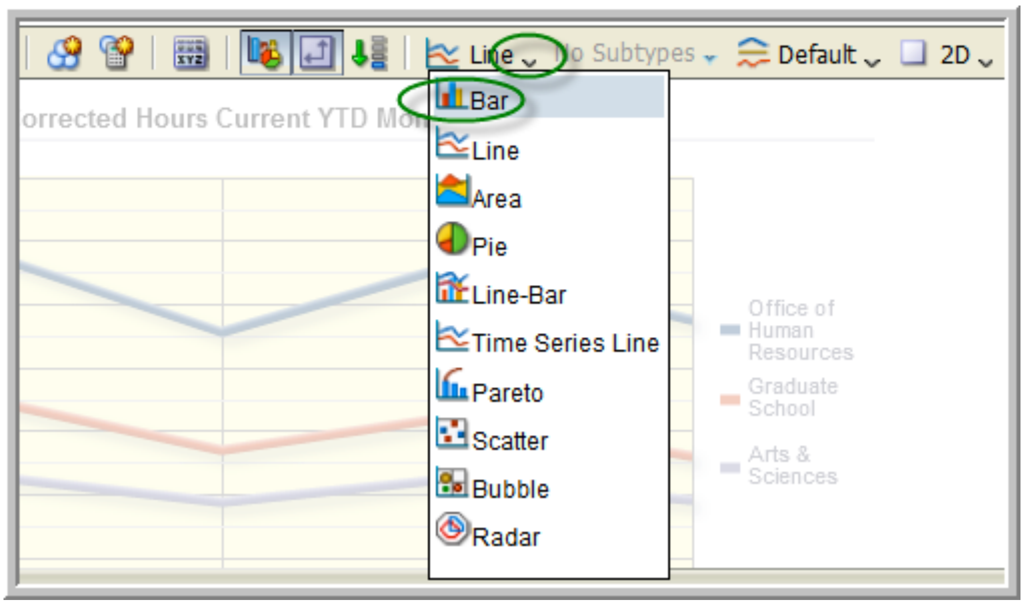
3. Click to highlight the **Graph** view in the list of views, then click the **Duplicate View** icon in the Views header.



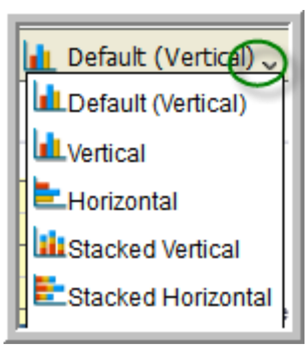
4. Take a look at the top left of the working area, just below the Results tab. You will know that you are actively editing a view when the pencil icon and the name of the view are shown in this location. The **Done** and **Revert** buttons will also be visible below the two save icons.



5. On the toolbar immediately above the graph, click the **Graph Type** dropdown arrow, and select **Bar** from the list. Notice that there are 10 different types of graphs available in OBIEE.

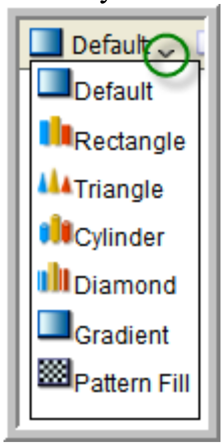


6. The default Bar graph is a Vertical bar, and that's what we want. However, you may click on the Graph Subtype dropdown arrow to see the other subtypes of Bar graphs that are available.

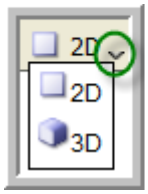


7. Likewise, notice that there are different graph **styles** and **effects**.

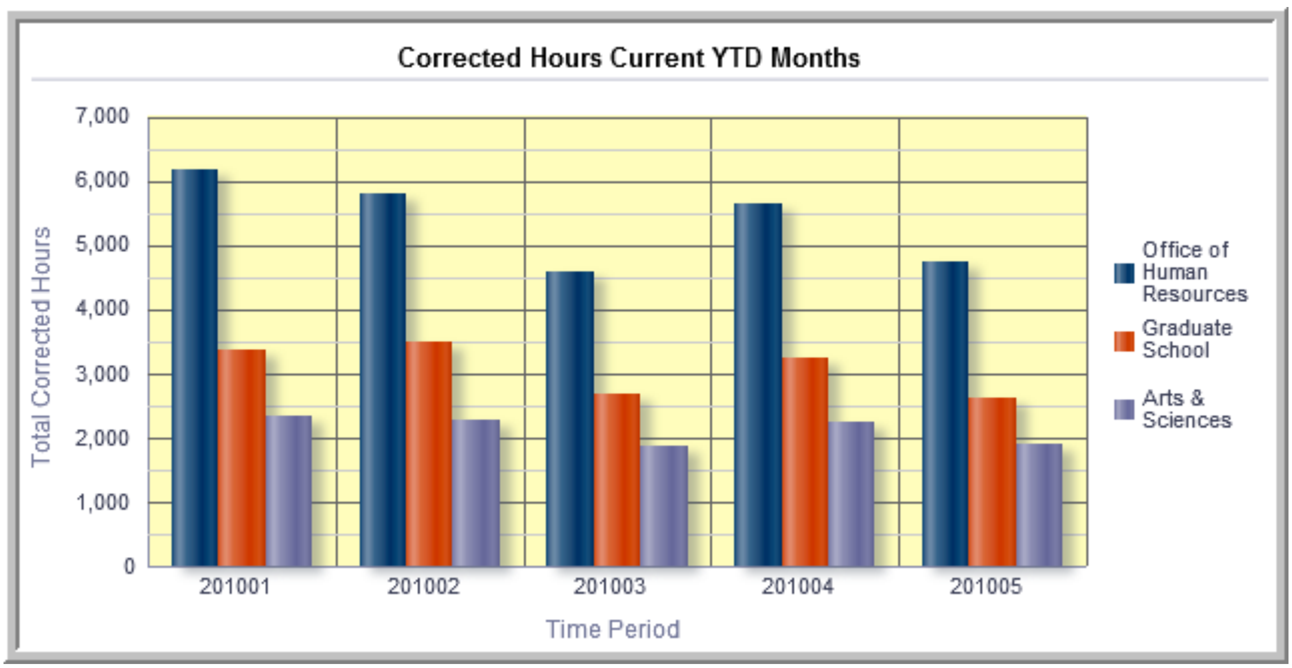
Styles



Effects

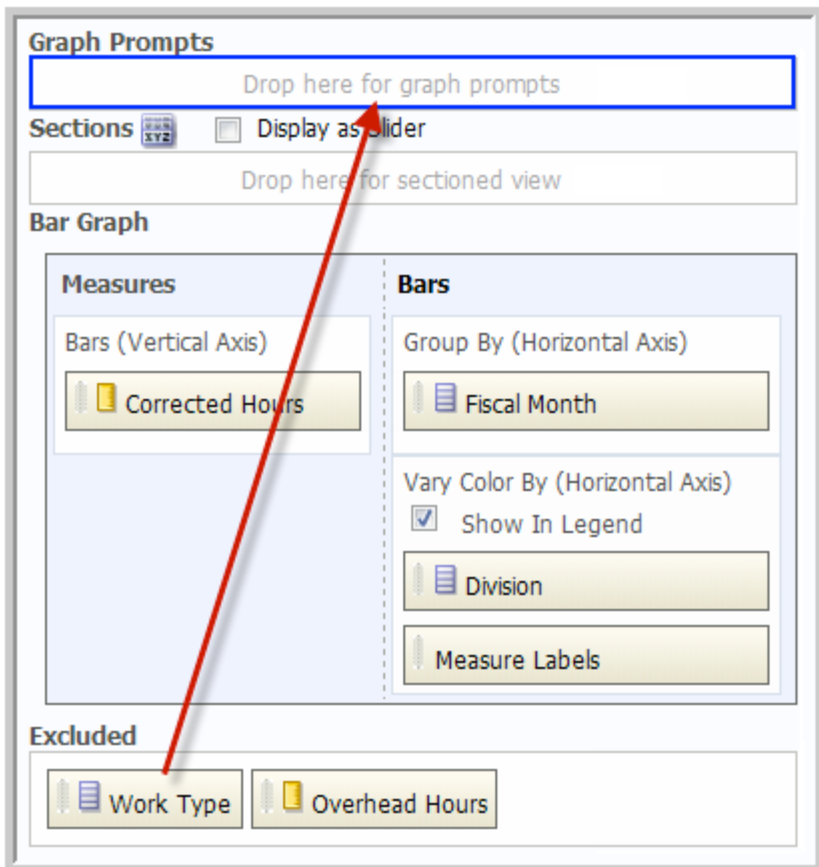


8. Compare your graph results to this picture.

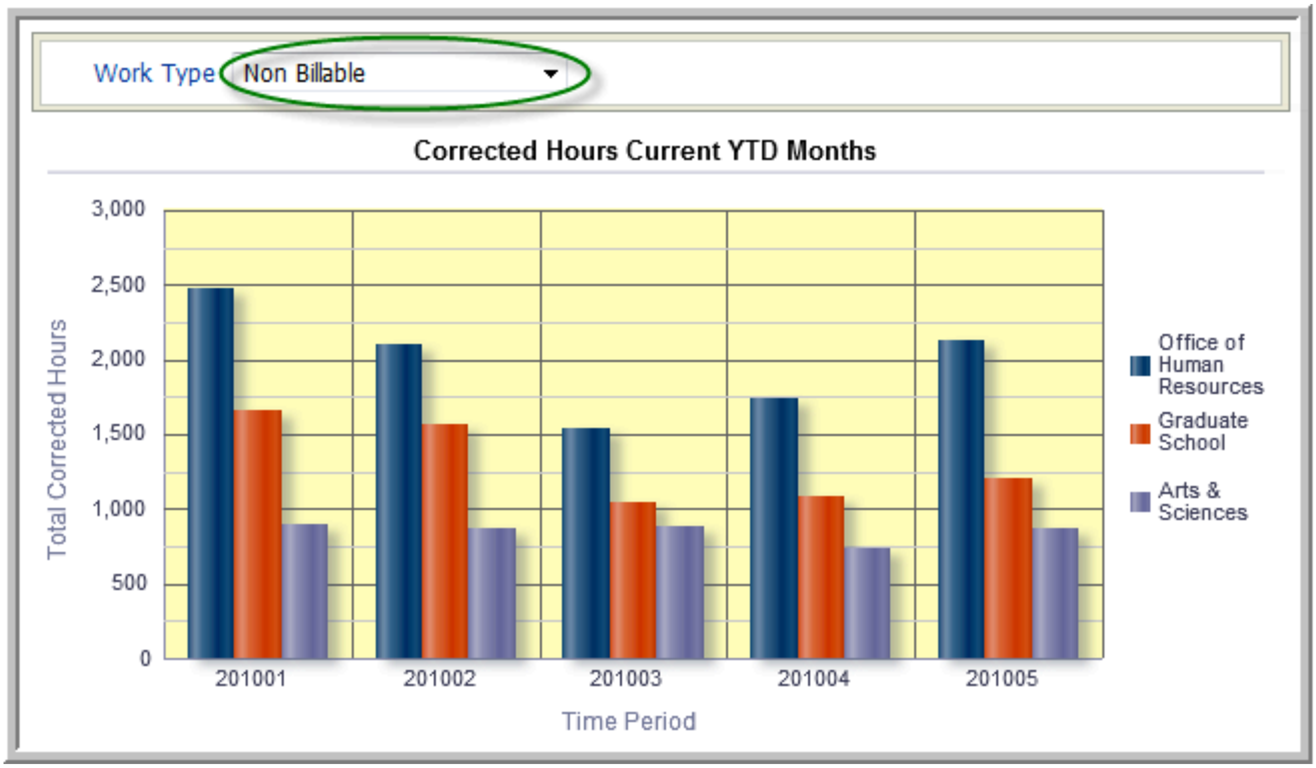


As was the case with the Line graph, **Fiscal Month** labels are displayed on the **horizontal** axis. The values for **Corrected Hours** are displayed on the **vertical** axis. Each Division is represented in the body of the graph and in the **legend**.

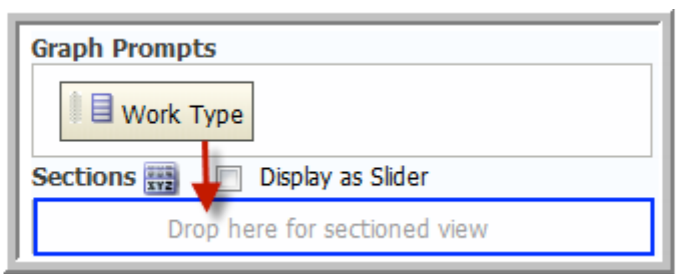
9. New in OBIEE 11g is the ability to use the **Graph Prompts** area and the **Sections** area within the Layout panel to display individual graphs for each value of a column. Working in the Layout section, and using the techniques learned in the Line Graph exercise, drag the Work Type tile out of the Excluded zone, and drop it into the Graph Prompts zone.



10. Notice that the graph now contains a dropdown list that allows you to select one value of Work Type at a time.

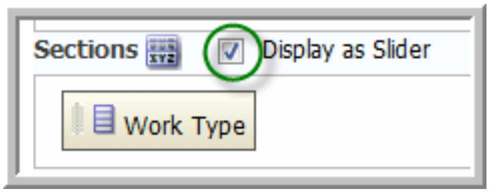


11. Return to the Layout panel again, and drag the Work Type tile down into the Sections zone.

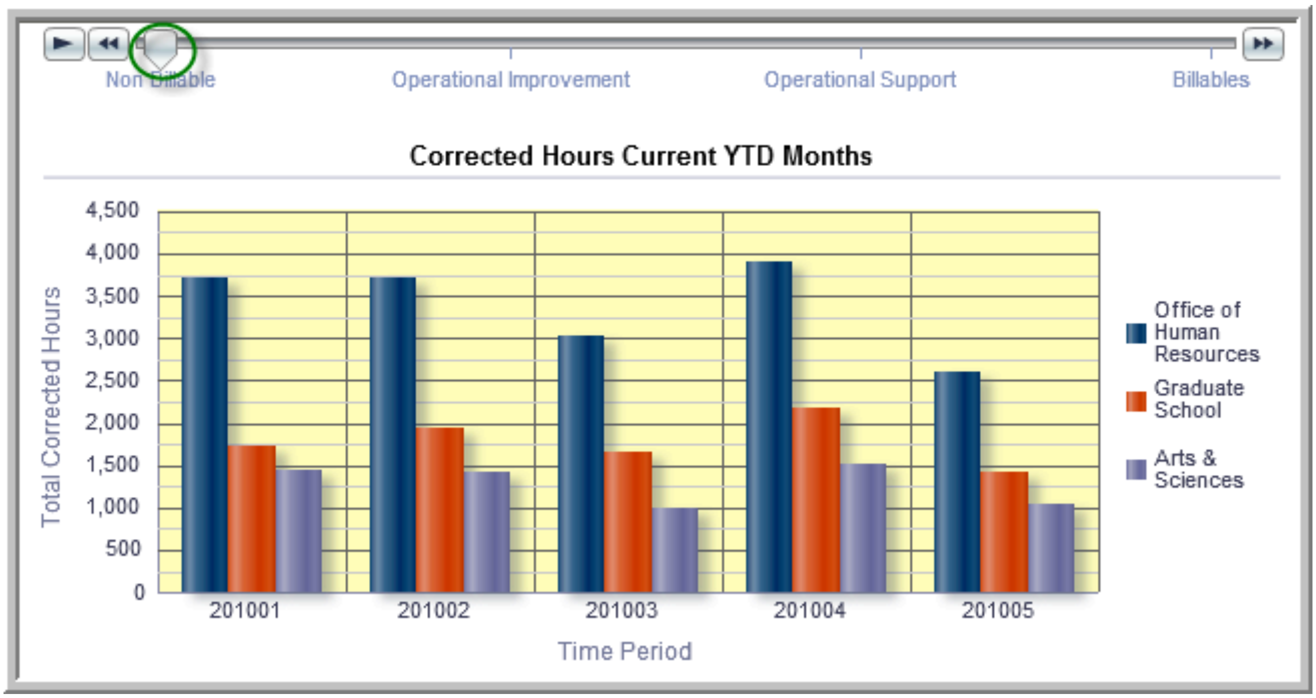


12. Notice that each value of Work Type is now represented in its own separate graphs.

13. Finally, click the **Display as Slider** checkbox.



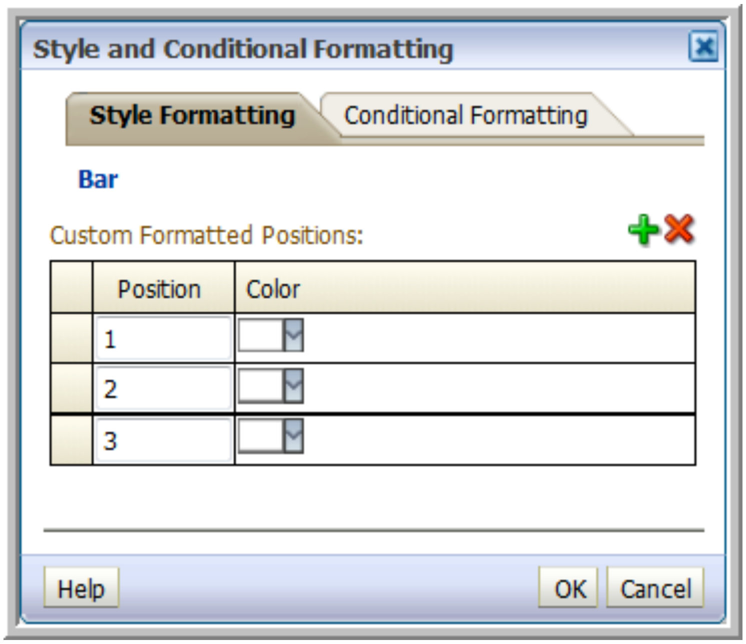
14. The four values of Work Type are visible in a slider bar above the graph. To see how the slider works, drag the pointer (circled in green) between Work Type labels, and experiment with the playback arrows on either side of the slider.



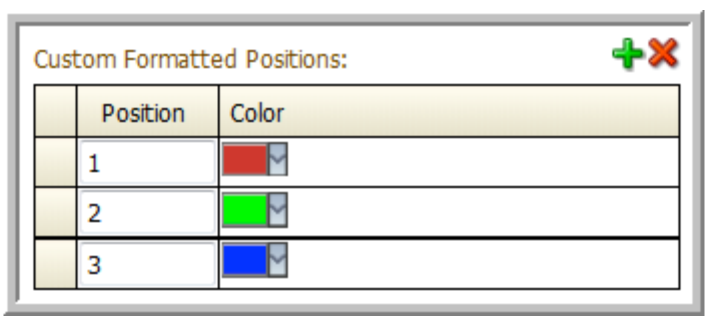
15. Let's change the colors of the vertical bars. Click the Graph Properties icon in the toolbar.

16. Click the **Style** tab, then click the **Style and Conditional Formatting** icon.

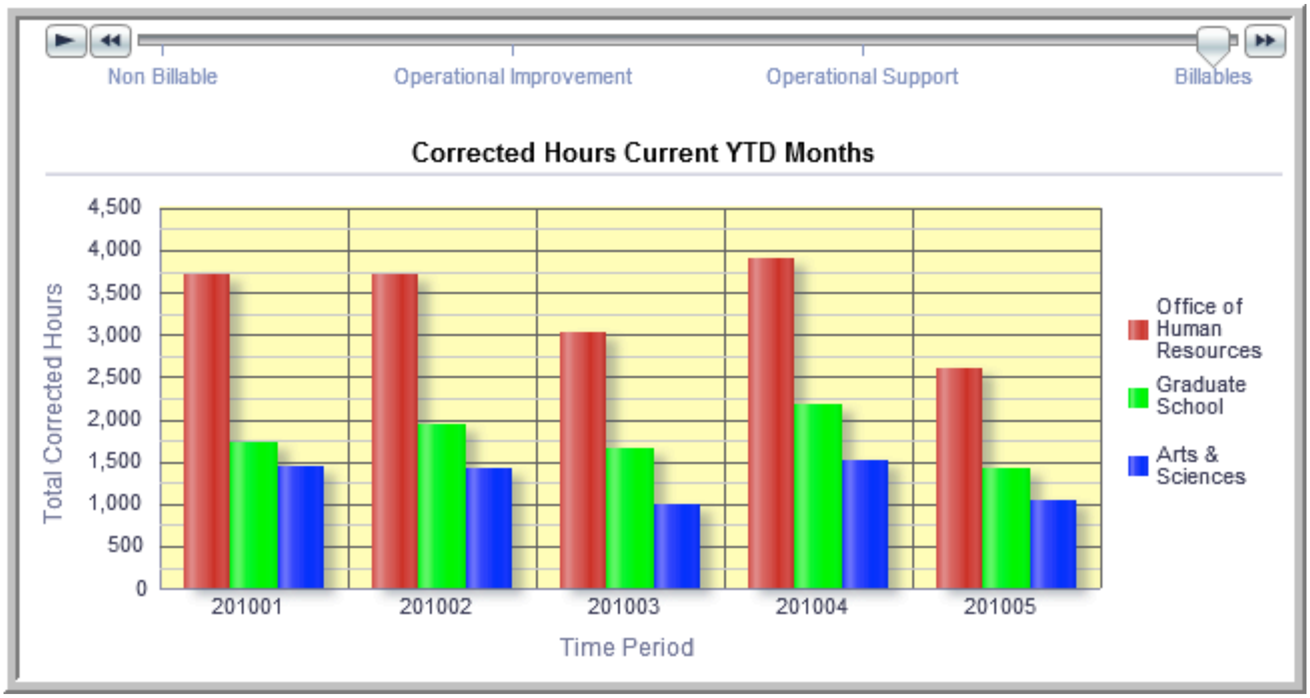
17. There are three bars, so let's specify colors for all three. Click the Add New Position icon three times.



a. Click the **Color** dropdown for Position 1, select the top left color (red) and click OK.
b. Likewise, select some shade of green as the color for Position 2.
c. Likewise, select some shade of blue as the color for Position 3.

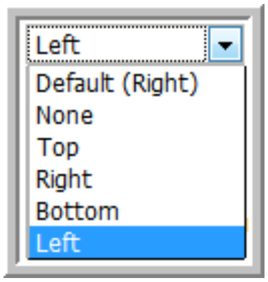


d. Click **OK** twice to close the dialog boxes and view the results (as shown on the next page).

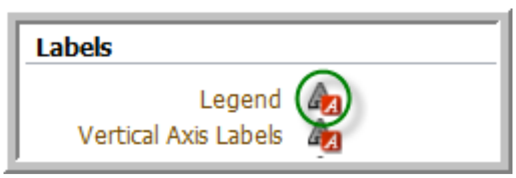

Non Billable
Operational Improvement
Operational Support
Billables
Corrected Hours Current YTD Months
Total Corrected Hours
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
201001
201002
201003
201004
201005
Time Period
Office of Human Resources
Graduate School
Arts & Sciences

18. Let's change a few more graph properties. Click the **Graph Properties** icon again.

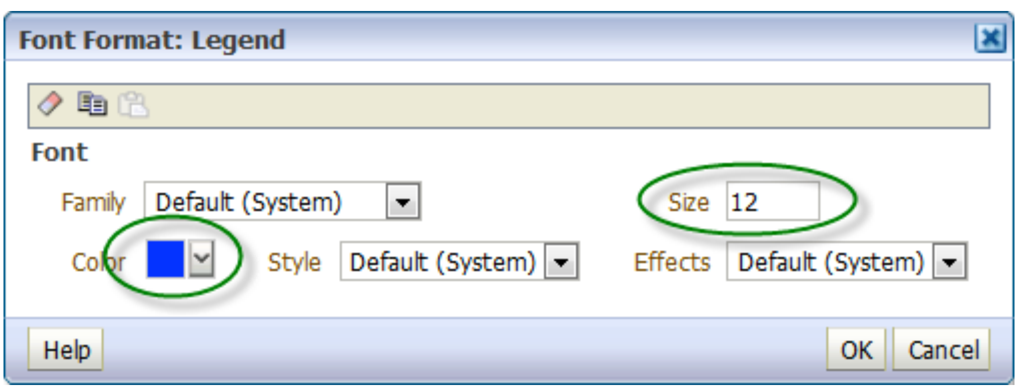
19. Let's move the legend to the other side of the graph. On the **General** tab, change the value of the **Legend** dropdown to **Left.**



20. Let's also change the color and size of the legend text.
    a. Click the **Titles & Labels** tab.
    b. Click the **Format** icon beside the word **Legend**.

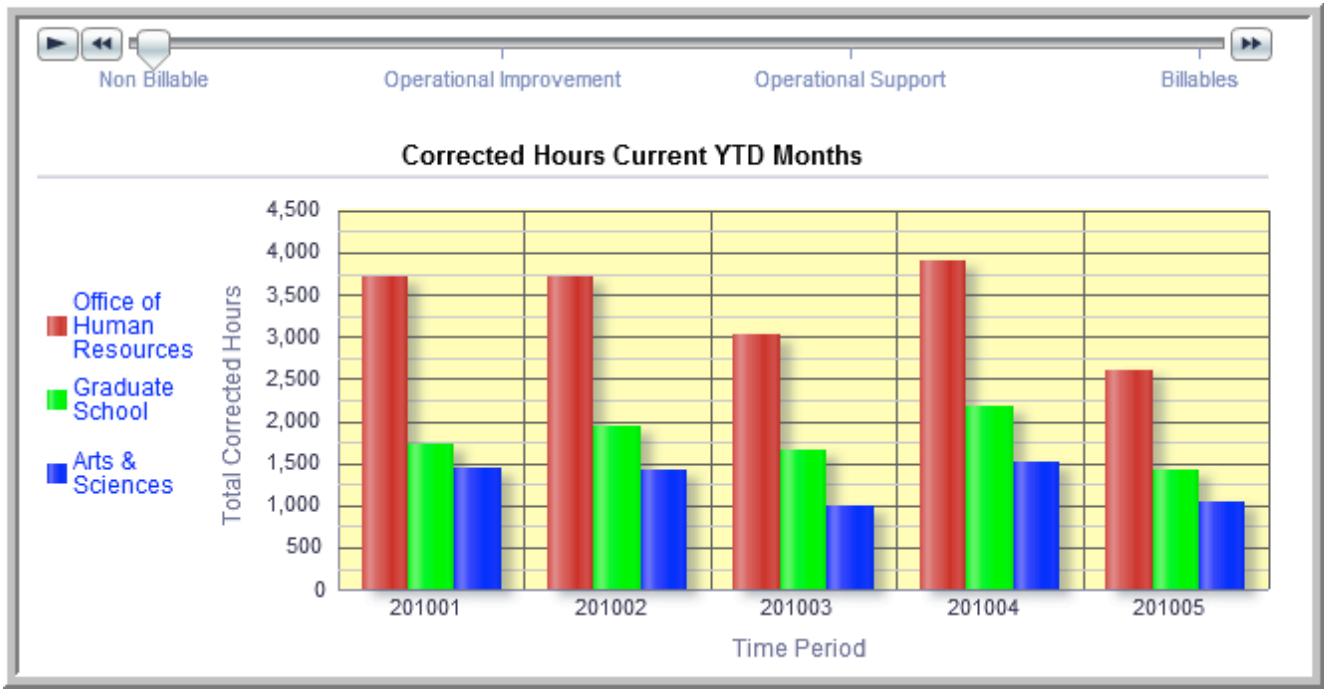


    c. Using techniques learned earlier, change the Font color to a selection of your choice.
    d. Type 12 as the Size (point size) of the font.



    e. Click OK twice to redisplay the graph results.

21. Your finished graph should look something like this (depending on your color selections):



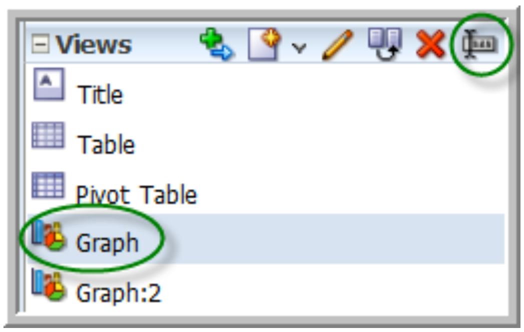
22. Resave the **Presidential Recap** analysis.

Exercise 4c: Renaming Views

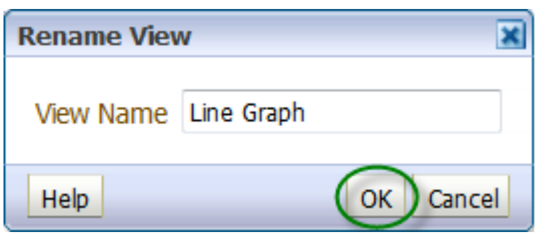
New in OBIEE 11g is the ability to assign descriptive names to the many defined views associated with an analysis. In this exercise, we'll rename the two graph views that we created earlier.

1. As noted earlier, in order to do any work with views, we must be on the Results tab. Click on the Results tab if necessary.

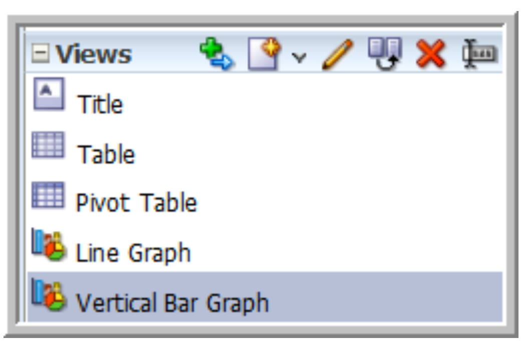
2. In the **Views** section, highlight the **Graph** view, and click the **Rename** icon on the Views header.



3. Type **Line Graph** as the View Name, and click **OK**.



4. Likewise, rename **Graph:2** as **Vertical Bar Graph**.



5. These changes are not automatically committed. Make sure to save the analysis.

Exercise 4d: Axis Labels, Scaling, Scale Markers

In our previous exercises, we lightly touched on some of the graph formatting properties available in OBIEE. In this exercise, we will examine two of the other very useful graph formatting options – Axis Scaling and Scale Markers.

1. Still working with the **Presidential Recap** analysis, and on the Results tab, highlight the Vertical Bar Graph view in the Views list, and duplicate it  to create a new Graph.

2. Notice that the name Vertical Bar Graph is shown as the name of the view being edited. Currently, there are currently **two** views with that name. You are editing the second one. Once the editing is complete, you may rename the view as you learned in the previous exercise.

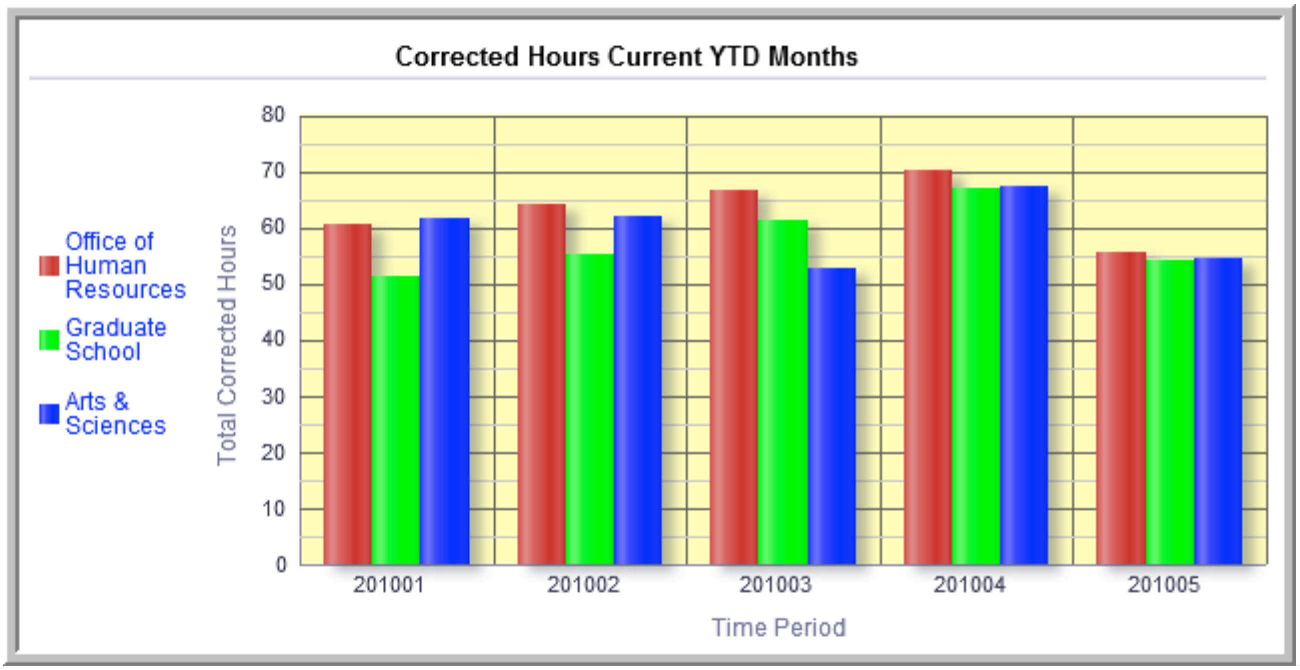
In this graph, we want to add and display a different fact, and display only a combination of the Work Type, not each one individually.

3. Drag the Work Type column tile into the Excluded area.

4. Using techniques learned earlier, **but remaining on the Results tab**, move the mouse into the Subject Area listing, drill down into the **Measures and Detail … Effort** folder, and add the **Applied %** column from the Effort table.

5. Notice that the new column was automatically added into the Layout as one of the visible Measures. We want to display **only** the **Applied %** column in this graph. Drag the **Corrected Hours** column tile out of the Measures area, and drop it into the Excluded area.

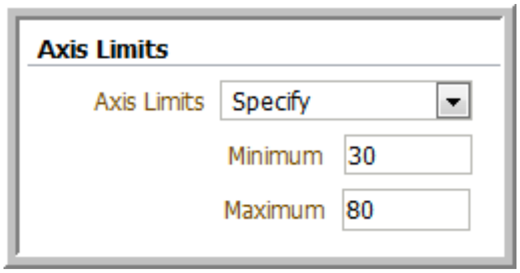
6. The graph should look like this:



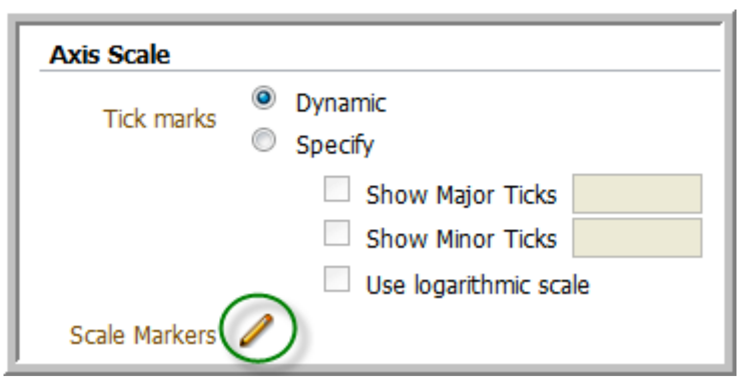
The University administration has determined that the target for Applied % for each Division should be in a range between 55% and 60%, and that a value lower than 52% is cause for concern. Let's add some scale markers to our graph to help us see which values fall within or outside of those limits.

7. First, let's take control over the scaling on the left axis. Open the Graph Properties and click the **Scale** tab.

8. Choose **Specify** from **Axis Limits** dropdown, and change the **Minimum** and **Maximum** to 30 and 80, respectively, as shown here. The left axis will now start at 30 instead of zero, and will go up to 80.

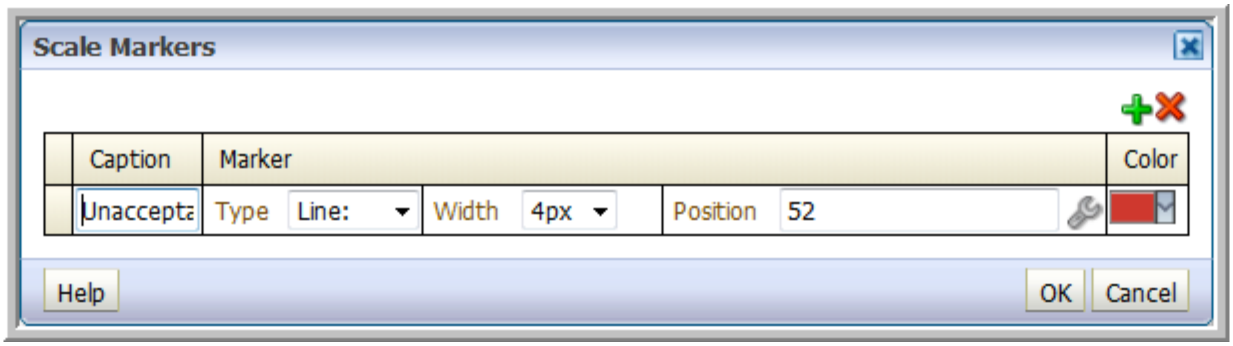


9. Next, let's add our first scale marker. Click the **Edit Scale Markers** icon.



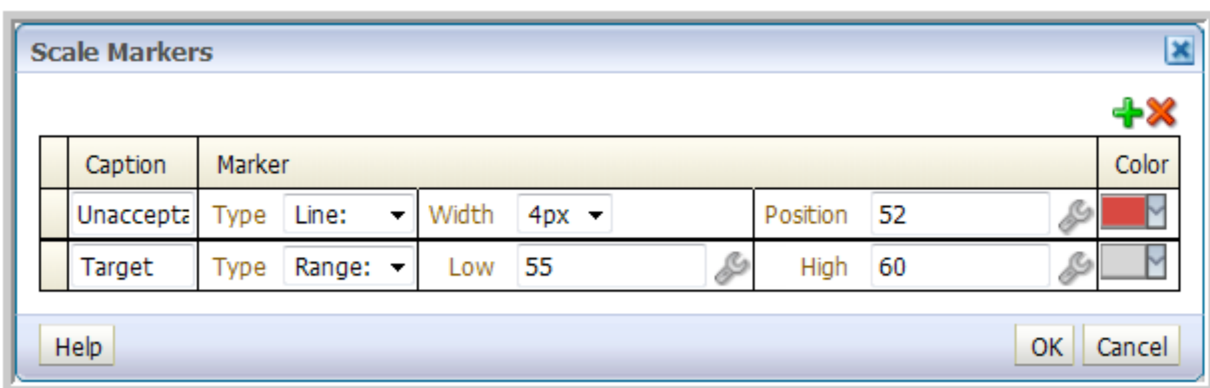
Scale Markers are lines or bands of color that help the reader to quickly interpret results.

10. Click the green icon to add the first scale marker position. Complete the dialog as shown here. This first scale marker will be a solid red line, 4 pixels thick, centered on the 52% axis label. The caption is **Unacceptable**.



Line scale markers are displayed across the graph **in front of** the graph elements.

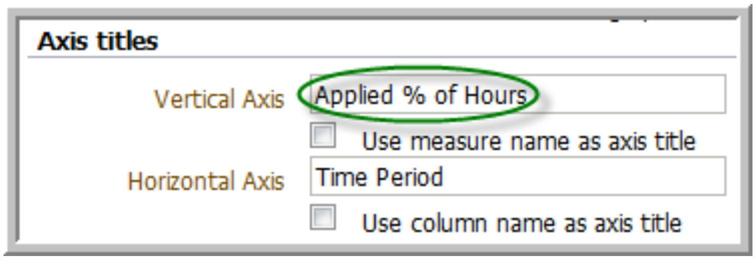
11. Click the green icon again to add the second scale marker position. Complete the dialog as shown here. The second scale marker will be a **Range** of grey, with a low end of 55%, a high end of 60%, and a caption of **Target**.



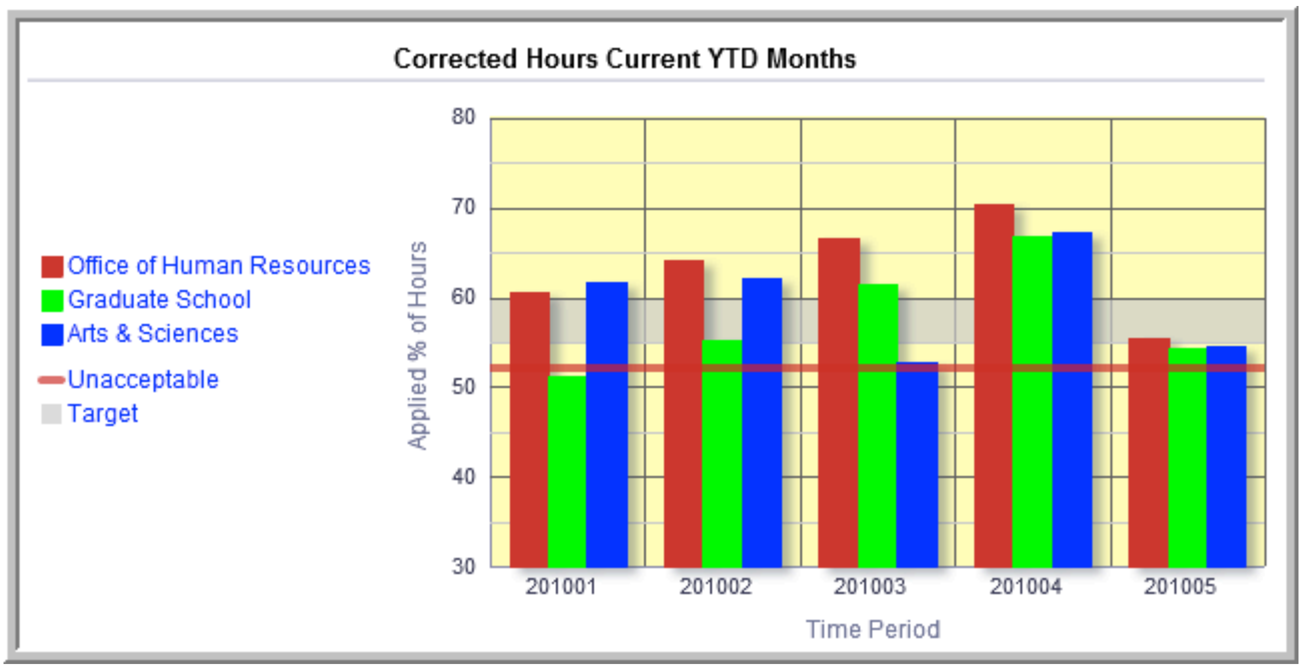
Range scale markers are displayed across the graph **behind** the graph elements.

12. Click **OK** to close the Scale Markers dialog.

13. Finally, let's change the Vertical Axis label. Click the Titles and Labels tab, type **Applied % of Hours** as the Vertical Axis title, and click OK.



14. The finished product should look something like this:



15. Click **Done** to conclude editing of this view.

16. In the Views area, rename the second Vertical Bar Graph as **V-Bar Applied %**.

17. **Resave** the **Presidential Recap** analysis.

Exercise 4e: Line Bar graphs

The Line Bar graph plots two different sets of data with two different ranges: one set as bars, one set as lines overlaid on the bars. Line Bar graphs are useful for showing trend relationships between different data sets.

In this exercise, we'll plot **Corrected Hours** as a vertical bar and **Applied %** as a line, creating one graph for each of the three Divisions. We'll use those graphs in the next lesson when we learn about Compound Layouts.

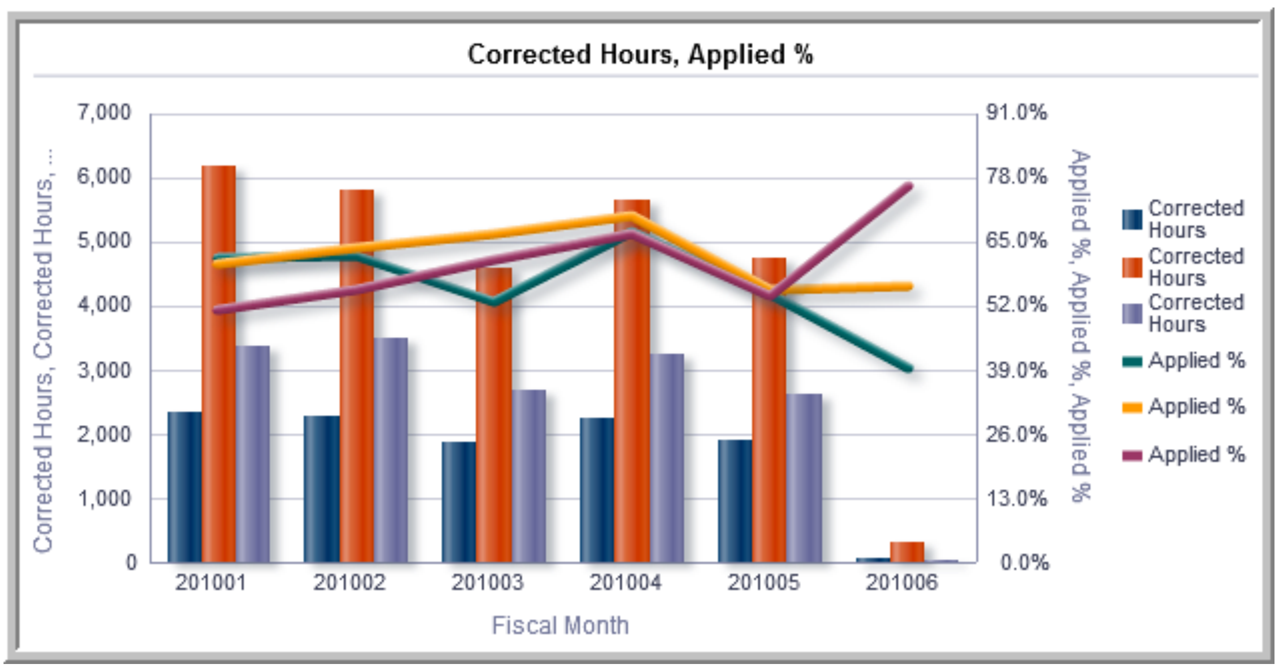
1. Open (Edit) the previously saved **Column Filters** analysis, using one of the four methods described on page **Error! Bookmark not defined.**.

★	**Helpful Hint**: You can control the number of row values returned in the Narrative view by setting a value in the **Rows to display** field. By default, all queried rows are displayed.

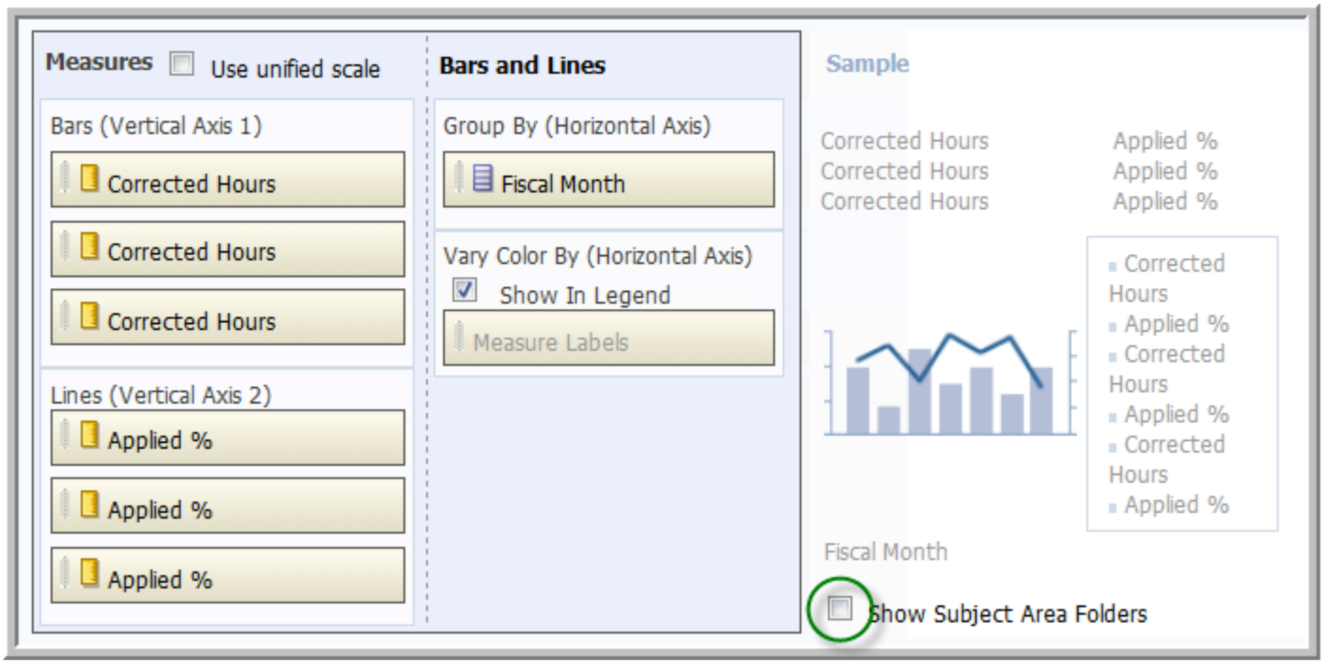
2. On the Results tab, create a new Line Bar (Standard) graph.

   (New Graph … Graph … Line-Bar … Standard)

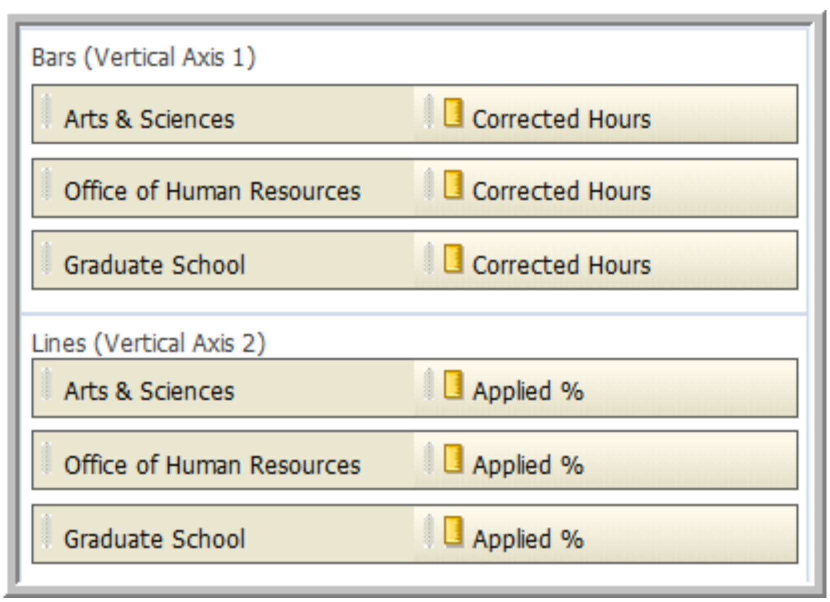
   The new graph should look like this:



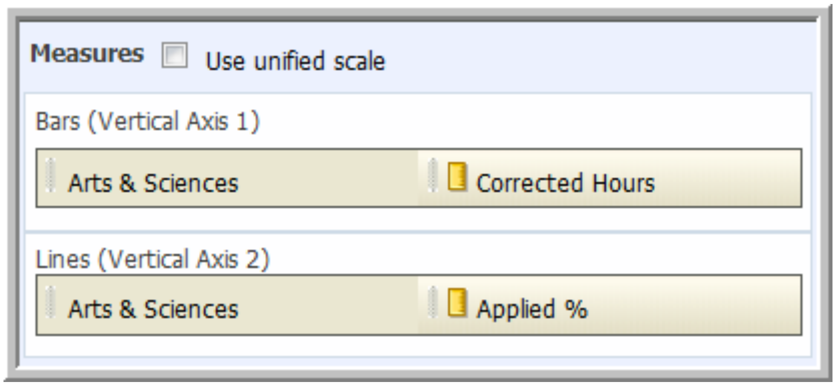
3. Currently, all six measures are displayed in the body of the graph. For this graph, we only want two the two measures related to Arts & Sciences. Notice that the Layout section shows three seemingly identical names for each measure. This is caused by the fact that, by default, the Layout only shows the column names. The **Show Subject Area Folders** box is not ticked.



4. Tick the **Show Subject Area Folders** checkbox to display the folder names along with the column names.



5. Now that we can see which columns belong with which folders, **exclude** (by dragging into the Excluded area) the Corrected Hours and Applied % columns associated with the Office of Human Resources and Graduate School folders, leaving only the two measures associated with Arts & Sciences present in the Measures area.

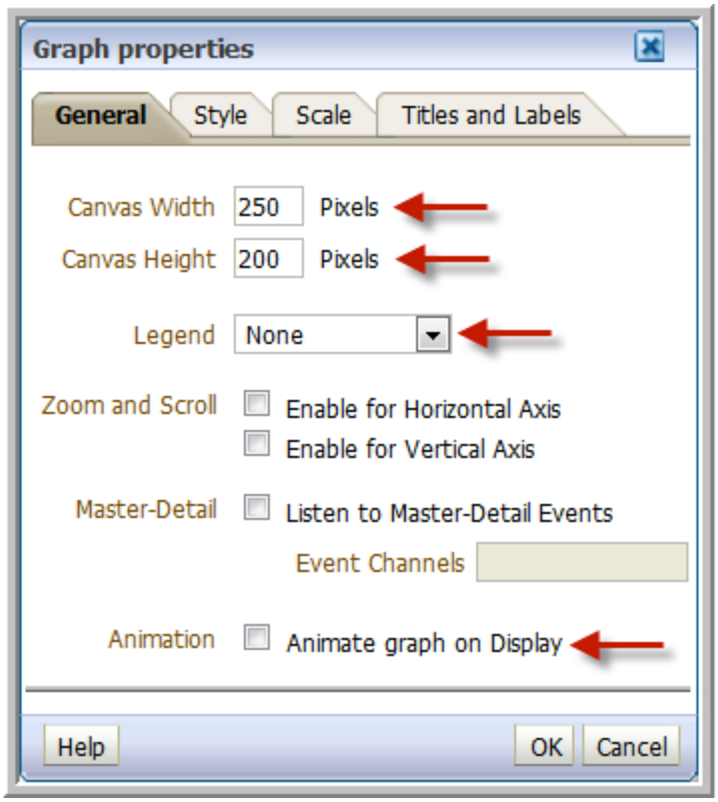


In the following steps, we will make several changes to the graph, including:

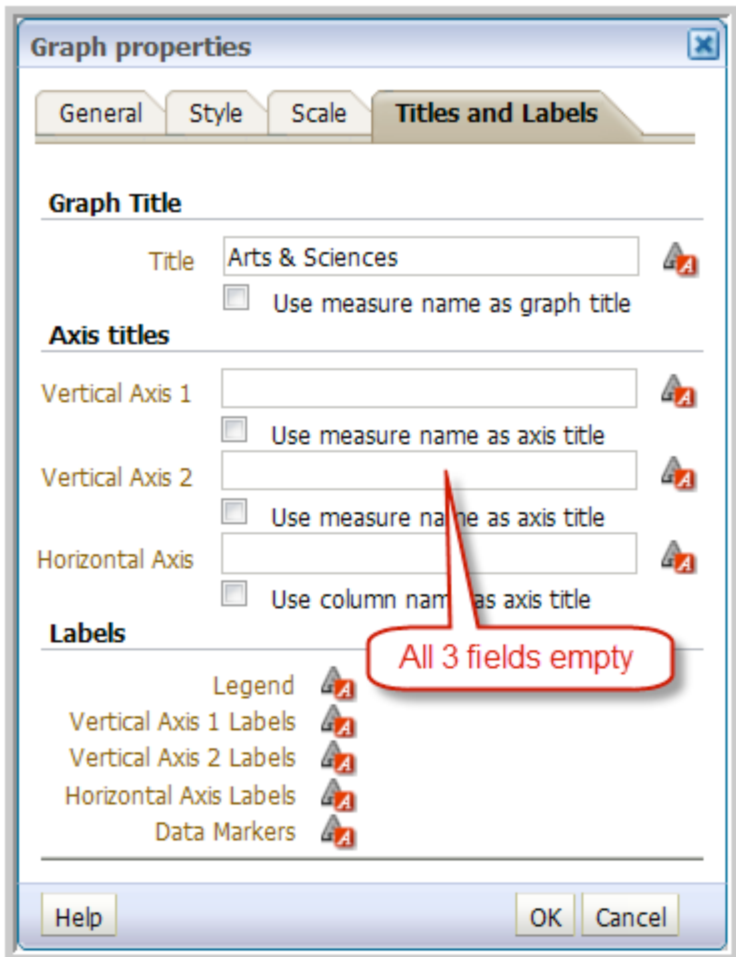
a. Shrink the graph to a size of 250x200 pixels
b. Change the graph title and remove all axis titles
c. Change the display characteristics of the right vertical axis
d. Modify the Graph Properties as shown in each of the following screenshots:
e. Change the background color of the plot area (the space containing the bars and the line), and the background color of the graph canvas (the space around the plot area).

6. Open the Graph Properties  from the toolbar.

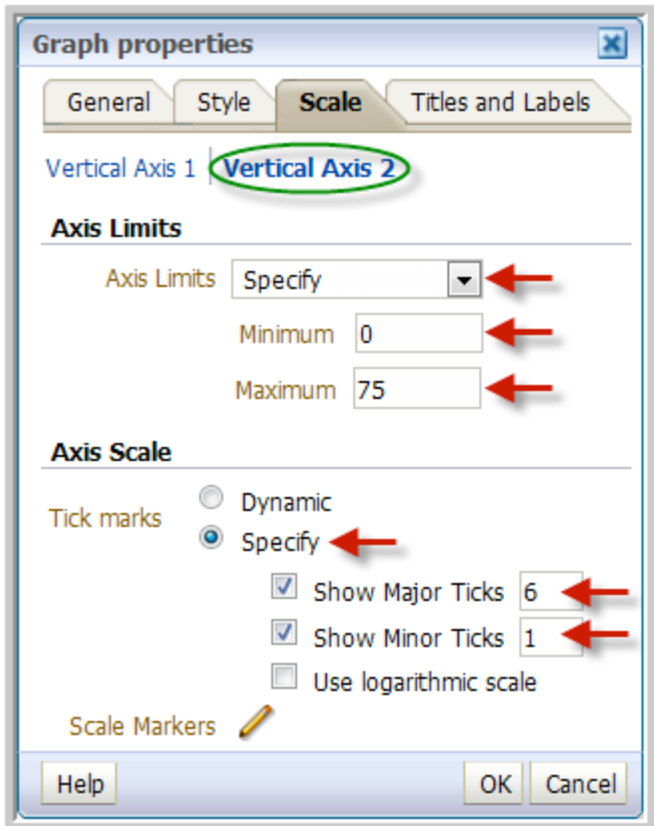
7. Shrink the graph to a size of 250 pixels wide by 200 pixels tall, remove the legend, and eliminate the graph animation. Continue to the next instruction (do not click OK).



8. Change the graph title and remove all axis titles. Continue to the next instruction.



9. Change the display characteristics of the right vertical axis using these two screenshots as a guide, then continue to the next instruction.

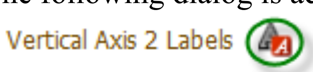


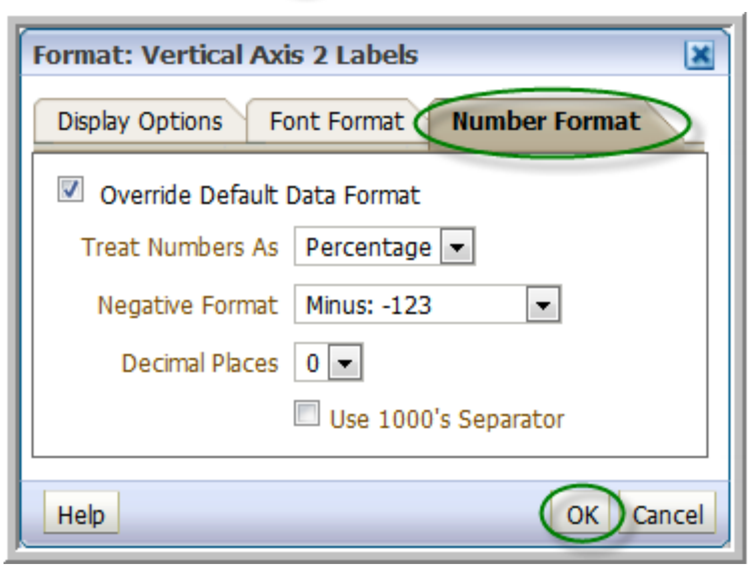
Axis Limits
Major Ticks and Minor Ticks

We would like to see numbered tick marks on this axis, starting with zero at the bottom, ending with 75 at the top, with one numbered (**major)** tick every 15 in between (i.e. 0, 15, 30, 45, 60, 75), for a total of 6 **major** ticks.

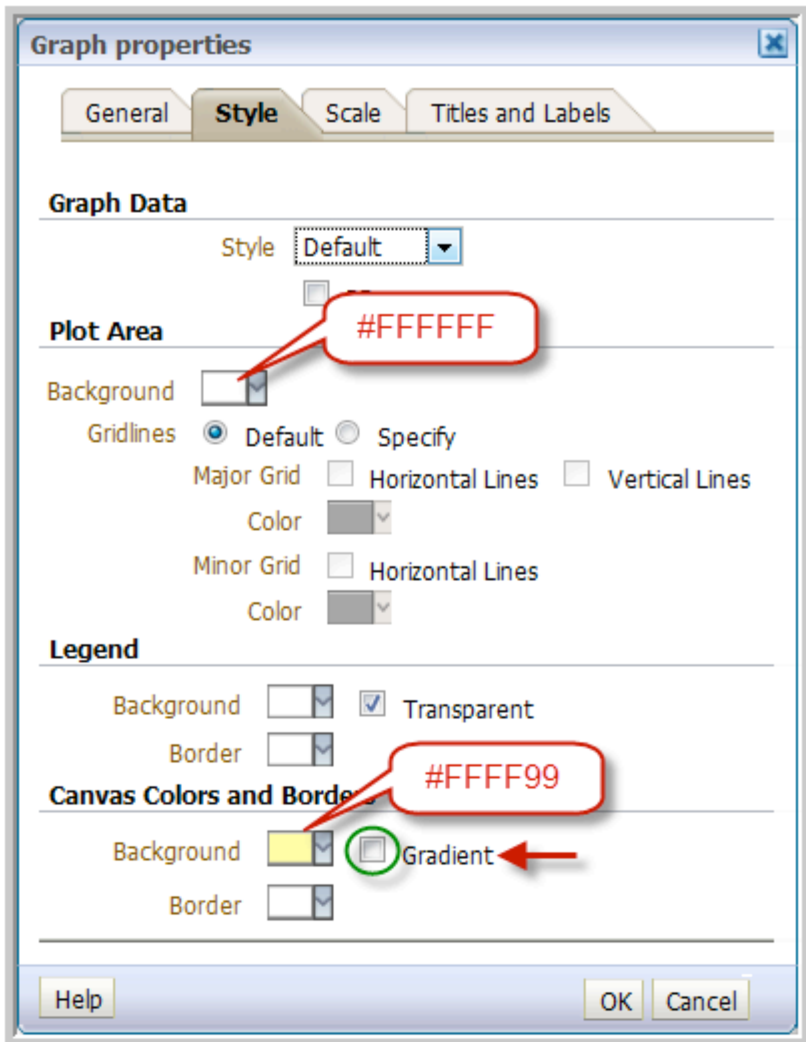
We would also like to see one unnumbered (**minor**) tick mark between each major tick.

The following dialog is accessed under the **Titles and Labels** tab, in its **Labels** section.

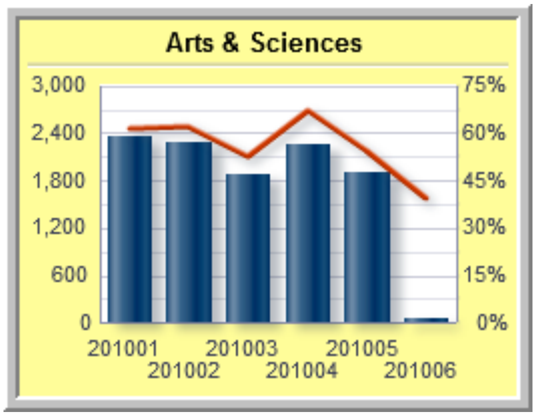




10. Change the background colors of the plot area and the graph canvas, then click **OK** to display the graph results.



11. Compare your results to this screenshot:



12. Click the **Done** button to conclude the editing of this graph.

13. Using the technique learned on page **Error! Bookmark not defined.**, rename the graph to **Arts & Sciences graph**.

14. Now we need a similar graph for the Office of Human Resources. Using the technique learned on page **Error! Bookmark not defined.**, create a **duplicate** of the **Arts & Sciences graph**. When the new graph appears in the editor, remember that even though the name of the view still shows the old value below the Results tab, you are, in fact, editing the new view.

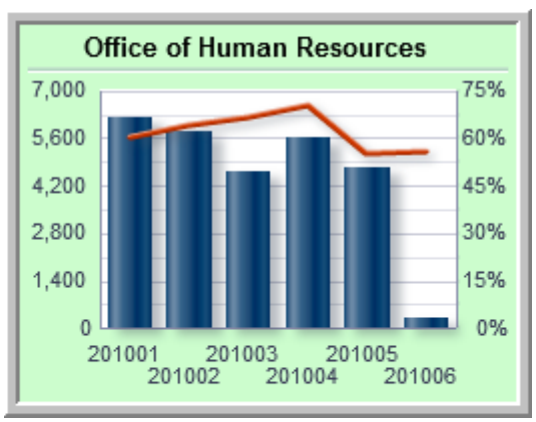
15. Tick the **Show Subject Area Folders** checkbox to see the folder names associated with each of the measure columns.

16. Using the techniques and screens referenced in the previous steps, change this second graph to reflect the following graph characteristics and properties:

    Vertical Axis 1 Measure: Office of Human Resources Corrected Hours
    Vertical Axis 2 Measure: Office of Human Resources Applied %
    Graph Title: Office of Human Resources
    Canvas Background Color: #CCFFCC (a pastel green)
    View Name: Office of Human Resources graph

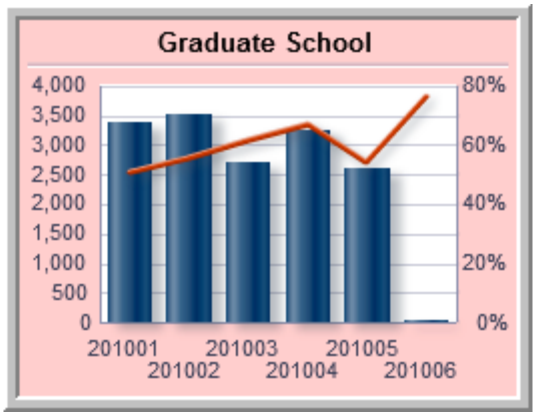
    Note: a bug in the interface is causing the values on the Scale tab to not be stored during the duplication of the original graph. You will need to manually reestablish the Axis Limits (0 to 75) and Major/Minor ticks (6 and 1).

17. Compare your results to this screenshot.



18. Finally, we'll create a third graph for the Graduate School columns. Make a duplicate of the Office of Human Resources graph and change it to match these characteristics:

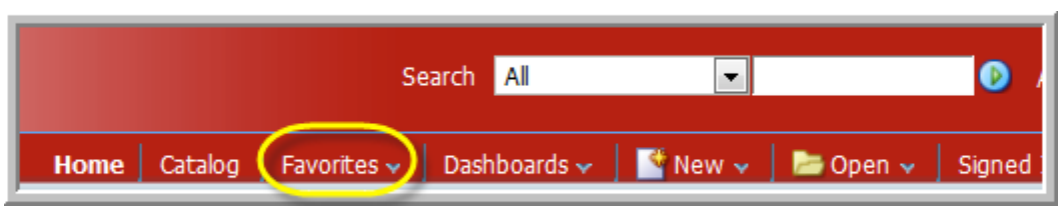
Vertical Axis 1 Measure: Graduate School Corrected Hours
Vertical Axis 2 Measure: Graduate School Applied %
Graph Title: Graduate School
Axis Limits: Minimum: 0 Maximum: 75
Ticks: Major: 5 Minor: 1
Canvas Background Color: #FFCCCC (a pastel red)
View Name: Graduate School graph



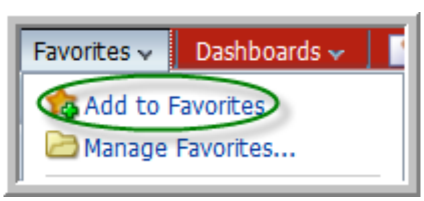
19. Resave the **Column Filters** analysis.

Perhaps this analysis is one that we would like to quickly access in the future. Let's save it as a **Favorite.**

20. Click the **Favorites** link on the toolbar.



21. Select the **Add To Favorites** link.



22. Click the **Add To Favorites** link again to see the saved analysis in the list.

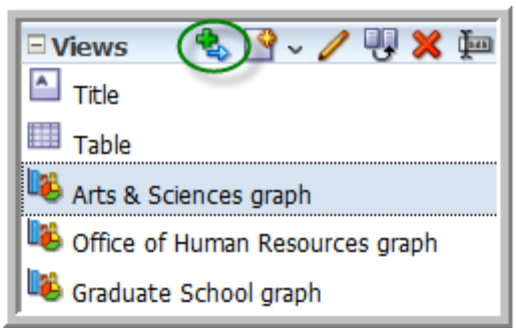
Lesson 5: Compound Layouts

Exercise 5a: Modifying compound layouts

A **Compound Layout** is a view that contains one or more of the other Views created for a single Answers analysis. In this exercise we'll modify the contents of a compound layout.

1. If it isn't already open, open the **Column Filters** analysis for editing. By default, the initial Compound Layout view, consisting of a Title view and a Table view, should be visible on the **Results** tab.

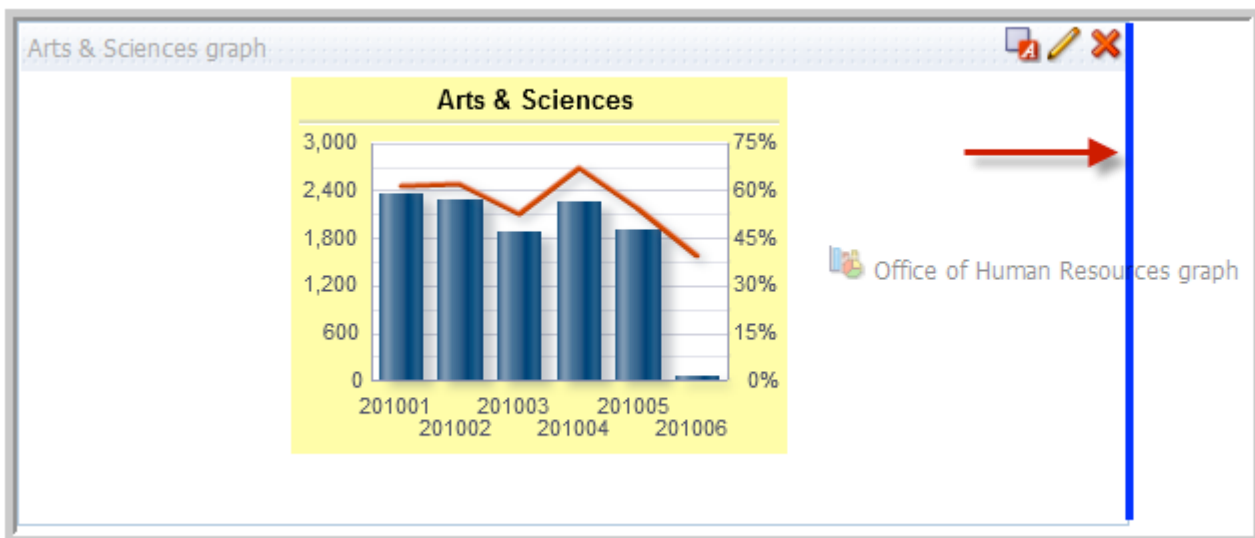
2. In the Views section, click to highlight the **Arts & Sciences graph** view, then click the **Add View**  icon on the Views header. This will add the view to the visible Compound Layout, placing it at the bottom of all other views.

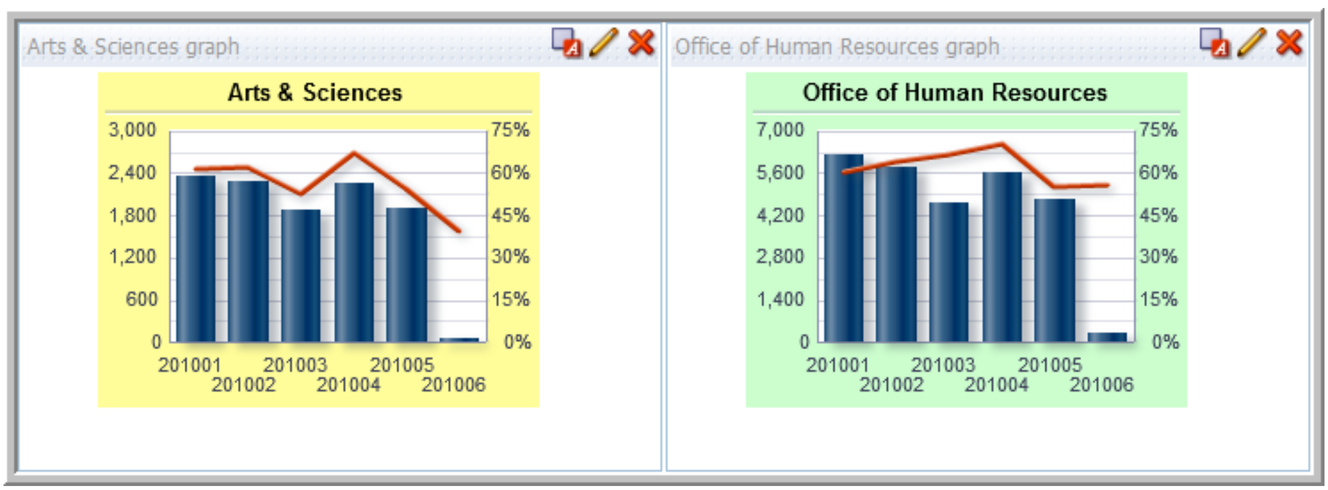
   

   Notice that the Add View icon  is now grayed-out. Whenever the highlighted view is already present in the visible Compound Layout, it cannot be added again.

We also want the other two graphs to be present in this Compound Layout. Instead of using the Add View icon, which places a view below all other included views, we can take control over where the view should be added.

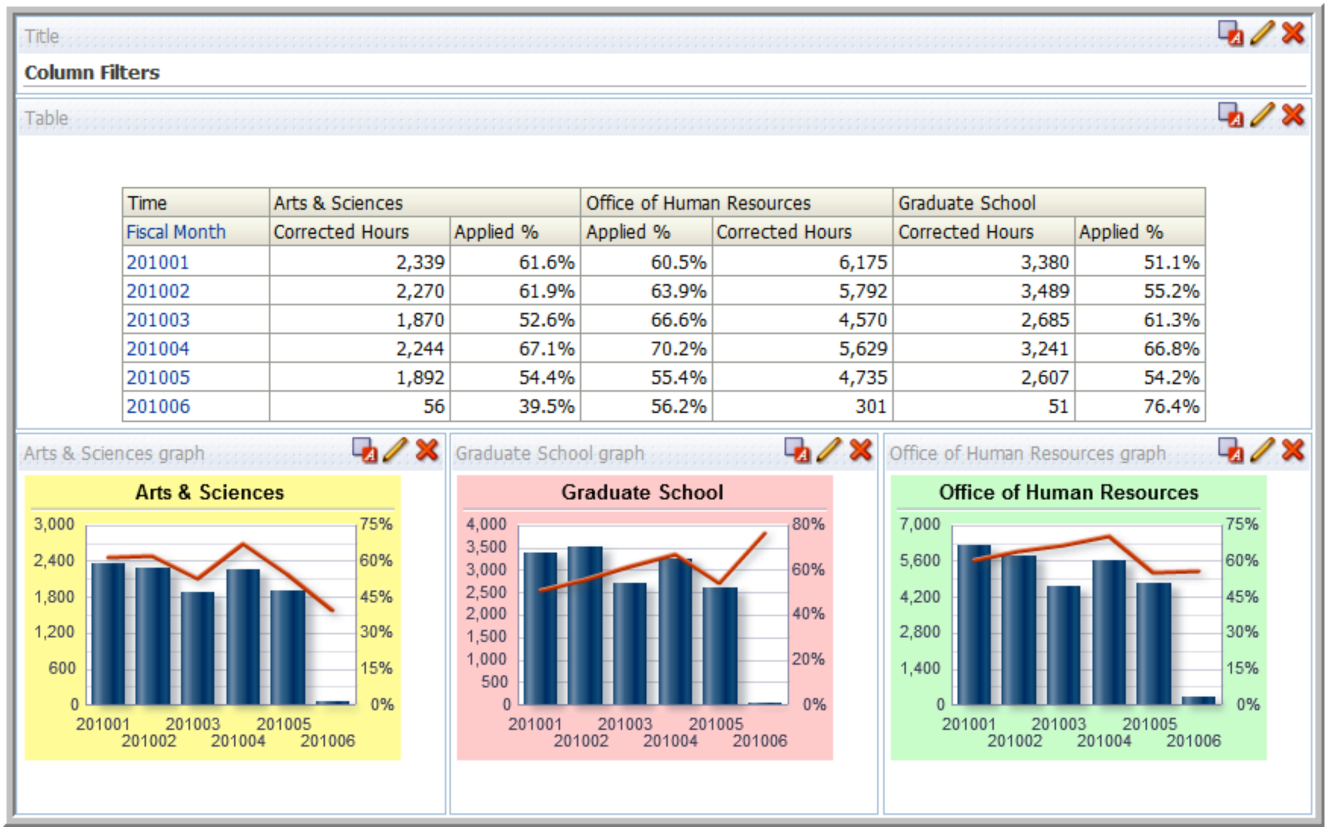
3. Click to highlight the **Office of Human Resources graph** in the Views section, then click, hold, and drag it into the Compound Layout. We want this graph to sit immediately to the right of the **Arts & Sciences graph**. Drag the mouse into the rightmost portion of the Arts and Sciences graph, until you see a bright blue line that extends from the top to the bottom of the Arts and Sciences graph, as shown below. The bright blue line indicates a valid drop point. Release the mouse button, and the Office of Human Resources graph will be dropped at that location.





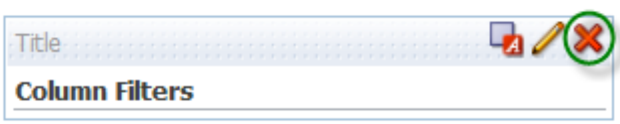
4. Likewise, pick up and drag the Graduate School graph, dropping it between the two existing graphs in the Compound Layout.

5. Compare your Compound Layout view to this screenshot:



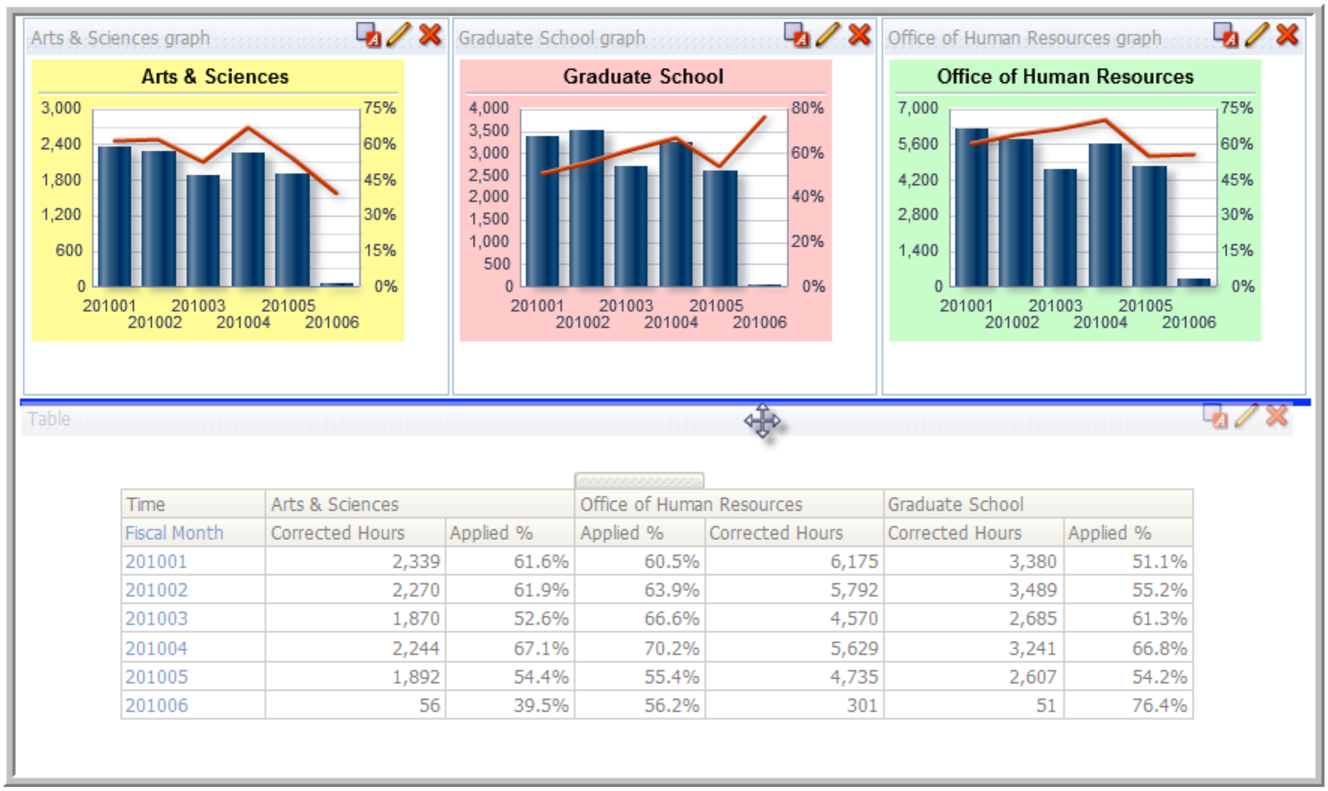
Time	Arts & Sciences		Office of Human Resources		Graduate School	
Fiscal Month	Corrected Hours	Applied %	Applied %	Corrected Hours	Corrected Hours	Applied %
201001	2,339	61.6%	60.5%	6,175	3,380	51.1%
201002	2,270	61.9%	63.9%	5,792	3,489	55.2%
201003	1,870	52.6%	66.6%	4,570	2,685	61.3%
201004	2,244	67.1%	70.2%	5,629	3,241	66.8%
201005	1,892	54.4%	55.4%	4,735	2,607	54.2%
201006	56	39.5%	56.2%	301	51	76.4%

6. If you don't want a particular view to be visible on your Compound Layout View, you may remove it. Click the **Remove View From Compound Layout** icon for the **Title** view to remove it from the Compound Layout.



Note that this ✖ icon performs a different function than the ✖ icon on the Views header. The icon on a header within the Compound Layout removes that view from this Compound Layout. The ✖ icon on the Views header deletes the view entirely from the analysis.

7. Views already present on a Compound Layout may be moved around. Click in the header bar of the Table view, then hold and drag it below the three graphs. When you see the bright blue line extending horizontally across all three graphs, release the mouse button to drop the table view at that location.



Time	Arts & Sciences		Office of Human Resources		Graduate School	
Fiscal Month	Corrected Hours	Applied %	Applied %	Corrected Hours	Corrected Hours	Applied %
201001	2,339	61.6%	60.5%	6,175	3,380	51.1%
201002	2,270	61.9%	63.9%	5,792	3,489	55.2%
201003	1,870	52.6%	66.6%	4,570	2,685	61.3%
201004	2,244	67.1%	70.2%	5,629	3,241	66.8%
201005	1,892	54.4%	55.4%	4,735	2,607	54.2%
201006	56	39.5%	56.2%	301	51	76.4%

You aren't limited to just moving views up and down. You can add and rearrange the views in almost any configuration. Just grab a view's header, drag it until you see the bright blue drop line in your selected location, and release the mouse button to drop it there.

8. Resave the **Column Filters** analysis.

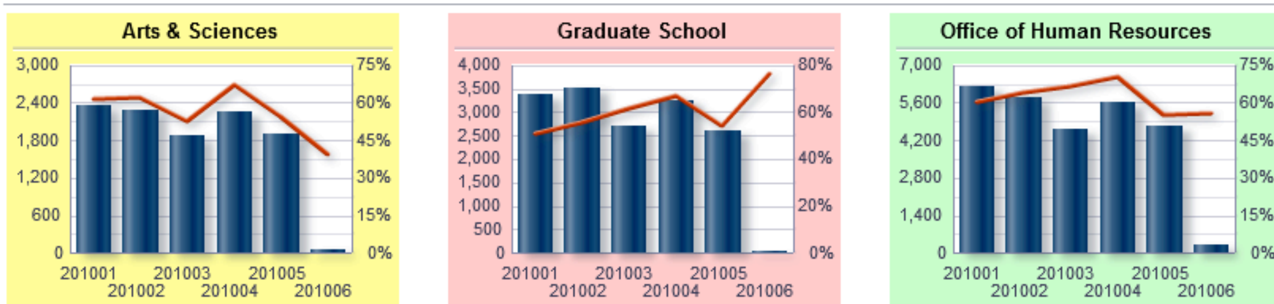
Exercise 5b: Using Dashboard Preview mode

Perhaps we would like to get an idea of what this layout would look like without all of the extra view headers and icons.

1. In the toolbar at the top of the Compound Layout, click the Dashboard Preview icon, circled below:

2. A new browser window should open, displaying the Compound Layout without the extra view headers and icons.

Column Filters



Time	Arts & Sciences		Office of Human Resources		Graduate School	
Fiscal Month	Corrected Hours	Applied %	Applied %	Corrected Hours	Corrected Hours	Applied %
201001	2,339	61.6%	60.5%	6,175	3,380	51.1%
201002	2,270	61.9%	63.9%	5,792	3,489	55.2%
201003	1,870	52.6%	66.6%	4,570	2,685	61.3%
201004	2,244	67.1%	70.2%	5,629	3,241	66.8%
201005	1,892	54.4%	55.4%	4,735	2,607	54.2%
201006	56	39.5%	56.2%	301	51	76.4%

Refresh - Print - Export

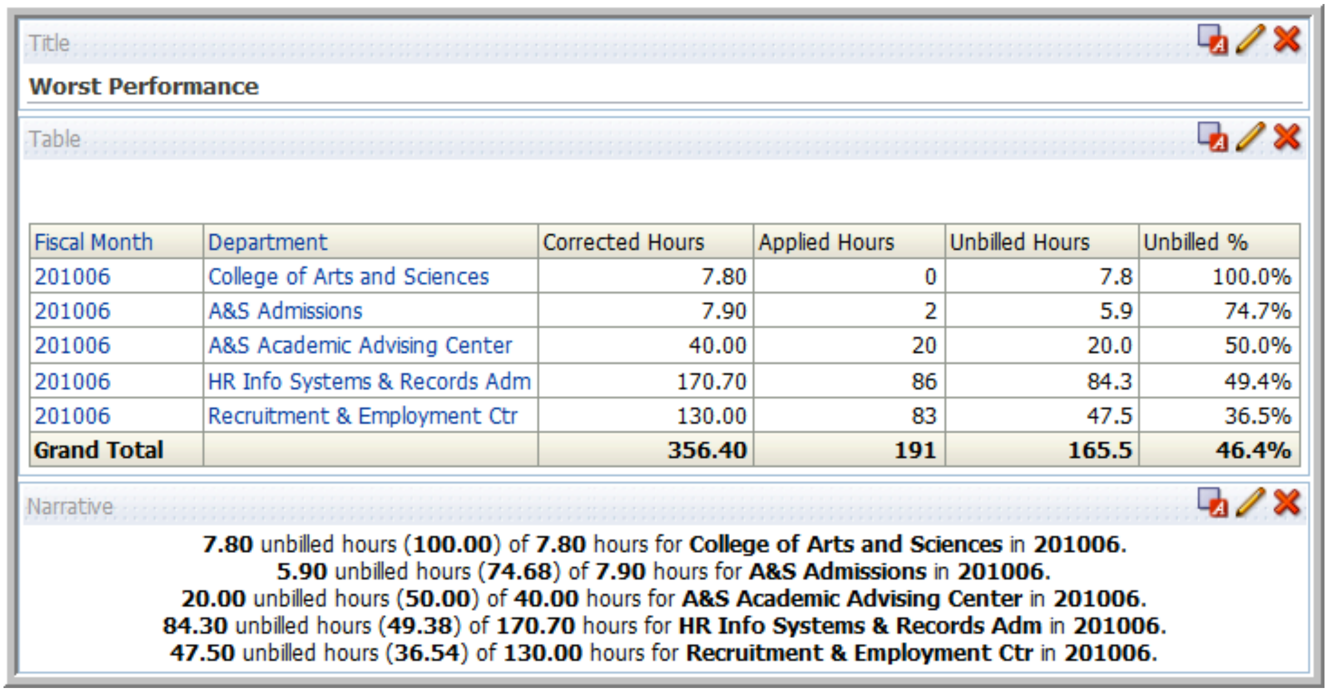
3. Close that new browser window.

Lesson 6: Additional Views

Exercise 6a: Narratives

In this exercise, you will use an analysis created in a previous exercise in creating and formatting a **Narrative View** and assigning a custom **No Results** message. The Narrative view allows you to add text to appear with the results to provide information such as context, explanatory text, or extended descriptions. The custom No Results message, if specified in the analysis, is displayed any time an analysis returns no rows of data.

The end result of this exercise will look like this:



Title

Worst Performance

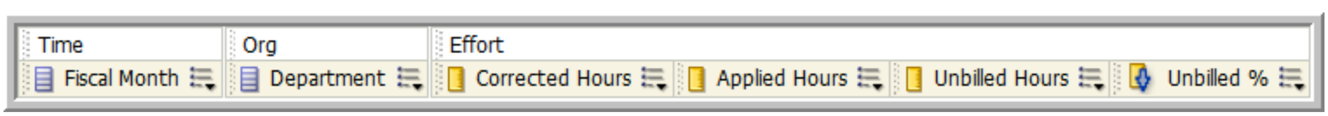
Table

Fiscal Month	Department	Corrected Hours	Applied Hours	Unbilled Hours	Unbilled %
201006	College of Arts and Sciences	7.80	0	7.8	100.0%
201006	A&S Admissions	7.90	2	5.9	74.7%
201006	A&S Academic Advising Center	40.00	20	20.0	50.0%
201006	HR Info Systems & Records Adm	170.70	86	84.3	49.4%
201006	Recruitment & Employment Ctr	130.00	83	47.5	36.5%
Grand Total		**356.40**	**191**	**165.5**	**46.4%**

Narrative

7.80 unbilled hours (**100.00**) of **7.80** hours for **College of Arts and Sciences** in **201006**.
5.90 unbilled hours (**74.68**) of **7.90** hours for **A&S Admissions** in **201006**.
20.00 unbilled hours (**50.00**) of **40.00** hours for **A&S Academic Advising Center** in **201006**.
84.30 unbilled hours (**49.38**) of **170.70** hours for **HR Info Systems & Records Adm** in **201006**.
47.50 unbilled hours (**36.54**) of **130.00** hours for **Recruitment & Employment Ctr** in **201006**.

1. Open the previously saved **Worst Performance** analysis, and select the Criteria tab, which should look like this. Rearrange your columns to match this screenshot (if different).



2. Note the order of the columns. You'll need to know the order of the columns when you build the Narrative. For example, Fiscal Month is column #1, Applied Hours is column #4, and so forth.

3. Select the **Results** tab.

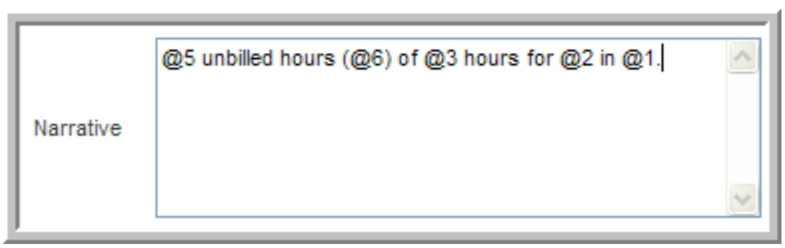
4. In previous exercises, we've clicked the New View icon located on the Views header. This icon creates the view and immediately opens it for editing, but does **not** automatically add it to the compound layout.

5. Click the New View icon located on the toolbar above the Compound Layout.

6. From the dropdown list, select the **Other Views** option, and select **Narrative** as the view type. The new Narrative view is created and automatically added to the Compound Layout below all other views, but is not automatically brought into the editor.

7. Notice that the **Narrative** view is listed in the **Views** section at the left of the screen. Open this view for editing, using either of the techniques learned earlier on page **Error! Bookmark not defined.**.

8. In the **Narrative** field, type the following:
@5 unbilled hours (@6) of @3 hours for @2 in @1.

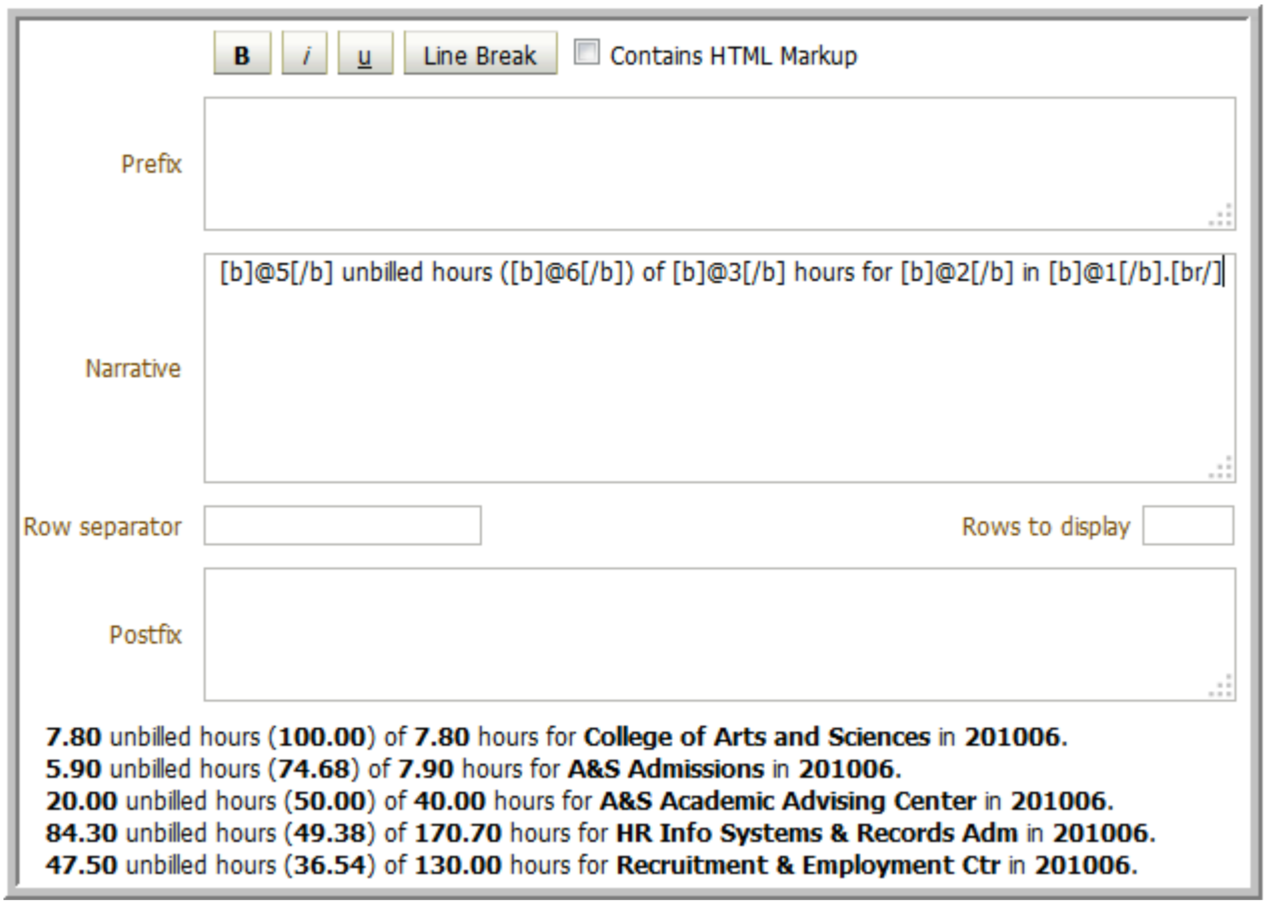


The narrative is a combination of text and analysis column values. In this example, @3 refers to the **third** column in the analysis (Corrected Hours), @2 refers to the **second** column (Department), and so forth.

To highlight (bold) the selected column values in the narrative, highlight (mouse select) **@5** in the narrative and click the **Bold** B icon. This adds bold HTML tags to the results. Also add **bold** tags to all of the other column references in the same manner.

9. Below the entry fields, you'll see the current results of the Narrative. Right now, there are no line breaks, resulting in one long, difficult-to-read string. Move your cursor to the end of the narrative text (the period) and click the **Line Break** button.

10. Your results should look like this:



Helpful Hint: You can include HTML tags in many of your view descriptions and headings, including the Narrative, Title, and Static Text views. For example, you can change font colors, styles, and so forth, by clicking the **Contains HTML Markup** checkbox and typing any kind of HTML into the Prefix, Narrative, and Postfix areas of the narrative view.

Helpful Hint: You can control the number of row values returned in the Narrative view by setting a value in the **Rows to display** field. By default, all queried rows are displayed.

11. Click **Done** to conclude editing the Narrative view. Since we used the Add View icon located on the toolbar, it is already present in the Compound Layout.

Title

Worst Performance

Table

Fiscal Month	Department	Corrected Hours	Applied Hours	Unbilled Hours	Unbilled %
201006	College of Arts and Sciences	7.80	0	7.8	100.0%
201006	A&S Admissions	7.90	2	5.9	74.7%
201006	A&S Academic Advising Center	40.00	20	20.0	50.0%
201006	HR Info Systems & Records Adm	170.70	86	84.3	49.4%
201006	Recruitment & Employment Ctr	130.00	83	47.5	36.5%
Grand Total		**356.40**	**191**	**165.5**	**46.4%**

Narrative

7.80 unbilled hours (**100.00**) of **7.80** hours for **College of Arts and Sciences** in **201006**.
5.90 unbilled hours (**74.68**) of **7.90** hours for **A&S Admissions** in **201006**.
20.00 unbilled hours (**50.00**) of **40.00** hours for **A&S Academic Advising Center** in **201006**.
84.30 unbilled hours (**49.38**) of **170.70** hours for **HR Info Systems & Records Adm** in **201006**.
47.50 unbilled hours (**36.54**) of **130.00** hours for **Recruitment & Employment Ctr** in **201006**.

12. Resave the **Worst Performance** analysis.

Helpful Hint: One excellent use for the Narrative View is as an alternative to the Title View. You have the flexibility to include HTML in the Narrative View where that feature is not available in the Title View.

In a Narrative View that is used as the title in a compound layout, consider using the HTML "**span**" tag. The <Span> tag can be used to show the name of the analysis when a user moves the mouse over the text of the Narrative. In the Example below, the text **Corrected Hours by Project** will be visible in the Narrative view, while the name of the saved analysis, **Corrected Hours by Project** (inside the tag), will appear in a small popup box (i.e. hover) when the user pauses the mouse on the **Project Corrected Hours** text.

Example

****Project** Corrected Hours

Exercise 6b: No Results message

When an analysis returns no results (for example, if there were no Departments with poor values of Unbilled %, OBIEE would, by default, display a screen that says "**The specified criteria didn't result in any data**." which might lead the user to believe that the analysis was faulty.

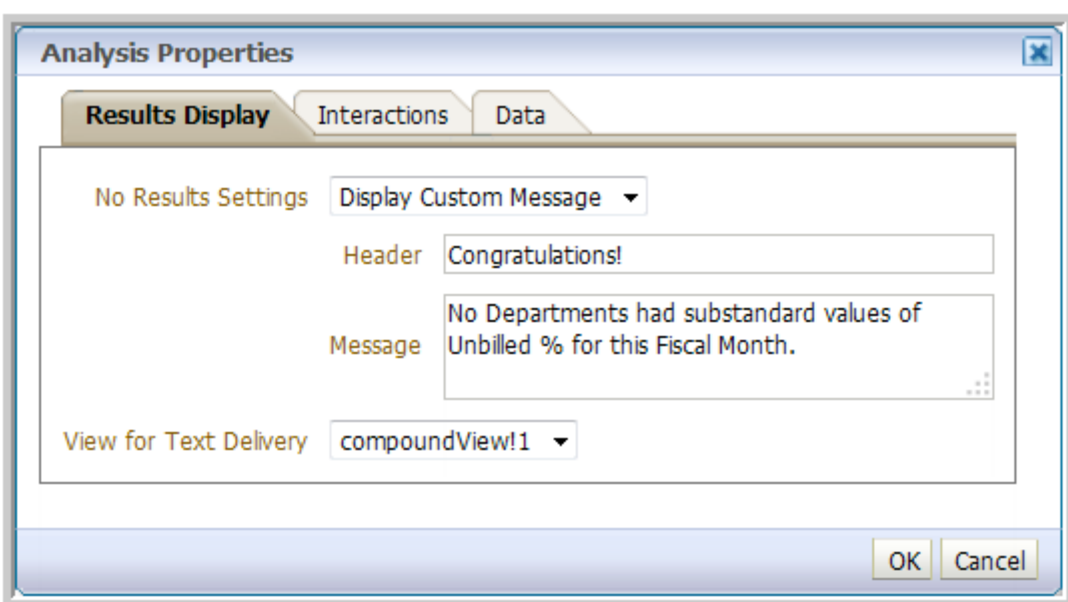
If there are no rows which meet the selection criteria, we'd like to display a controlled message. That message is created using the **No Results** message.

This can reduce support calls: if a user gets NO data returned, they might be confused or think there is an error. But using this technique, they'll receive a message confirming that there really **should** be no data.

1. The **No Results** message is a **property** of the Analysis. Click the **Analysis Properties** icon from the toolbar above the Compound Layout.

2. In the Analysis Properties dialog, choose **Display Custom Message** from the **No Results Settings** dropdown.

3. Type **Congratulations!** as the Headline, and **No Departments had substandard values of Unbilled %** for this **Fiscal Month**. as the Text. Click **OK** to close the dialog.



4. So that we can see the No Results view in action, let's force our analysis to return no rows. Return to the Criteria tab, and add a test filter to the **Unbilled %** column, specifying a filter condition of **is greater than 1000.**

5. **Return to the Results tab.** Since **Unbilled %** should never be greater than 100%, you should see the custom No Results message.

6. Return to the Criteria tab and remove the test filter.

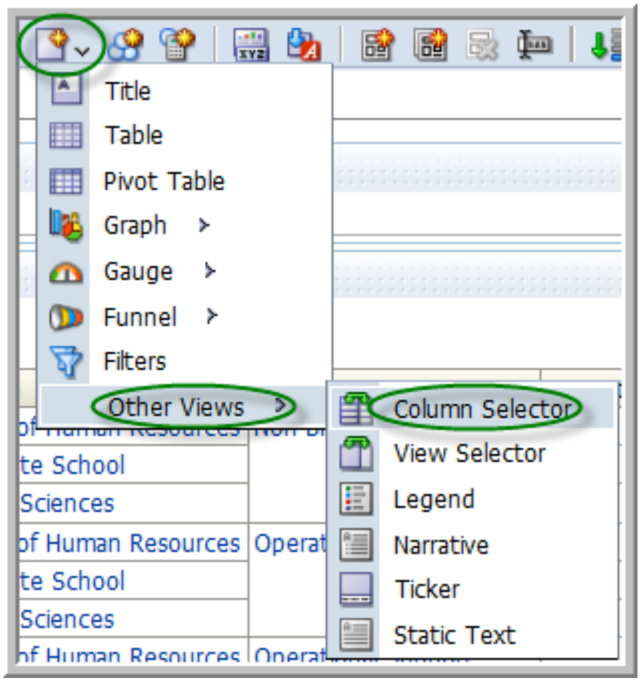
7. Resave the **Worst Performance** analysis.

Exercise 6c: Column Selectors

Column selectors allow users to select from a group of columns, substituting and swapping columns in their analyses for comparative analysis.

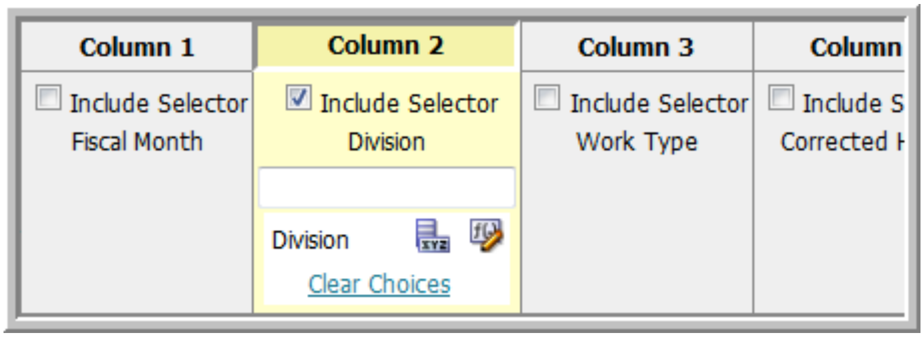
1. **Edit** the **Presidential Recap** analysis.

2. On the **Results** tab, use either of the New View icons (your choice) to add a Column Selector view. The Column Selector view is located under the **Other Views** flyout option.



3. If necessary, open the Column Selector in the editor. Depending on which New View icon you used (Views section or Toolbar), the Column Selector will have either:
   a. Been added to the Compound Layout but not opened for editing (Toolbar); or,
   b. Been opened for editing but not added to the Compound Layout (Views section)

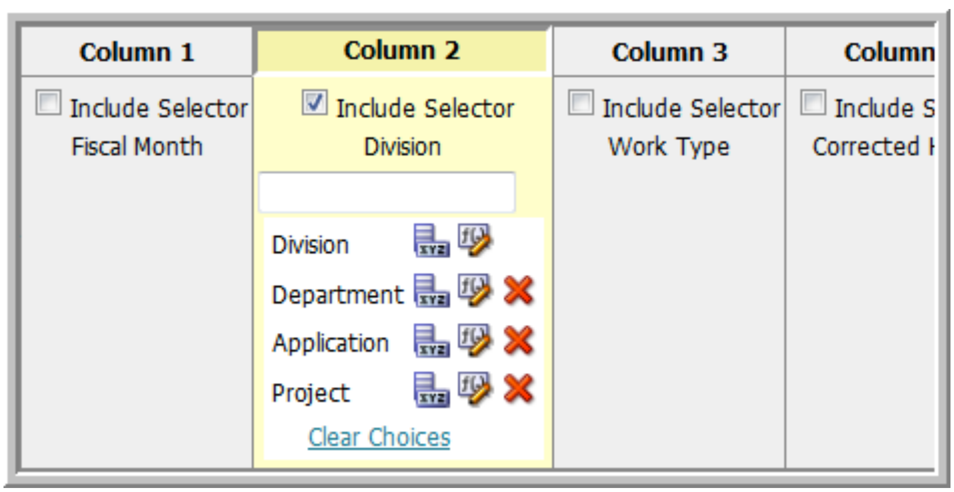
4. Select the **Include Selector** option for Column 2, currently Division. The column will be highlighted in yellow. Any columns that are added in the next step will be added to the yellow highlighted column.



5. From the Subject Areas selection panel, drill into the appropriate folders and double-click on each of the following columns to make them available in the Column Selector:

Folder	**Column**
Org	**Department**
Project	**Application**
Project	**Project**

Your Column Selector in the results pane should look like this:

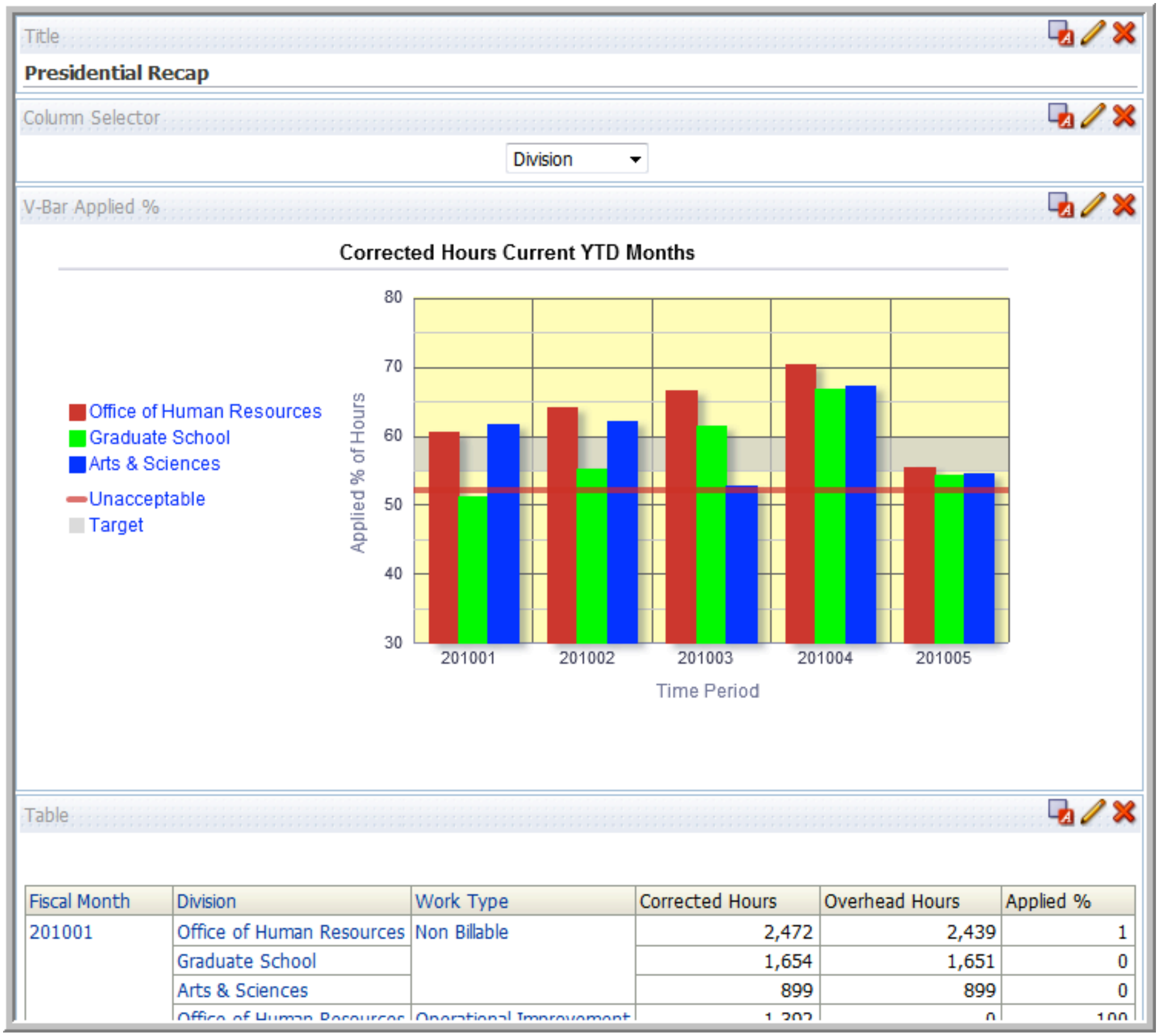


6. Click **Done** to conclude editing the Column Selector view.

7. Add (or move) the Column Selector view above the Table view in the Compound Layout view, using the techniques learned on page **Error! Bookmark not defined.**.

8. Add the **V-Bar Applied %** view to the Compound Layout, between the Column Selector and Table views.

9. Compare your results to this screenshot:



10. In the Column Selector dropdown, select a different value from the column selector, and notice that not only does the table change, but the graph elements related to that column have changed as well.

11. Resave the **Presidential Recap** analysis.

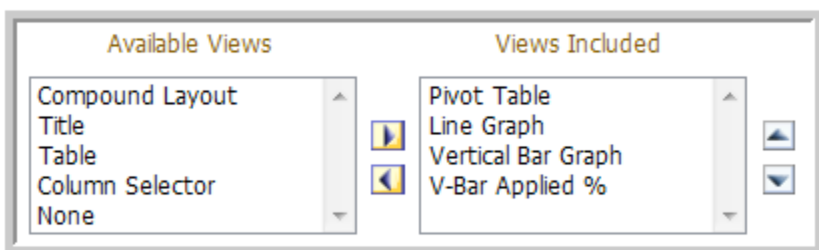
Exercise 6d: View Selectors

In contrast to a **Compound Layout** that simultaneously displays ALL Views on a single page, **View Selectors** “stack” the Views one “behind” the other, to allow users to quickly navigate between the different Views, to display only one at a time. For example, you can view different graphs of the same data or quickly navigate to a pivot table to do trend analysis.

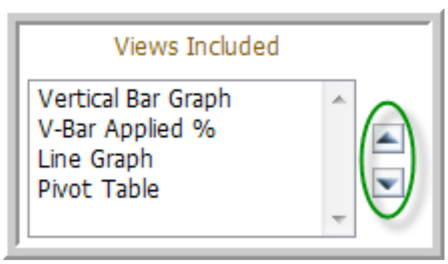
1. Still working with the **Presidential Recap** analysis, add a **View Selector** view, located under the Other Views flyout option (as were the Narrative and the Column Selector).

2. In the View Selector design workspace, select the Pivot Table, Line Graph, Vertical Bar Graph, and V-Bar Applied % views in the Available Views field (you may use CTRL + Click to select multiple views if you wish).

3. Click the **Move Right** icon to add the selected views into the Views Included field.



4. One at a time, highlight the views in the Views Included box, and use the Move Up and Move Down buttons to arrange the views in the list as shown here:



5. Click **Done** to conclude editing the **View Selector** view.

6. Remove all views from the Compound Layout except for the **Column Selector** view by clicking the **close** icon at the top right of their sections. Leave only the **Column Selector** view in the compound layout.

7. Add the **View Selector** view to the Compound Layout.

8. Experiment with changing the Column Selector and the View Selector to various combinations.

9. Resave the **Presidential Recap** analysis.

Lesson 7: Variables and Dashboard Prompts

This class has been designed to provide the knowledge and tools necessary to use OBIEE ad hoc Answers to its fullest potential. This particular lesson on Dashboard Prompts is not intended as a preparation to start developing dashboards, but rather an overview of basic OBIEE Dashboard functionality and its design potential.

Each functional business area will typically authorize one or two people to develop 'official' reports and dashboards for distribution to a set of end users. Functional offices have control over "publishing" in OBIEE, with a functional QA Administrator who will oversee development and govern migration of new or revised reports and dashboards from OBIEEDEV to OBIEETEST, and then on to OBIEEPROD.

Exercise 7a: Variables

Although knowledge of the three types of variables in OBIEE isn't strictly required in order to build analyses and/or dashboards, such knowledge is useful. In this exercise, we'll define and discuss the three types of variables in OBIEE: Repository variables, Session variables, and Presentation variables.

Variables: Definition

A **variable** is nothing more than a single piece of information stored for later use. It may be a character string, a number, or a date. It must be a simple, one-cell object: one string, one number, or one date.

When imagining variables, it is helpful to think of three shelves on the wall. Each shelf is a different color (red, silver, or purple), and each shelf holds some number of paper cups of the same color as the shelf. Each paper cup has a label on the outside, and a small slip of paper inside, on which is written a character string, number or date.

The top shelf is red, and holds red cups. Each of those red cups has a label on it, and inside each red paper cup is a slip of paper with a character string, a number, or a date on it. Those red paper cups represent **Repository** variables. The label on the outside of the cup is the **name** of the Repository variable, and the single piece of information on the slip of paper inside of the cup is the **value** of the Repository variable.

Similarly, there is a silver shelf, on which sit silver paper cups with labels, each paper cup containing a slip of paper with a single piece of information. The silver cups on the silver shelf represent **Session** variables.

Finally, there is a purple shelf with purple cups, each with a slip of paper with a single piece of information, each representing a **Presentation variable.**

Repository Variables

Repository variables (the red cups) are created and populated by the OBIEE Administrator as part of the metadata repository. Values of repository variables are reset on a regularly scheduled basis, and cannot be changed by any user. The value of any given repository variable (i.e. the string, number, or date on the piece of paper in the labeled red paper cup) is the same for all users. The date of the most recent data load would be an example of a repository variable.

Session Variables

Session variables (the silver cups) are also created by the OBIEE Administrator as part of the metadata repository. The values of session variables are established when a user logs in to OBIEE, and the same session variable may have a different value for each user.

There are two “flavors” of system variables:

System session variables: User ID, the user’s data security groups, and the user’s web catalog group(s) are all examples of system session variables. These variables are not eligible to be changed by any user.

Non-system session variables: These are variables which are defined by the OBIEE administrator for whatever purpose may be required. The administrator may allow users to change the values of any or all session variables. The user’s office location might be an example of a session variable that may not be changed by the user. System variables defined for population by dashboard prompts and subsequently used as filter criteria would be examples of session variables that **may** be changed by the user. After their initialization during the user’s session login, populating such system variables can **only** be accomplished with a dashboard prompt.

Presentation Variables

Presentation Variables are created by, and exist only in the context of, a Dashboard Prompt. The values of Presentation variables may be used as filtering conditions for any analyses on the dashboard(s) on which the dashboard prompt is present. The use of a dashboard prompt is the **only** way to create a presentation variable.

There is no way to just “create and populate a variable” for use in OBIEE. It must be defined in the repository or on a dashboard prompt.

Dashboard Prompts vs. Column Filter Prompts

In an earlier lesson, we learned how to create Column Filter Prompts, which can be used to provide users with a filtering and selection mechanism in the absence of a dashboard. If an analysis isn’t intended for deployment to a dashboard, the Column Filter Prompt method of filtering an analysis is the proper mechanism to use. Dashboard prompts are used when deployment of an analysis on a dashboard is desired.

Dashboard Prompts

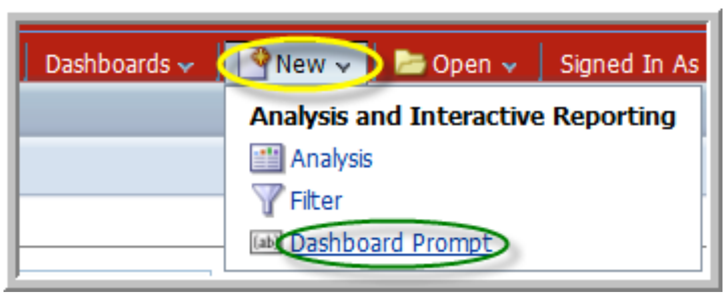
Dashboard Prompts are used in conjunction with Answers analyses in which one or more Answers Filters are set to "is prompted", or which feature a filter condition based on the values of one or more Presentation variables. For example, an Answers analysis might require the user to select a Fiscal Month from a list of all values, whereupon the Answers analysis would display data for that Fiscal Month. That list of all values can be included in an object known as a **Dashboard Prompt,** which requires the Answers analysis to have an "is prompted" filter on the Fiscal Month column.

The prompt we are about to create can be included on one or more Dashboards, and can be used to control the scope of analyses on an individual dashboard page, or an entire dashboard.

Exercise 7b: Filtering using Presentation Variables

In this exercise, we'll create a dashboard prompt in which our users will enter two numbers to be stored into two Presentation Variables. We'll then create an Answers analysis with a filter that returns only those rows in which Corrected Hours falls between our two input values. Presentation Variables are created using the optional **Set Variable** field in a dashboard prompt.

1. Create a new Dashboard Prompt using the New icon on the toolbar at the top of the OBIEE Answers screen. Select **Dashboard Prompt** from the dropdown list.



2. As was the case when creating an analysis, a dashboard prompt is sourced from a single Subject Area. Select the **Training** Subject Area as the source for this dashboard prompt.

   When you get additional Answers access to other Subject Areas, those will appear in this drop down list, just as they will in the Answers Subject Area list on the default Answers page.

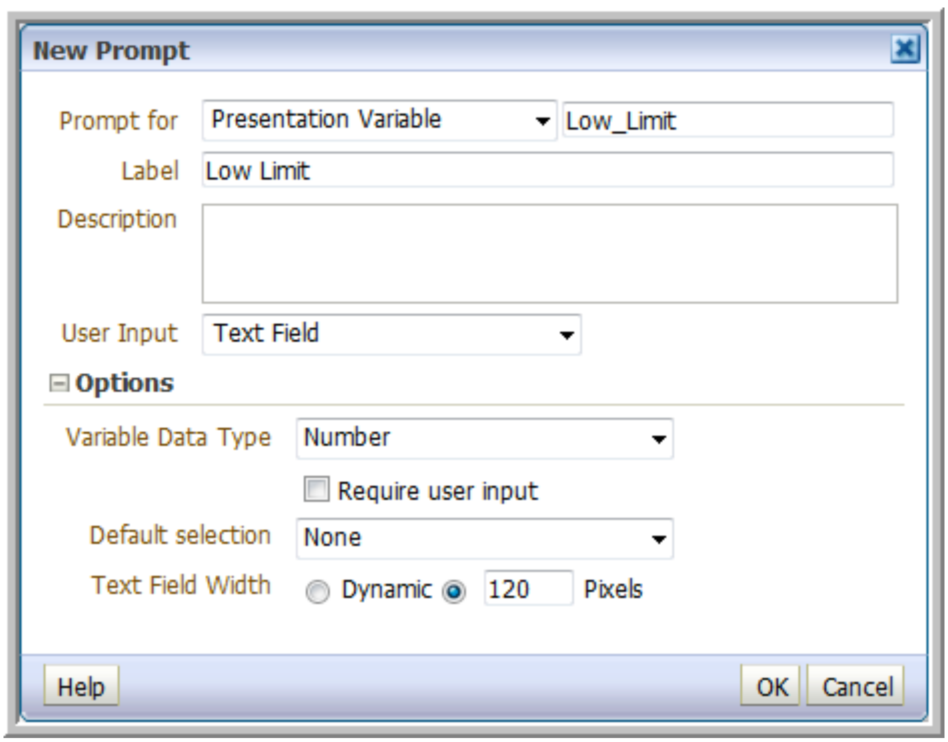
3. This dashboard prompt will populate two **Presentation Variables**, based on the user's input into two dashboard prompt boxes. Click the green sign at the top right to begin the creation of a new prompt.

This particular prompt will be a **Variable Prompt**. Variable Prompts permit us to present the user with data entry boxes, as opposed to Column Prompts which display a list of values from a particular column (such as Fiscal Month) for the users to choose from.

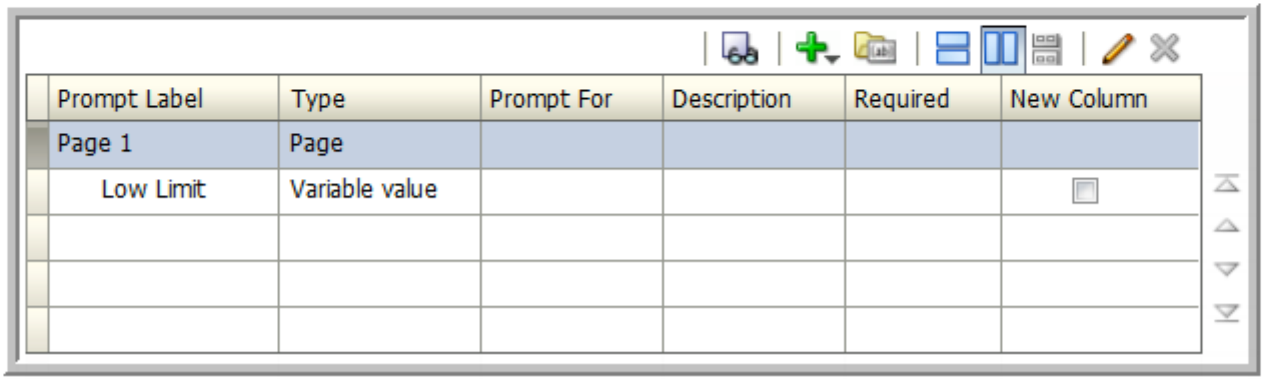
4. Select **Variable Prompt** from the dropdown list.

5. Create the Prompt as shown in the screenshot below, then click **OK**. The key features of this Dashboard Prompt are:

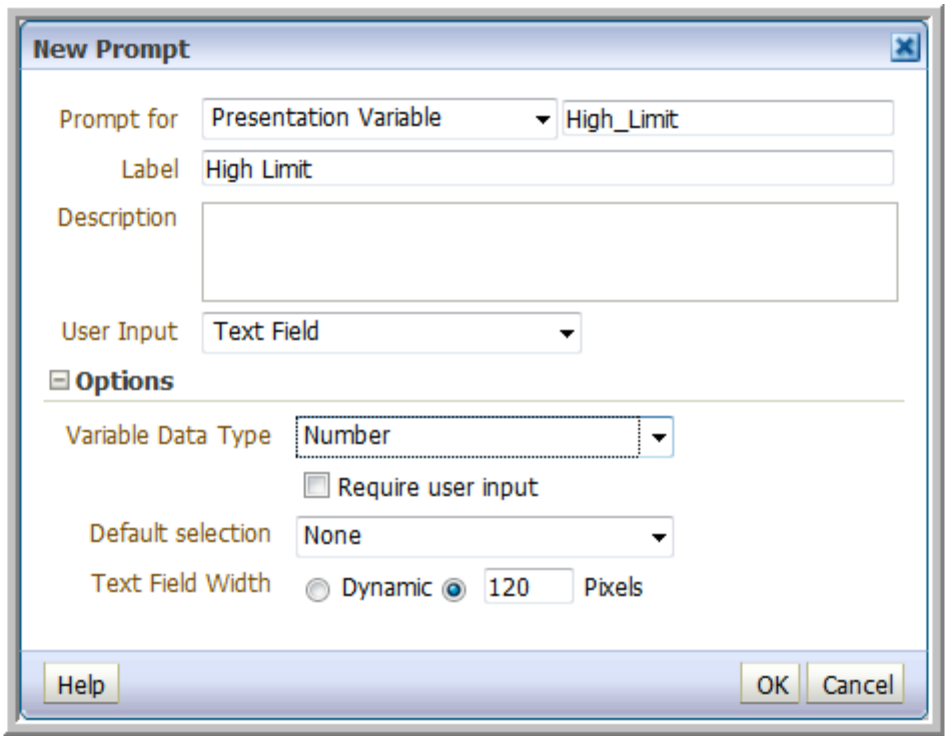
    a. The user's entry will be stored in a Presentation Variable called **Low_Limit**.
    b. The words **Low Limit** will be displayed above the data entry box.
    c. The User Input is a **Text Field**, a simple field that accepts typed values.
    d. The Variable Data Type is a number. Only digits 0-9 are allowed in this prompt.



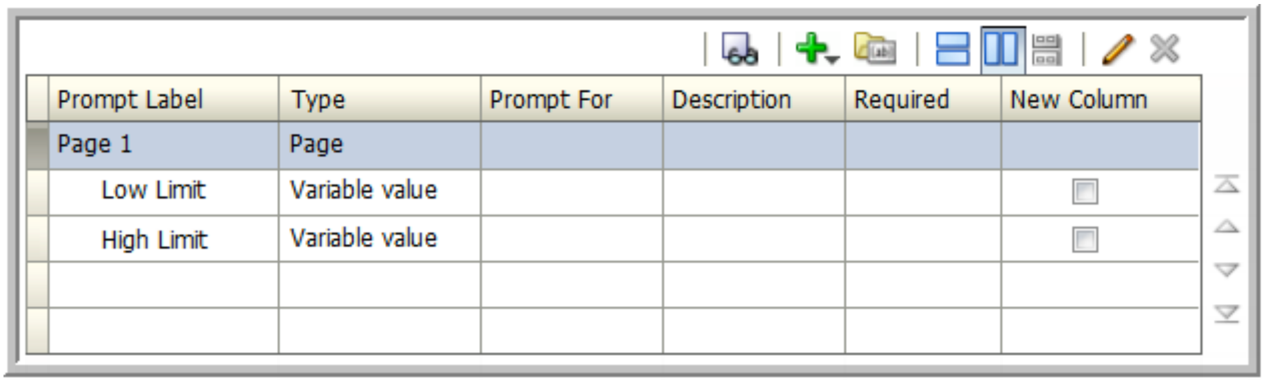
6. Compare your results to this screenshot:



7. Starting with the green  again, add another Variable Prompt, with these characteristics:



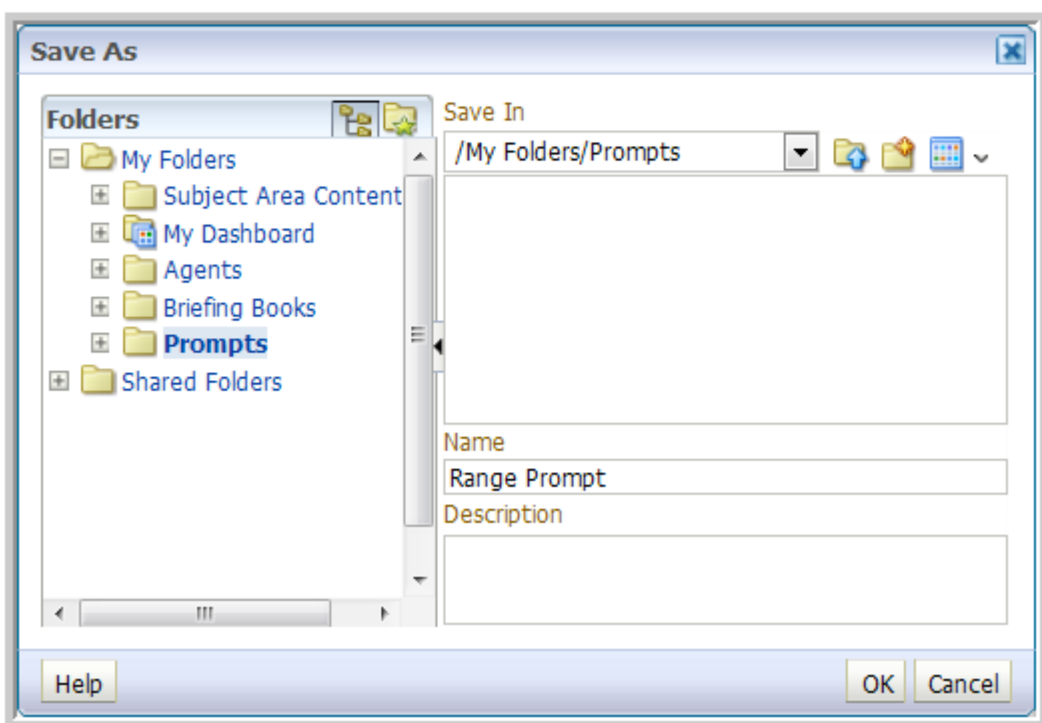
8. Compare your results to this screenshot:



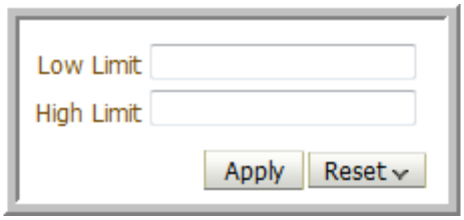
9. Use the Save icon to save this re-usable prompt in **My Folders**, in a **NEW subfolder** called **Prompts**.

★	This is a Cornell **Best Practice** for organizing all of the objects in **My Folders**

a. In the Save As dialog box, use the **New Folder** icon at the top to create Prompts.
b. Double-click the new Prompts folder in the list.
c. Save your new Dashboard Prompt in that subfolder as **Range Prompt.**



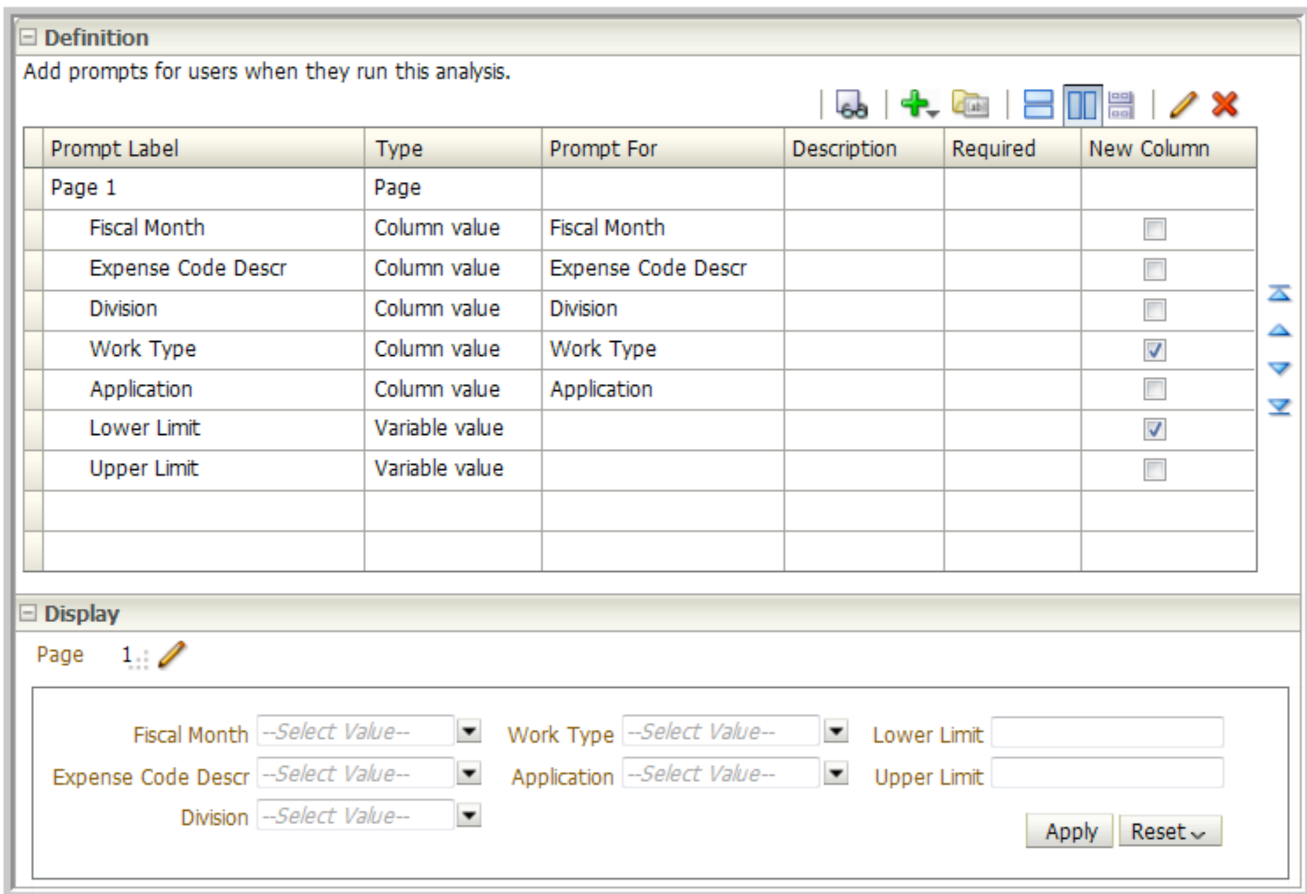
10. View the Display section at the bottom of the screen. Notice that the two prompt entry boxes are arranged one above the other. This is the default behavior in OBIEE 11g.



11. Also notice the toolbar at the top right of the Definition section at the top of the screen. Notice that the icon for the Column-based Layout is currently highlighted. This is causing the prompts to be arranged in one vertical column.
12. Let's switch to a Row-based Layout, in which the prompts are laid out side-by-side. Click the Row-based Layout icon. Now the prompts should be side-by-side on one row.

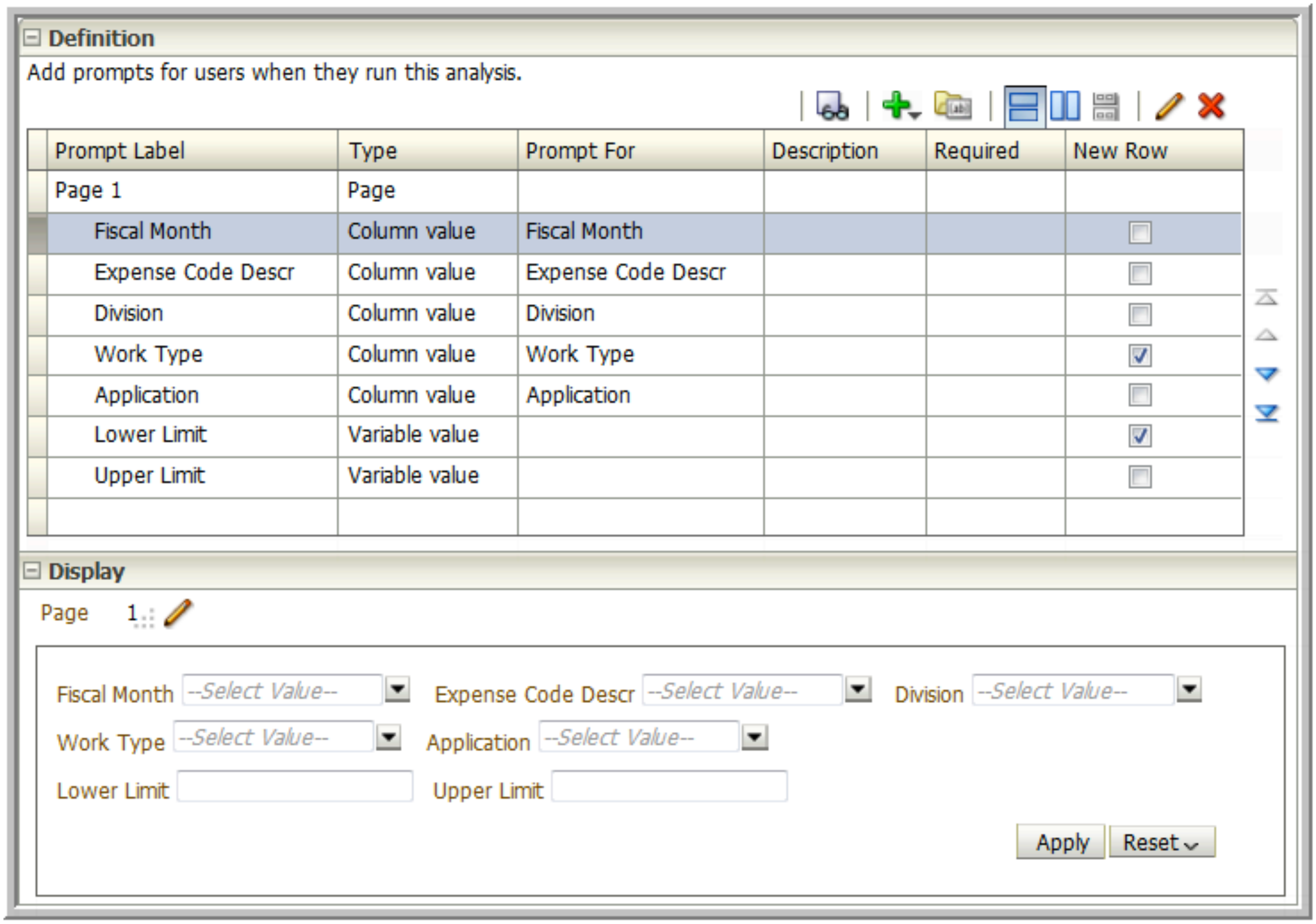
New Row or **New Column**: By default, prompts for all of the prompts within a single dashboard prompt will appear on one row, or one column, depending on which icon is clicked, as shown above. If a checkbox under New Row or New Column is checked, it means that a new row or column should be started with that prompt.

This example dashboard prompt contains five Column Prompts and two Variable Prompts.



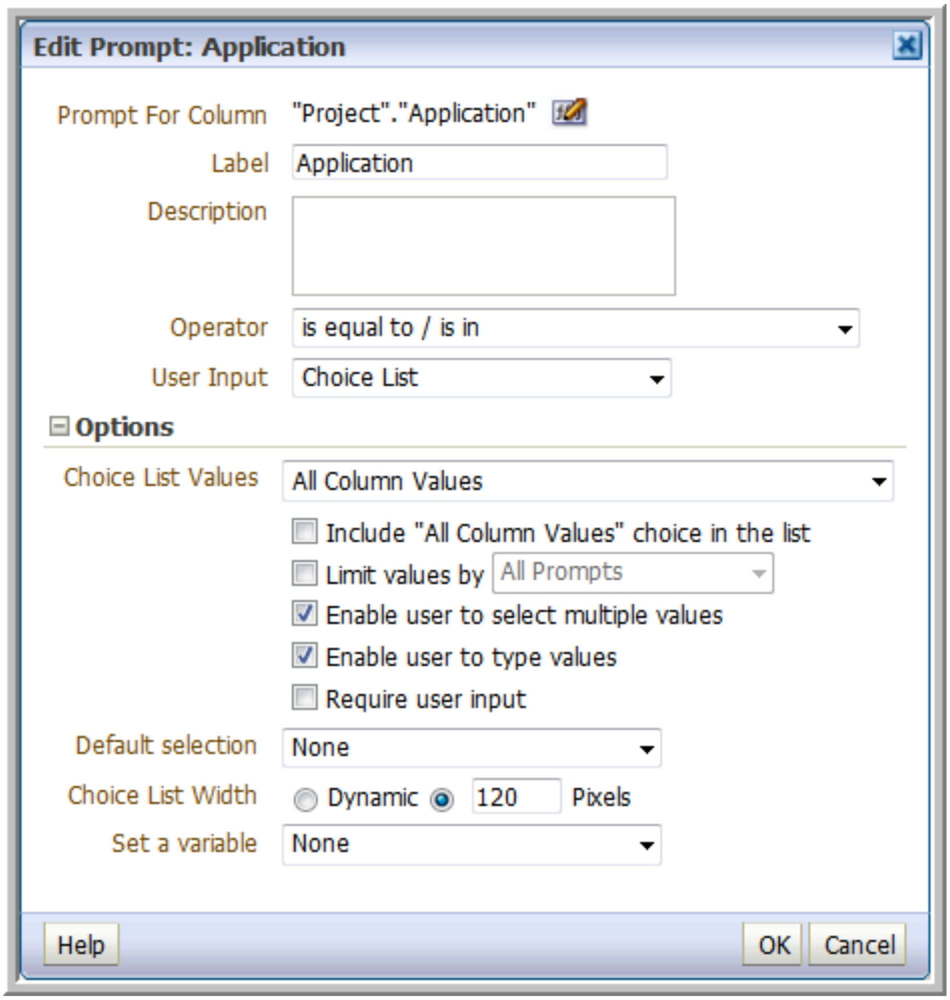
In this example, the Column-based Layout icon is selected. By default, all 7 of these prompts will be arranged vertically, in one column. But notice that under the **New Column** heading there are two checkboxes ticked, one for Work Type, another for Lower Limit. Notice that in the Display section, the Work Type prompt starts a new column, as does the Lower Limit prompt.

The same example dashboard with a default Row-based Layout is shown here.



By default, all prompts would be arranged on a single row. Notice that a new row is started with the Work Type prompt and with the Lower Limit prompt, because of the ticked checkboxes.

Let's examine the options available to us on the Edit Prompt dialog.



Label: The text shown above the prompt box.

Operator: There are many different operators to choose from. While **is equal to / is in** is the most frequently used, some of the other commonly used values include:

- is not equal to / is not in;
- is greater than
- is less than
- is between
- contains

User Input: The type of selection mechanism. There are five options available:

- Choice List: A simple dropdown list of values to choose from.
- Text Field: The user types a selection into the field
- Check Boxes: The user can select one or more values from a list of check boxes.
- Radio Buttons: The user can select one value from a radio button list.
- List Box: Similar to the Choice List, except that the available values are shown on the left side of a selection dialog, and the selected values are shown on the right.

Values: Which values are displayed to the user? Some of the options here include:

- All Column Values – display all values of the specified column
- Specific Column Values – display only specifically named values of the column
- SQL Results – display only those values returned as the result of a logical SQL statement. For example, the SQL statement
  select "Org"."Work Type" from Training where "Effort"."Corrected Hours" > 500
  would return a limited set of Work Types for display in the prompt.

Include "All Column Values" choice in the list
Not only would the list include the values specified in the Values area, it would also have an additional **All Choices** value at the top of the list, allowing the user to quickly select all values.

Limit values by
This option allows us to display only relevant values of some prompts based on other prompts. For example, we might want to select values of Work Type, then only see values in the Application prompt that are related to those Work Types. If so, we would tick the **Limit values by** checkbox for the Application prompt, and specify that its values should be limited by the user's selections from the Work Type column prompt.

Enable user to select multiple values
If only one value may be selected from a prompt, this checkbox would not be ticked.

Enable user to type values
This option allows users to type values for selection. This is most effectively implemented with columns containing short values, such as Fiscal Months. Since searches and matches are case sensitive, allowing this option for longer values might not be very productive.

Require User Input
When this option is selected, users cannot click the Apply button to execute the prompt query until they have selected a prompt value. An asterisk displays to the left of the prompt label to indicate that the prompt is required.

Default selection: There are five possible options for the **Default to** condition:

- None: No default is specified.
- Specific Value: A specified, hard-coded value.
- All Column Values: This option is only available when the **Include "All Choices" choice in the list** option is selected. Select this option to specify the "All Choices" default value for the prompt.
- Server Variable: The value of a Repository Variable or Session Variable will be the default. For a session variable, prefix the name with NQ_SESSION, such as NQ_SESSION.USER.
- SQL Results: The results of a SQL statement.
- Variable Expression: references to reserved (system) session variables, including:
    - @{system.currentTime}
    - @{system.productVersion}
    - @{session.locale}
    - @{session.language}
    - @{session.loginTime}
    - @{session.logoutTime}
    - @{session.lastAccessTime}
    - @{session.currentUser.id}
    - @{user.homeDirectory}
    - @{user.id}
    - @{user.displayName}

Selection Value Width:

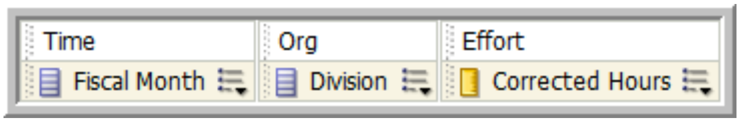
- Dynamic: Let OBIEE determine the width of the check list, radio buttons, etc… based on the widths of their contents.
- # Pixels: Display the list of values at a fixed number of pixels, concatenated on the left.

Set a Variable: The two possible values are **Presentation Variable** and **Request Variable**

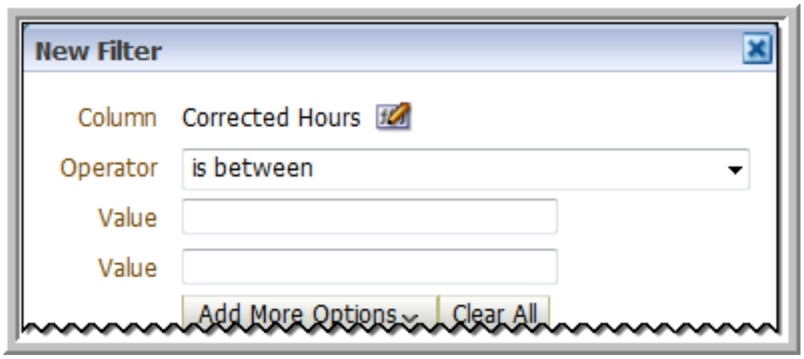
- **Presentation Variable:** A variable that is created by the dashboard prompt
- **Request Variable:** The name of a Session Variable.

Turn to the next page to continue with the dashboard prompt/analysis exercise.

13. Create a new analysis with the Fiscal Month, Division, and Corrected Hours columns:



14. Begin a filter for the Corrected Hours column, using the **Is Between** operator



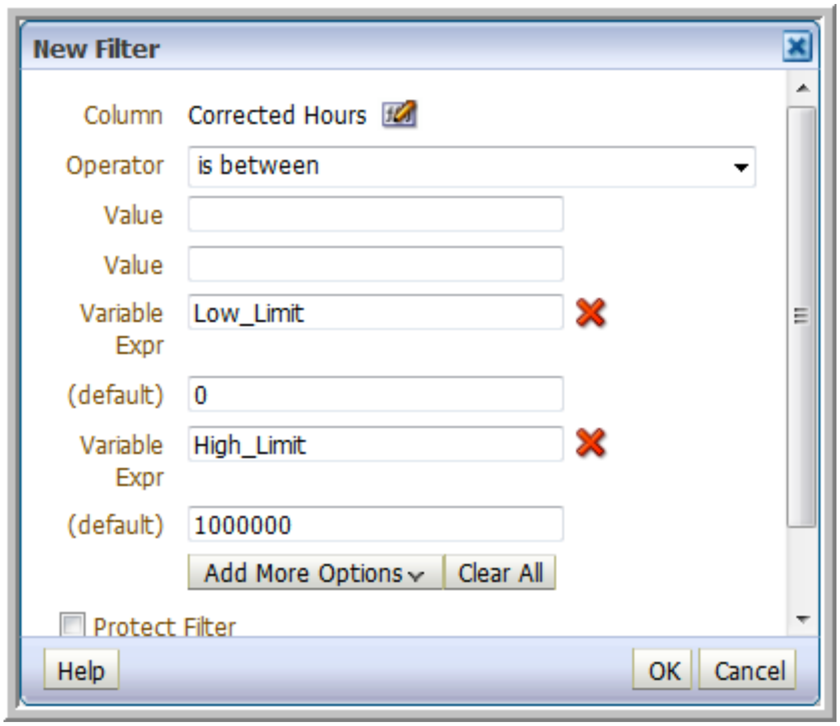
15. As you learned in an earlier lesson in which you used Repository Variables, entry boxes on the filter dialog that are labeled **Value** will use the literal character strings entered there. Since we want to use our two Presentation Variables as the lower and upper bounds of our filter, click in the first **Value** box and click the **Add More Options** button.

16. Select **Presentation Varible.**

17. In the field labeled **Variable Expr**, type type **Low_Limit.**

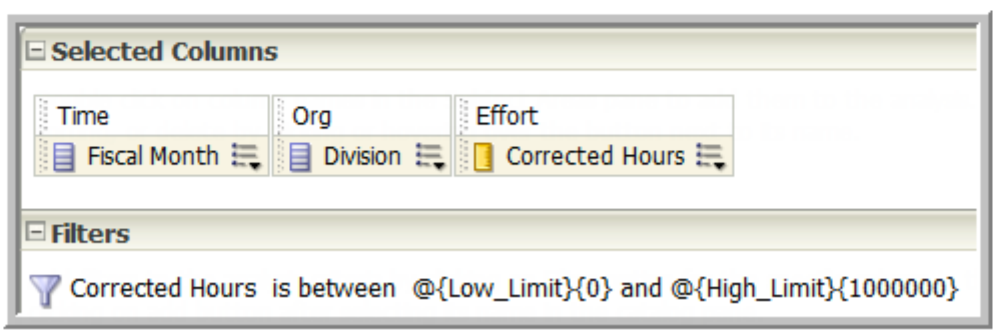
18. In the field labeled **(default)**, type **0** (zero).

19. Repeat the previous 4 steps for the second Value field, using the High_Limit presentation variable with a default of 1,000,000.



20. Click OK to complete the definition of the new filter.

21. The finished Critieria tab will look like this:

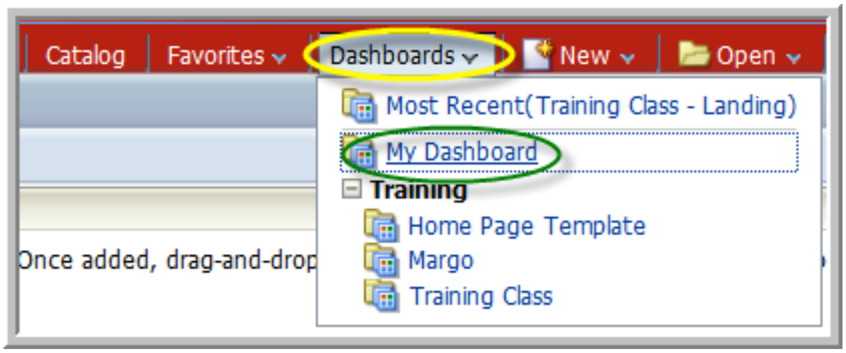


22. Save the analysis in **My Folders** as **Ranged Results.**

Now let's put the Dashboard Prompt and the Answers analysis together on a dashboard page and see what happens.

★	***CAUTION: In the real world, dashboard development never begins in My Folders.***

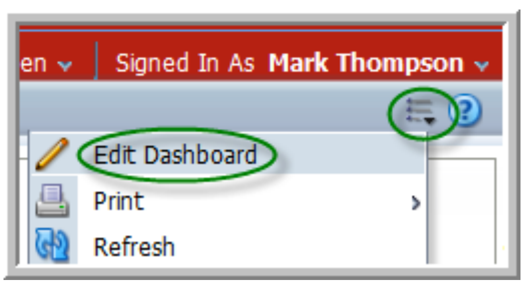
23. Click on the **Dashboards** link in the toolbar, and select My Dashboard.



Note: **My Dashboard** is your own personal dashboard space, to be used for whatever purpose you desire. Nobody else can see or alter your **My Dashboard**. You cannot explicitly share access to your **My Dashboard**. It is exclusively assigned to you, in your personal workspace.

The list of shared dashboards that you see below the My Dashboard link may vary, depending on the access rights granted to you by the administrators of the system based on your needs.

24. At the top right of the page, underneath your sign-in name, click the **Page Options** button, then **Edit Dashboard.**



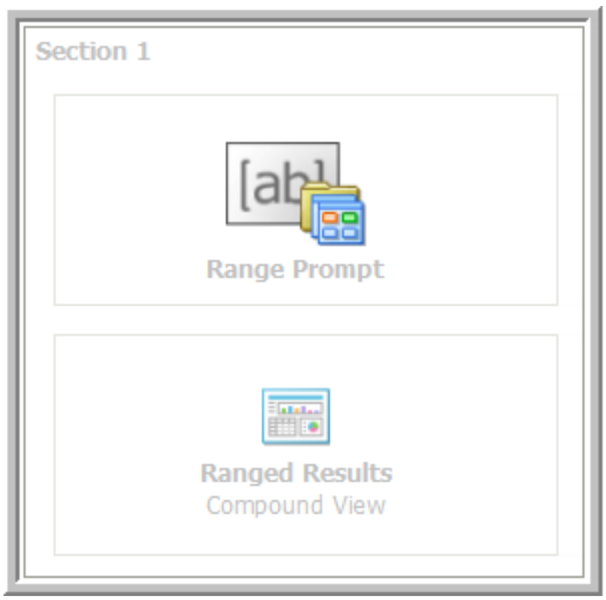
25. From the toolbar above the empty design canvas, click the **Add Dashboard Page**  icon, and enter **Range** as the page name. Click **OK**.

26. On the left side of the screen, drill down into **My Folders**.

27. Drill further into the **Prompts** folder.

28. Grab and drag the Range Prompt object to the right, dropping anywhere on the empty design canvas.

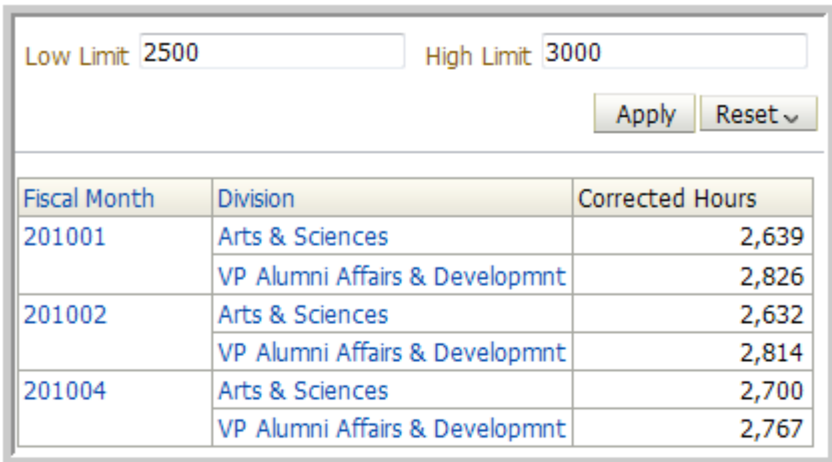
29. Further down in the My Folders list, grab and drag the **Ranged Results** object, dropping it directly below the Range Prompt placeholder. Make sure to drop Ranged Results **inside** Section 1 by placing the mouse directly onto the bottom border line of Section 1, and release the mouse button when you see the border around Section 1 turn yellow.



30. Click the **Save** button to save the dashboard page.

31. Click the Run button to view the results.

32. Test the interaction between the analysis and the dashboard prompt by entering values into the Low Limit and High Limit fields, and clicking the Apply button.



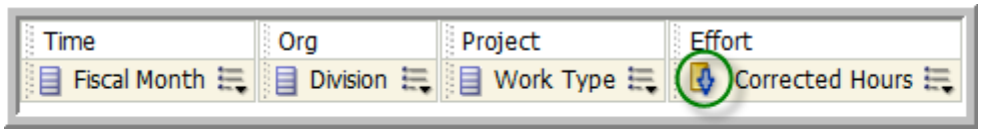
Fiscal Month	Division	Corrected Hours
201001	Arts & Sciences	2,639
	VP Alumni Affairs & Developmnt	2,826
201002	Arts & Sciences	2,632
	VP Alumni Affairs & Developmnt	2,814
201004	Arts & Sciences	2,700
	VP Alumni Affairs & Developmnt	2,767

Exercise 7c: Filtering for a combined X% of a group

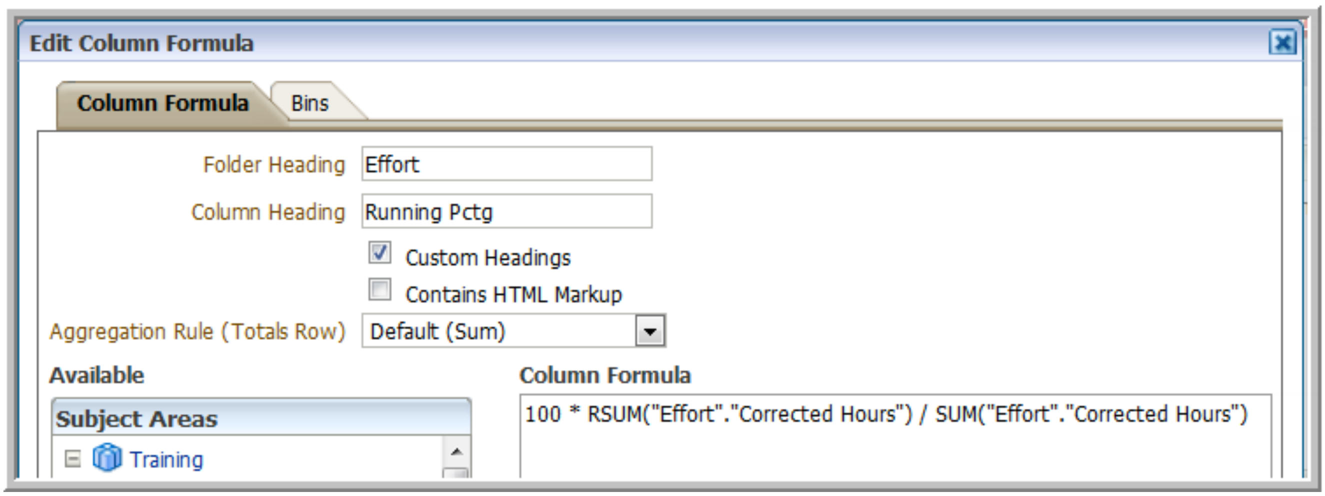
In this exercise, we use a filter to help us display only those rows which comprise the top X% of Corrected Hours, where X is input into a dashboard prompt by the user.

Let's start with a new Answers analysis.

1. Create this new Answers analysis with the Fiscal Month, Division, Work Type, and Corrected Hours columns, sorting by Corrected Hours in descending order as shown.



2. Add any column to the analysis, such as Corrected Hours again, then change its formula and Customize its Column Heading as shown below. Refer to page **Error! Bookmark not defined.** for a refresher on modifying and creating column formulas.



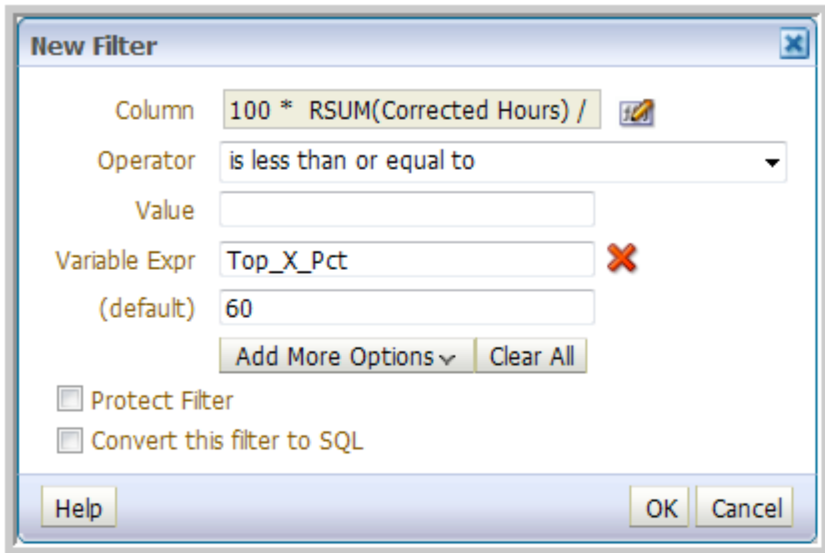
The RSUM (running sum) function is found under **Running Aggregates**, and the SUM function is found under **Aggregates** (or you may just type them if you wish). The formula for **Running Pctg** is:

100 * RSUM(Effort.Corrected Hours) / SUM(Effort.Corrected Hours)

Running Pctg is a running total of the percentage of total Corrected Hours encountered row-by-row in the Answers analysis.

3. Modify the **Running Pctg** column properties to display with **1 decimal** and a **percent sign**.

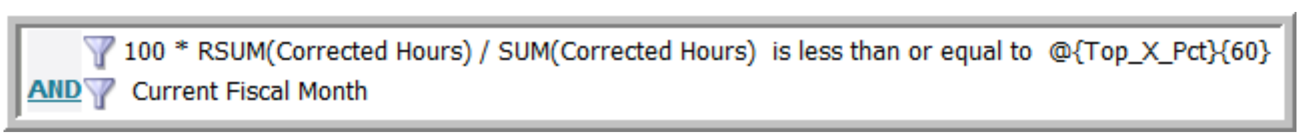
4. Create a filter for the **Running Pctg** column as shown here.



Top_X_Pct is the name of a Presentation Variable that we'll create shortly. Set a default, such as 60, which will mean to display the top 60% of the results. Note that this setting only applies for testing in Answers. We will also specify a default value on the dashboard prompt.

★	**Helpful Hint:** Notice that since Running Pctg is a custom formula, the ***formula*** for the column, and not column name, is what will be saved as the filter condition. Should the formula for the **Running Pctg** column change in the future, ***this filter will not reflect that change.***

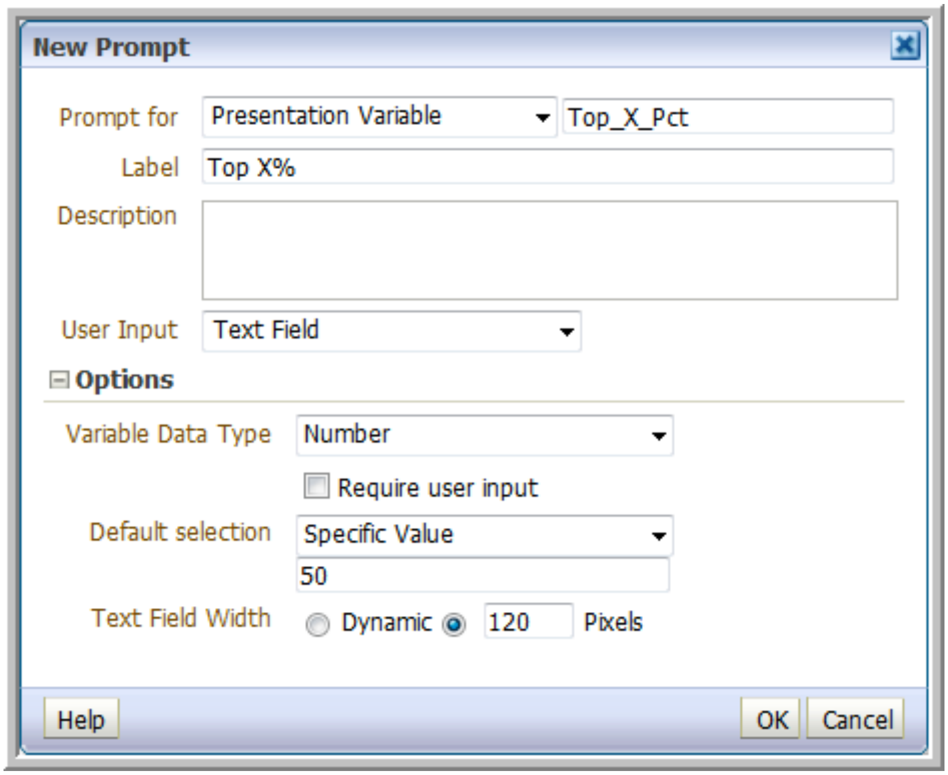
5. Apply the previously saved **Current Fiscal Month** filter to the analysis. The filters should look like this:



6. Save the analysis as **Top X% Cumulative.**

So far, we've created an analysis which looks for the presence of a Presentation Variable called Top_X_Pct. Remembering that Presentation Variables are created in Dashboard Prompts, our next step will be to create that Dashboard Prompt and its associated Presentation Variable, so that our users can enter any percentage of results that they would like to see on the dashboard.

7. Create a new dashboard prompt as shown here.



Note that we're specifying a default of 50 as the value of the Top_X_Pct presentation variable. The default specified in the analysis filter was 60? Which of the two values do you expect will be used as the default on the dashboard?

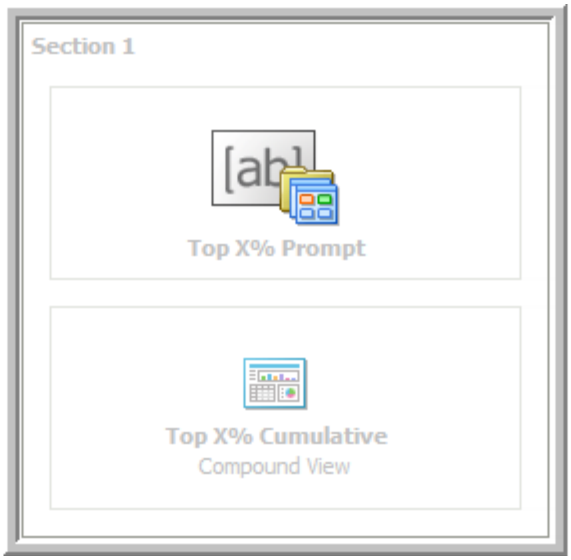
Also note that presentation variable names are case sensitive.

8. Save the dashboard prompt under **My Folders \ Prompts** as **Top X% Prompt**.

Now let's put the Dashboard Prompt and the report together on a dashboard page.

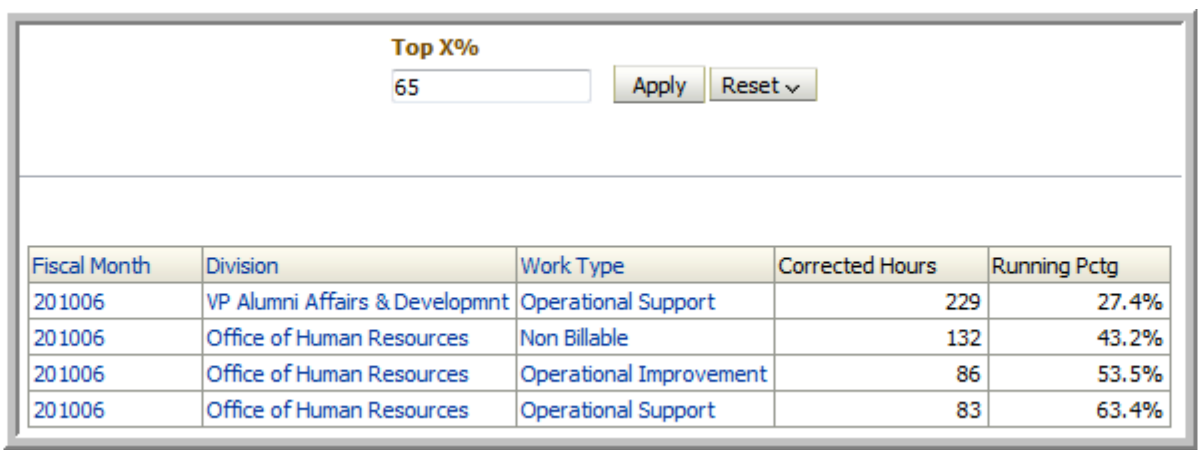
9. Click on the **Dashboards** link, choose My Dashboard, choose **Page Options … Edit Dashboard**, and add a new page called **Top X%.**

10. Drag **Top X% Prompt** and **Top X% Cumulative** from the selection panel, and drop them onto the new dashboard page, as shown here:



11. Save and run the dashboard. Notice that the dashboard prompt default of 50 is initially shown.

12. Enter a value such as **65** into the **Top X% field**, and click **Apply.** Your report should only show those combinations of Division and Work Type which make up less than the top 65% of the total of all Corrected Hours for the current Fiscal Month.

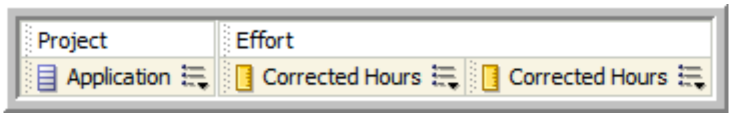


Fiscal Month	Division	Work Type	Corrected Hours	Running Pctg
201006	VP Alumni Affairs & Developmnt	Operational Support	229	27.4%
201006	Office of Human Resources	Non Billable	132	43.2%
201006	Office of Human Resources	Operational Improvement	86	53.5%
201006	Office of Human Resources	Operational Support	83	63.4%

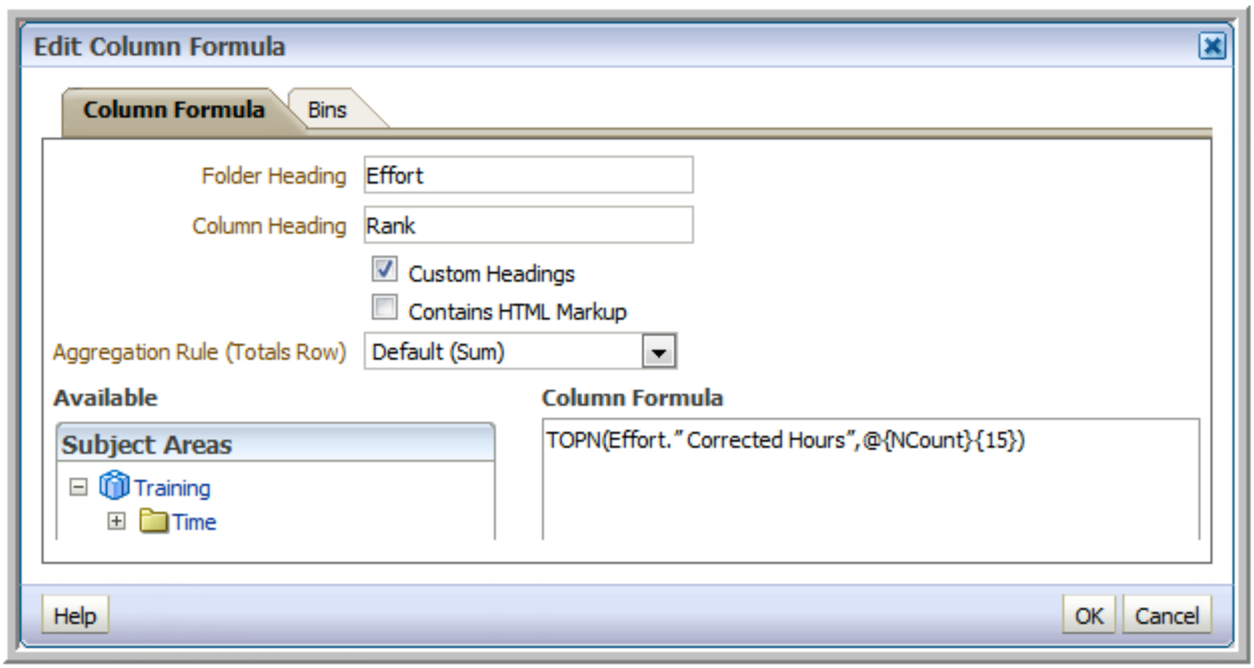
Exercise 7d: Filtering with TopN / BottomN functions

The TopN and BottomN functions are actually filters, not functions. When you include a TopN or BottomN function in a column formula, the analysis is automatically filtered to only return the number of rows specified in that function.

1. Create this Answers analysis with the Application column once, and the Corrected Hours column twice.



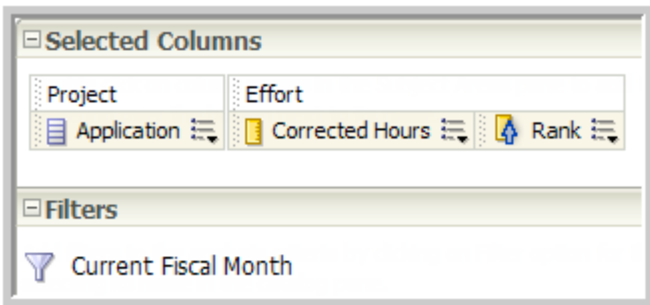
2. Modify the formula for the 2nd Corrected Hours column so that its column heading is **Rank**, and its formula is TOPN(“Effort”.”Corrected Hours”,@{NCount}{15}) as shown below.



The TOPN function is found under **Aggregates.** The @{NCount}{15} shows the use of a Presentation Variable called NCount (with a default value of 15) that will be created in a dashboard prompt. You may type it in as shown, or you may use the **Variable** button to insert it in the formula. **Reminder: Presentation Variable names are case sensitive**.

3. Sort the results in ascending order based on the Rank column.

4. Apply the Current Fiscal Month filter to the analysis. The criteria should look like this:

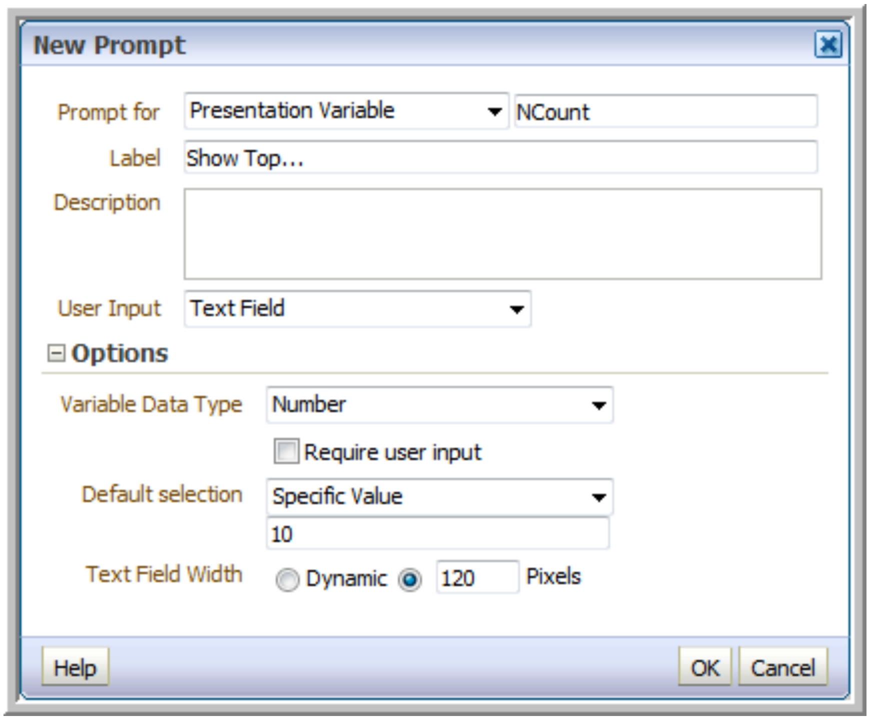


5. View the results.

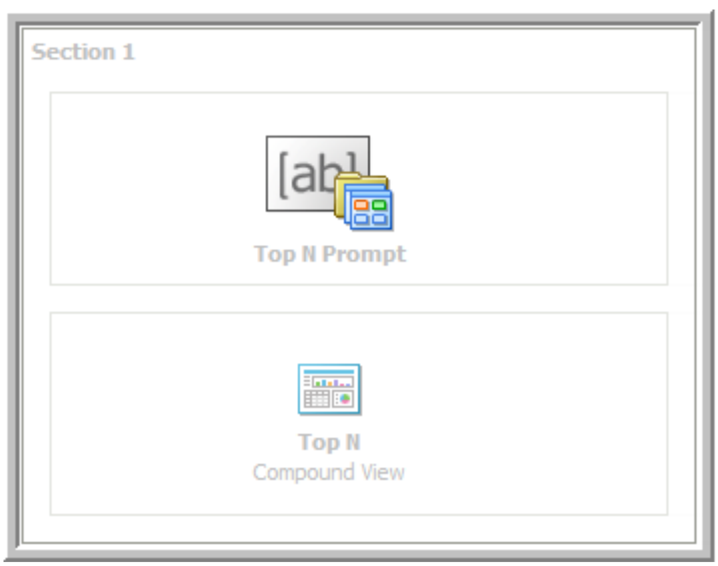
Application	Corrected Hours	Rank
Non Billable	281	1
CM - General Operation	163	2
AP/GL	62	3
Oracle Business Intelligence	53	4
COG	41	5
CMS Hosting	32	6
Pinnacle	28	7
Oracle DB	25	8
Blackboard	22	9
ColdFusion Hosting	20	10
COLTS	15	11
PS - Payroll	14	12
United Way	12	13
Static Hosting	12	14
CUHosting	8	15

6. Save the analysis as **Top N.**

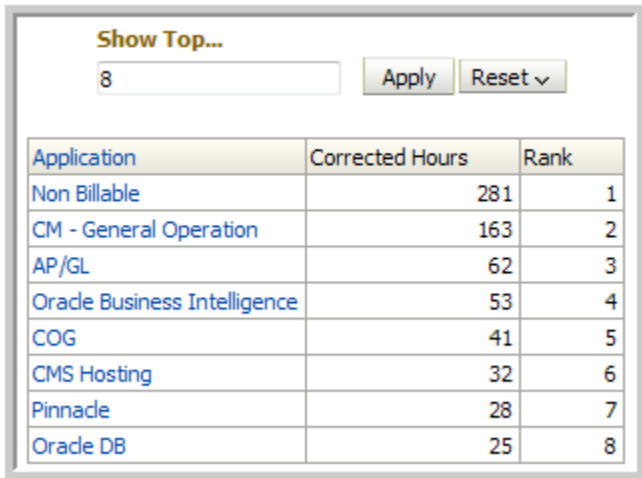
7. Create a new dashboard prompt as shown here, and save it as **Top N Prompt**. Make sure to set a **Default selection** value such as 10.



8. Edit My Dashboard, add a new page called **Top N**, and add the **Top N Prompt** and **Top N** analysis to the page.



9. Save the dashboard and view the results. Enter a value into the dashboard prompt and click Apply to show the effect of the TopN function.


Show Top...

8

Apply Reset

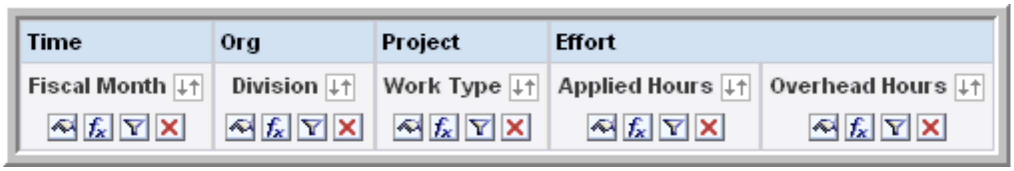
Application	Corrected Hours	Rank
Non Billable	281	1
CM - General Operation	163	2
AP/GL	62	3
Oracle Business Intelligence	53	4
COG	41	5
CMS Hosting	32	6
Pinnacle	28	7
Oracle DB	25	8

Note: In any given analysis, there can only be one TopN or BottomN function. That's one **total**, not one of each.

Exercise 7e: Configuring for Required Selections on Dashboard Prompts

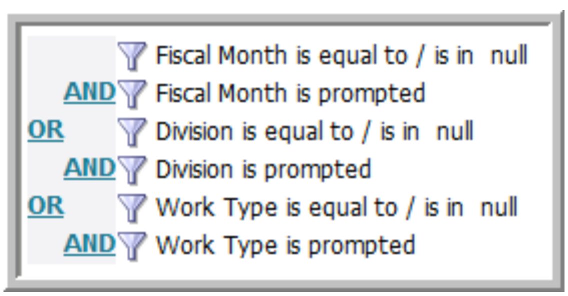
In the absence of any filtering criteria or default dashboard prompt values, it is possible that a significant number of rows could be returned unnecessarily to a dashboard screen prior to the use of the dashboard prompt. In this exercise, we'll learn how avoid that by restricting the execution of analyses on a dashboard page until after the dashboard prompt(s) have been used.

1. Create this simple unfiltered analysis in Answers, and save it as **Required Prompt Analysis**.



2. Remembering the techniques for grouping filters as learned in a previous lesson (refer to page **Error! Bookmark not defined.**), create filters for the three dimension columns as shown below.

   Note: the first filter in each pair uses the **is equal to / is in** operator, and the value to compare is the four characters **n-u-l-l.** This is not an IS NULL operator. The comparison string can be any value that you know does NOT exist in the column, and **null** is usually a pretty good one. This will force the filter to return no results.



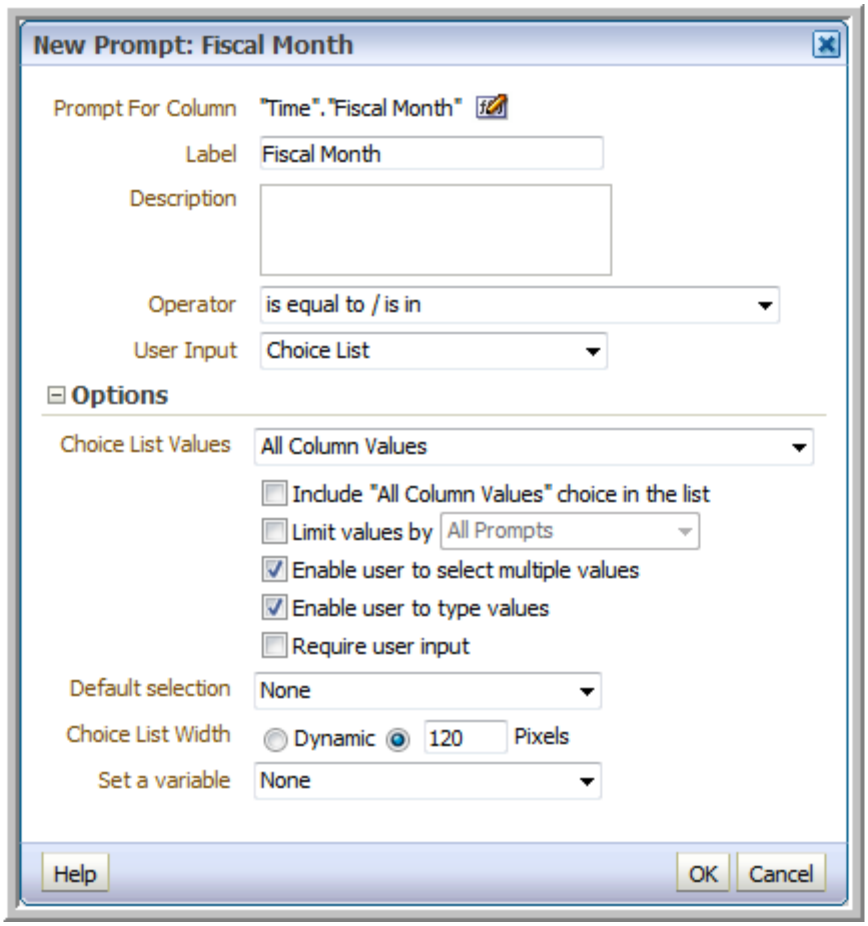
We read the first filter group like this: "I want to see Fiscal Month values that match the character string 'n-u-l-l', plus all values that match what the user has selected from a dashboard prompt." If the user hasn't selected anything in the prompt, and since we know that there isn't a value of Fiscal Month spelled **n-u-l-l,** then that first filter won't return any hits, and the analysis will return zero rows.

And of course, the other two prompt sets work exactly the same way. So, until the user has made a selection from all three prompts, the analysis will not return any rows.

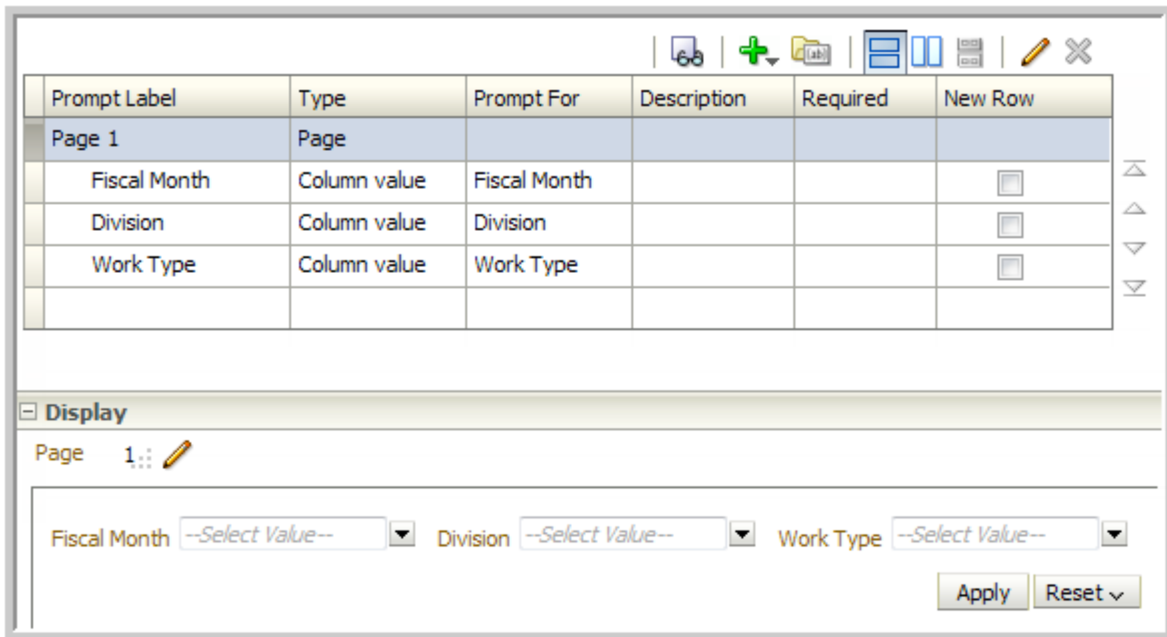
One caveat for YOU as you're developing in Answers: You'll want to click that first AND to temporarily change it to an OR as you're working with it, (or apply some other filter), otherwise you won't see any results in Answers.

3. Resave the analysis.

4. Create and a new dashboard prompt, starting with a Column Prompt for the Fiscal Month column as shown here:



5. Create two other prompt values in this dashboard prompt, for the Division and Work Type columns, but otherwise identical to the Fiscal Month prompt shown above.



6. Save the dashboard prompt as **Required Prompts**.

7. Edit My Dashboard, create a new page named **Required**, and mate the new dashboard prompt with the new analysis.

8. Notice that the analysis initially returns no information (which is what we intended), and that the default No Results message is being displayed. If you wish to do so, you may return to Answers, and add a totally blank No Results message to the analysis, using the techniques learned in an earlier lesson.

9. Make selections from each of the three prompts and click Apply to display the results.

Exercise 7f: Drilling and Navigation

The column values and column headings in an Answers analysis may, at the option of whomever is creating and/or editing the Answers analysis, be defined as **drill links** or **navigation links**.

Definitions:

Drill Link – A drill link displays the next lowest hierarchical level of information. When a user clicks on a column value and/or a column heading, Answers will "drill" down to the next lower level in the hierarchy associated with the source column. Values at the lowest level of the dimension hierarchy cannot be displayed as drill links.

Navigation Link – A navigation link redirects the user to a specified dashboard page or to a specified Answers analysis. When a user clicks on a column value and/or a column heading, Answers will open a specified target Answers analysis or navigate to a specified dashboard page.

Heading Link - The column header is presented as a link.

- When used as a drill link, the "child" column is added to the analysis, and all existing values of the source column are retained (i.e. no filter is applied).
- When used as a navigation link, clicking the heading link will open a specified Answers analysis or navigate to a specified dashboard page.

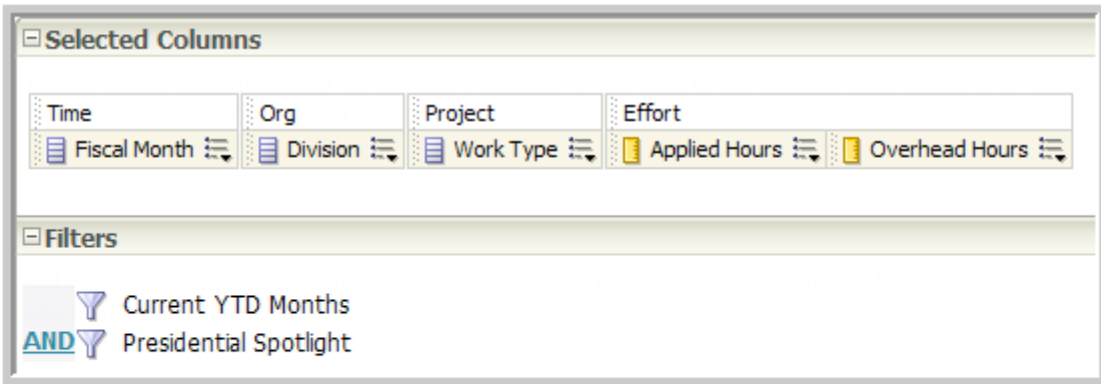
Value Link – The data values in a column are presented as links.

- When used as a Drill Link, the "child" column is added to the analysis, and a filter condition is added to the analysis, limiting the "parent" column to only the value clicked. For example, clicking on a value like Q1-2002 in the Quarter column will add the Month column to the analysis, will add a filter like "Quarter = Q1-2002", and will display only that quarter and the months related to it.
- When used as a navigation link, Answers will open a specified Answers analysis or navigate to a specified dashboard page.

Helpful Hint: When drilling and/or navigating while working **in Answers**, it is usually desirable to click the dashboard preview icon before clicking a drill link or navigation link. Choosing to **drill** without going to the preview screen will **add** new columns and filters to the Answers analysis, which might not be the desired action. Choosing to **navigate** without going to the preview screen shouldn't cause any harm, as it should open the target analysis in a new browser window or tab, but it's a good habit to save often.

Let's take a look at the default drilling / navigation behaviors of an Answers analysis.

1. Create this simple analysis in Answers, and save it as **Drill and Navigate**.



2. View the table on the Results tab.

3. Click on the Dashboard Preview icon.

4. Click on the Division column heading link. Notice that the three existing Divisions are retained, and their associated "child" Departments are now displayed in a column immediately to right of the Division column. The data values represent data at the Department level.

5. Click the browser's Back button to "undrill".

6. Next, click on the **Operational Improvement** link next to the **Graduate School** Division. Notice that the resulting analysis is now filtered to include only those column values associated with the clicked value, **including the specific values in columns to the left** of the clicked value.

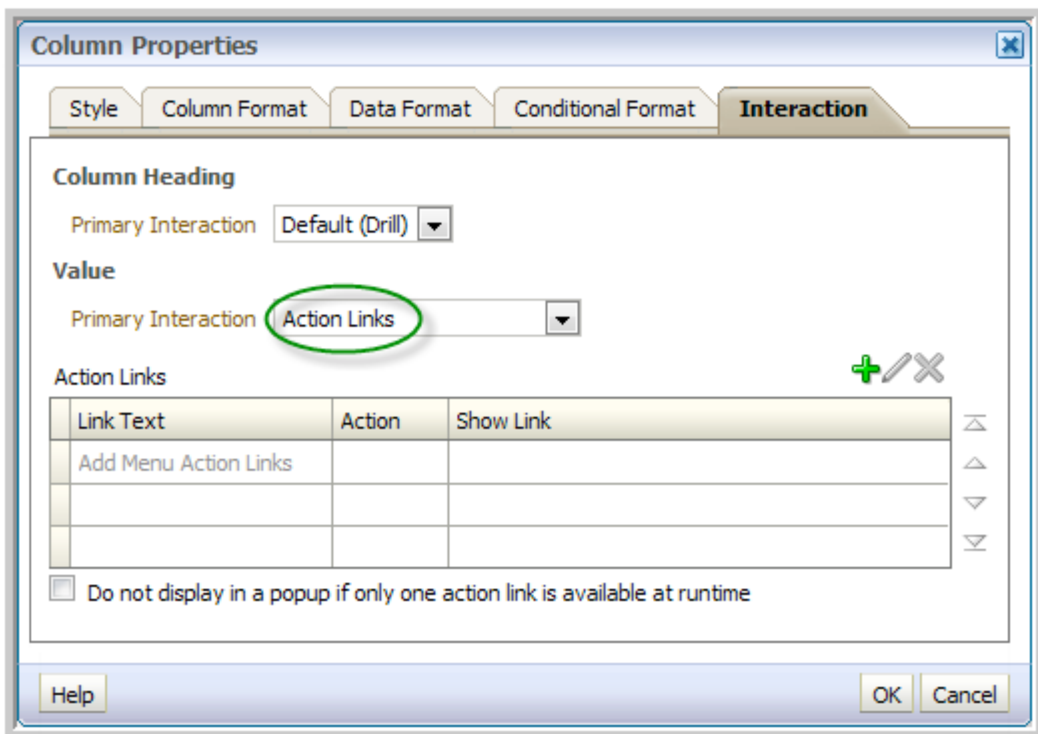
7. Close the dashboard preview browser window.

So we see that clicking to drill on a **column heading** will retain all values in all columns, and just add a new "child" column to the analysis (i.e. will not add filters), while clicking to drill on a **value** within a column will add a new "child"column **and** create filters for all columns to the left of the clicked cell.

Now let's take control over what happens when the user clicks on a column heading or a value.

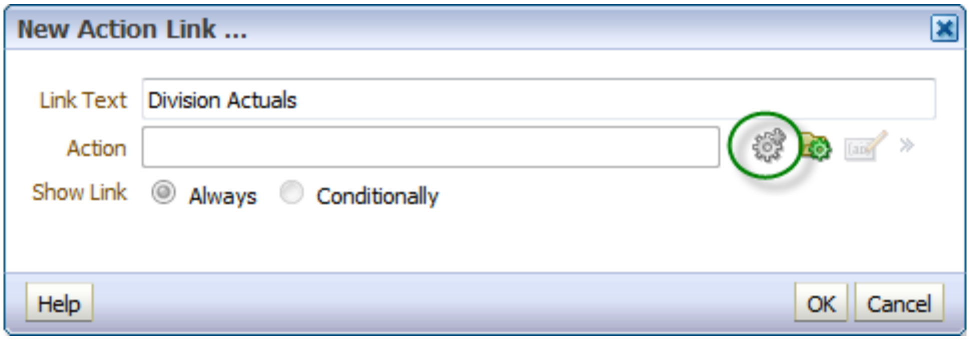
8. Return to the Criteria tab, and open the Column Properties for the Division column.

9. On the **Interaction** tab, click the **Value Interaction** dropdown, and select **Action Links**. (We'll leave the Column Heading Interaction at its Default setting, which is Drill.)

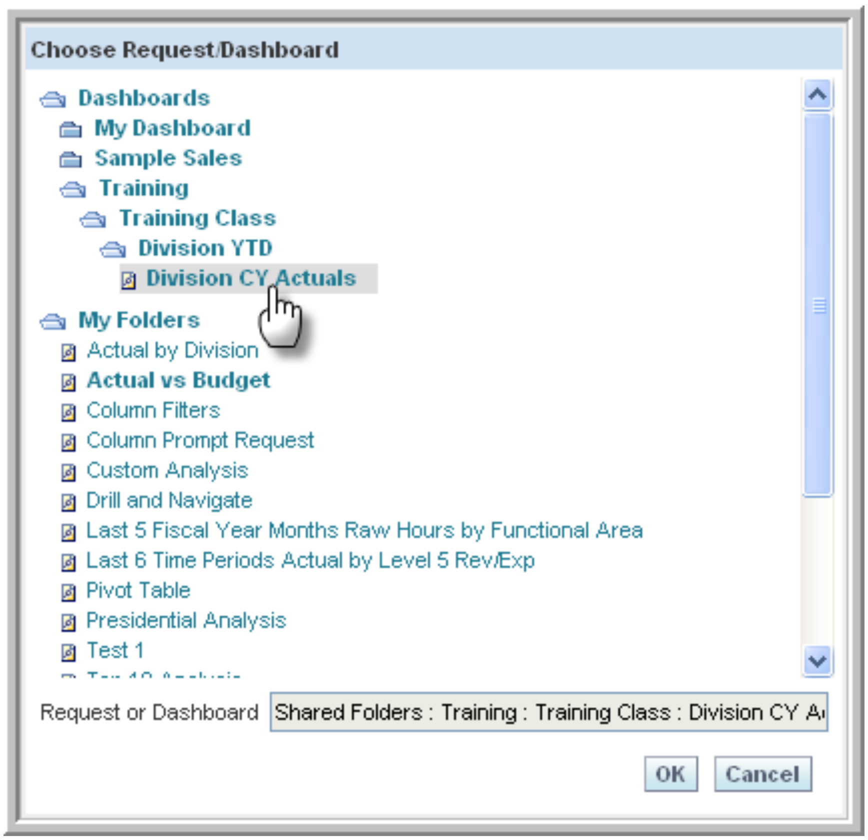


10. Click the Add Action Link icon.

11. Begin creating a new Action Link by clicking the icon shown below:



12. Browse to the location shown in the screenshot below, and click OK.



Notes:

c. If an **Answers Analysis** is specified as the destination (as shown here) that Analysis will be opened when the link is clicked. Note that even though we located an analysis by browsing into a dashboard, our means of locating it is irrelevant: we selected an analysis, and only that Analysis will be opened, not the dashboard that contains it.

d. If a **Dashboard Page** is specified as the destination, the Dashboard will be displayed, and the specified Dashboard Page will be selected and visible, when the link is clicked.

e. If a **Dashboard Name** is specified as the destination, the first page of the Dashboard will be displayed.

13. If you were to choose to add more than one Navigation Target, you would also want to add a value into the Caption box to allow the user to select from multiple destinations.

14. Click OK to close the dialog box

15. Resave the analysis. (My Folders … Drill and Navigate)

16. Let’s test our results. Click the Dashboard Preview icon, and click on one of the values in the Division column to see results similar to this:

Division CY Actuals

Time	Org	Project	Effort	
Fiscal Month	Division	Work Type	Applied Hours	Overhead Hours
201001	Arts & Sciences	Non Billable	0	899
		Operational Improvement	35	0
		Operational Support	1,404	0
201002	Arts & Sciences	Non Billable	0	864
		Operational Improvement	95	0
		Operational Support	1,311	0
201003	Arts & Sciences	Non Billable	0	886
		Operational Improvement	34	0
		Operational Support	950	0
201004	Arts & Sciences	Non Billable	0	738
		Operational Improvement	29	0
		Operational Support	1,478	0
201005	Arts & Sciences	Non Billable	0	863
		Operational Improvement	19	0
		Operational Support	1,010	0
201006	Arts & Sciences	Non Billable	0	34
		Operational Support	22	0

17. Notice that the Division column is only displaying the value that we clicked on the source analysis. Reason: this analysis has an **is prompted** filter for the Division column. A navigation link can also serve as a filtering device when the target contains an **is prompted** filter for the column in question.

18. Notice also that the Fiscal Month column is displaying all values. But wait a minute: when we were testing the default drilling behavior, didn’t all columns to the left of the clicked value become filtered on just those values? Why is this column behaving differently?

    Remember way back in the Filters lesson where we **protected** the filter containing our YTD Fiscal Months? Now you can see the effect of protecting a filter. If we had not selected the **protected** option for the filter, it would have been ignored in favor of the implied filter resulting from the drilling or navigation action. Without that protection, we would only see one Fiscal Month, whichever one was associated with the row on which we clicked the value of Division.

19. Close the Dashboard Preview.

Lesson 8: Advanced Topics and Techniques

Exercise 8a: Conditional Formatting

In this exercise, we'll apply conditional formatting to analysis results. We'll apply four different conditional formats, one for each of four possible conditions for a given row of results.

1. Create a new Answers analysis with the Fiscal Month, Department, Corrected Hours, and Applied % columns.

2. Set the data format for the **Applied %** column to 1 decimal place and a percent sign.

3. Apply the Presidential Spotlight filter and the Current YTD Months filter.

4. Display the Results tab.

Fiscal Month	Department	Corrected Hours	Applied %
201001	A&S Academic Advising Center	754	64.9%
	A&S Admissions	894	58.8%
	College of Arts and Sciences	691	61.4%
	Graduate School Administration	3,380	51.1%
	HR Info Systems & Records Adm	2,106	60.5%
	Office of Human Resources - VP	1,531	62.4%
	Recruitment & Employment Ctr	2,537	59.3%
201002	A&S Academic Advising Center	725	72.5%

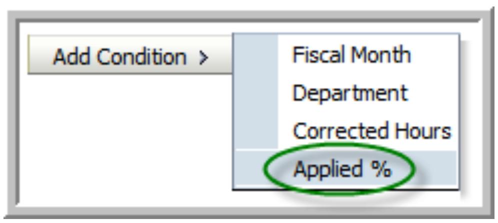
We want to apply these conditional formatting rules:

Any **Applied %** of 70% or greater is outstanding, displayed in blue.
Any **Applied %** between 60% and 70% is good, displayed in green.
Any **Applied %** between 55% and 60% is neutral, displayed in yellow.
Any **Applied %** less than 55% is bad, displayed in red.

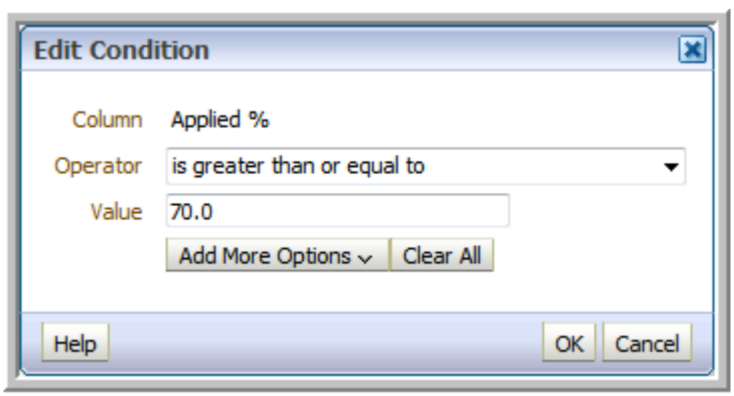
We'll accomplish this by creating four **conditions**, one for each of those four break levels.

5. Return to the Criteria tab and open the Column Properties for the **Applied %** column.

6. On the **Conditional Format** tab, click the **Add Condition** button and select **Applied %** from the dropdown.



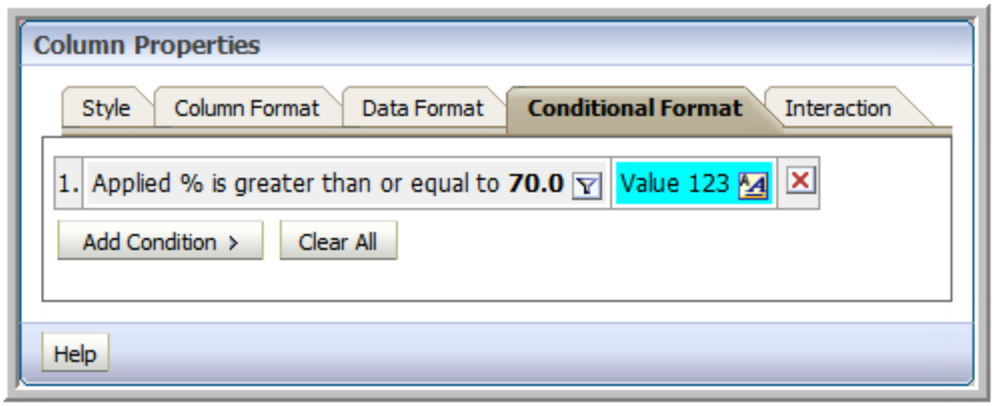
7. Select **is greater than or equal to** as the operator, and enter **70** as the value. Click **OK**.



8. In the **Edit Format** dialog,

   a. Click the **Color** box (in the Font section), and select white (top right color, #FFFFFF).
   b. Click **Background Color** box (in the Cell section), and select cyan (4rd row, 6th column, #00FFFF).
   c. Click **OK** to close the Edit Format dialog.

Your screen should look like this:



9. Click the **Add Condition** button, and select **Applied %** again.

10. In the **Create/Edit Filter** dialog, set the Operator to **is less than,** and set the value to **70,** then click **OK**.

11. In the **Edit Format** dialog, experiment with different fonts, font colors and sizes, background colors, borders, etc…, using green in some manner. For example, you might set the font color to Black, the style to Bold Italics, and the background color to Lime Green (#00FF00).

12. Repeat the process again, adding an **is less than 60** condition, and selecting some sort of yellow for either the background or the font (your choice).

13. Repeat the process one last time, adding an "**is less than 55**" condition for any values under **55**, using a red color in some manner. The idea is to have four different range conditions applied to your data.

1.	Applied % is greater than or equal to **70**	Value 123	
2.	Applied % is less than **70**	Value 123	
3.	Applied % is less than **60**	Value 123	
4.	Applied % is less than **55**	**Value 123**	

14. Click **OK** to close the Column Properties dialog.

15. Save the analysis as **Conditional Format**.

16. Display the Results tab.

Fiscal Month	Department	Corrected Hours	Applied %
201001	A&S Academic Advising Center	754	64.9%
	A&S Admissions	894	58.8%
	College of Arts and Sciences	691	61.4%
	Graduate School Administration	3,380	**51.1%**
	HR Info Systems & Records Adm	2,106	60.5%
	Office of Human Resources - VP	1,531	62.4%
	Recruitment & Employment Ctr	2,537	59.3%
201002	A&S Academic Advising Center	725	72.5%
	A&S Admissions	873	54.0%

Note to 10g users: In OBIEE 11g, **every condition is evaluated on every row**, and the **LAST TRUE** condition will be the one applied to the data cell. (In previous versions, the first true condition was applied.)

Exercise 8b: Using Images for Conditional Formatting

In this exercise, we'll modify an existing so that we can easily spot excellent and poor performing areas by applying custom conditional formatting graphics to our results.

OBIEE features many built-in graphic images that can be used for conditional formatting. Those images are demonstrated in Appendix B of this document.

1. Return to the **Conditional Format** analysis, go to the Criteria tab, and open the Column Properties for the **Applied %** column.

2. On the **Conditional Format** tab, delete the last condition (less than 55) by clicking its icon.

For each of the three remaining conditions, we'll apply an image from OBIEE's set of built-in images to represent the performance.

3. Click the Format icon for the first condition (greater than or equal to 70).

4. Clear the Background Color by clicking on the **Background Color** box, clicking the **Clear** button, and clicking **OK**.

   Note: You can clear **all** formatting by clicking the eraser icon at the top left of the dialog.

5. Click the **Image** box.

6. Click on the sixth image down the left side – the red ball.

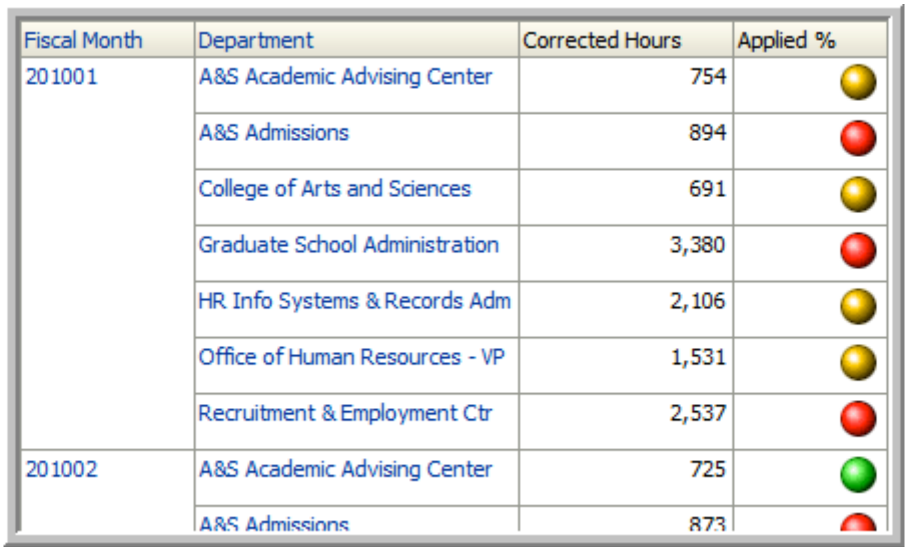
7. Select the **green ball** from the icons in the selection area.

8. Select **Images Only** for the Image Placement dropdown. This prevents the numbers from displaying.

9. Click OK on the **Graphics** dialog, then OK on the **Edit Format** dialog.

10. Repeat the steps above for the other two conditions, assigning the yellow ball to the 2nd condition, and the red ball to the 3rd condition.

11. Take a look at the Table view to see that the values of Applied % have been replaced with the appropriately colored balls.



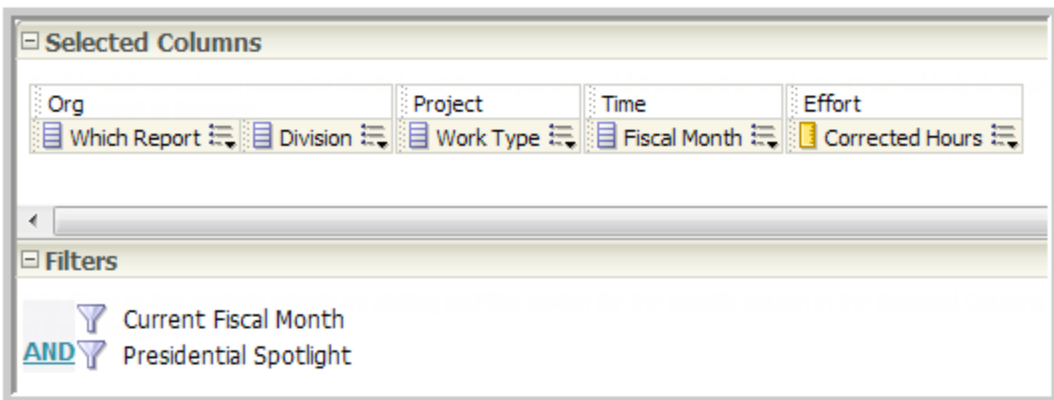
Fiscal Month	Department	Corrected Hours	Applied %
201001	A&S Academic Advising Center	754	
	A&S Admissions	894	
	College of Arts and Sciences	691	
	Graduate School Administration	3,380	
	HR Info Systems & Records Adm	2,106	
	Office of Human Resources - VP	1,531	
	Recruitment & Employment Ctr	2,537	
201002	A&S Academic Advising Center	725	
	A&S Admissions	873	

12. Resave the Conditional Format analysis.

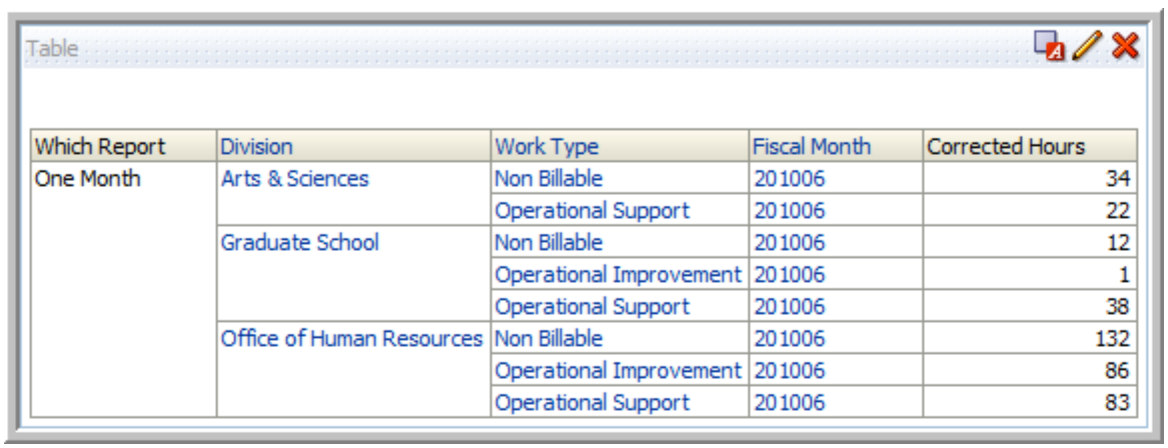
Exercise 8c: Combining Multiple Analyses

OBIEE Answers provides you with the means to create analyses that are Unions or Intersections of multiple analyses. Like the similar functions in SQL, the number of columns must be the same across all joined analyses.

1. Create this new analysis in Answers with one column of your choice, plus the Division, Work Type, Fiscal Month, and Corrected Hours columns. The 'Which Report' column can start as any column you wish, because you will change its formula to **'One Month'** (including the single quotes), and the column heading to **Which Report**. Apply the **Current Fiscal Month** and **Presidential Spotlight** filters as shown.



2. View the Results.

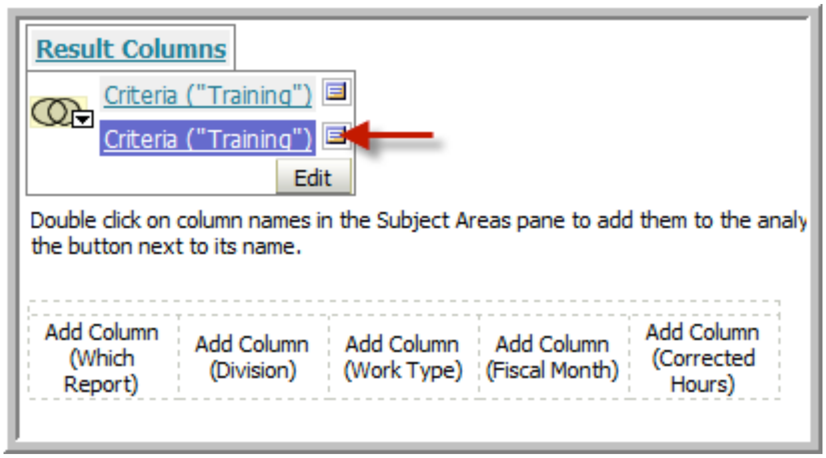


Which Report	Division	Work Type	Fiscal Month	Corrected Hours
One Month	Arts & Sciences	Non Billable	201006	34
		Operational Support	201006	22
	Graduate School	Non Billable	201006	12
		Operational Improvement	201006	1
		Operational Support	201006	38
	Office of Human Resources	Non Billable	201006	132
		Operational Improvement	201006	86
		Operational Support	201006	83

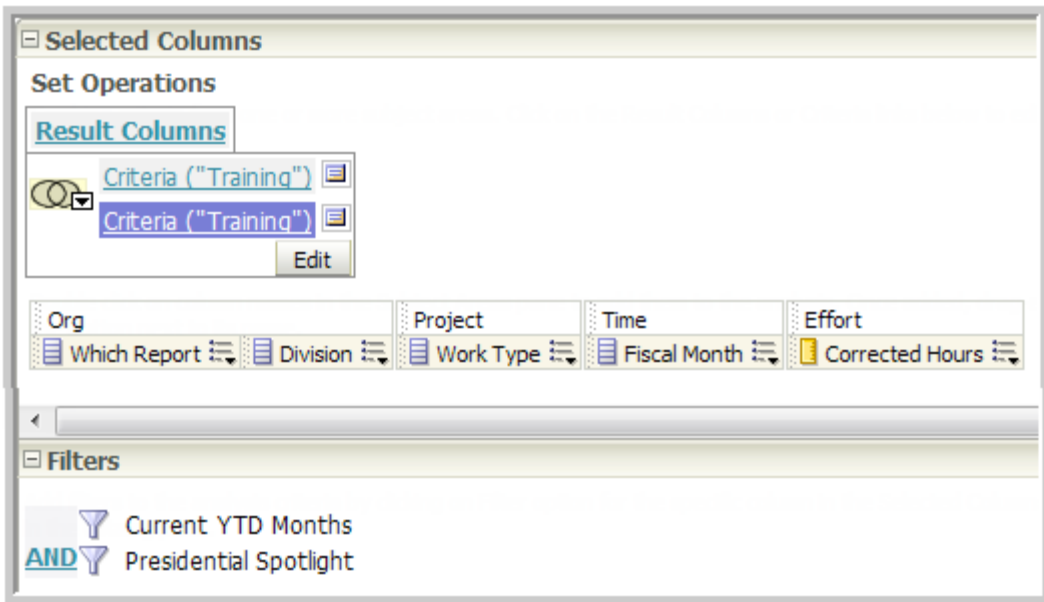
3. Return to the **Criteria** tab and click the **Combine Results**  icon, located at the far right side of the **Selected Columns** header, below the save icons.

4. Select the **Training** subject area.

5. The second analysis is highlighted, and dashed boxes are shown to indicate the contents of the first analysis.

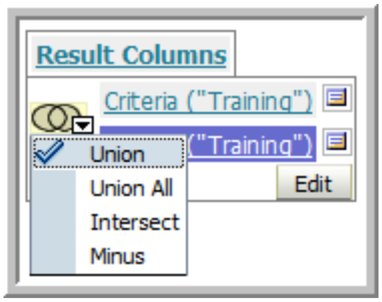


6. Select columns for the second analysis exactly as you did for the first analysis, this time changing the value of the first column to **'YTD'**, its custom heading to **Which Report**, and applying the **Current YTD Months** and **Presidential Spotlight** filters as shown.

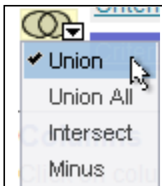
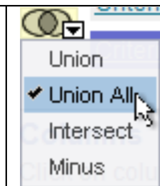
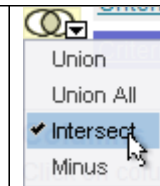
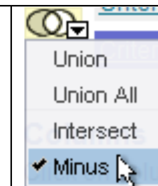


Note: although we've used the same columns in both analyses, that is not required. As with similar analysis combinations in SQL, each analysis must contain the same number of columns, and the corresponding data types must be the same between the two analyses (text, number, date), but the contents do not have to be identical. Nor do both sets of criteria need to come from the same subject area.

7. Click on the Union  icon to see the possible types of combinations of the analyses. In this exercise, leave the Union setting in place.



The different combination options have different icons, and are created as follows:

			
Union – Returns distinct rows from all queries.	**Union All** Returns all rows, including duplicates, from all queries.	**Intersect** Returns all rows that are part of both (all) analyses.	**Minus** Returns all rows from the first query which do not also exist in the second query

8. Take a look at the results using the Table view. You've combined two analyses into one table.

Which Report	Division	Work Type	Fiscal Month	Corrected Hours
One Month	Arts & Sciences	Non Billable	201006	34
		Operational Support	201006	22
	Graduate School	Non Billable	201006	12
		Operational Improvement	201006	1
		Operational Support	201006	38
	Office of Human Resources	Non Billable	201006	132
		Operational Improvement	201006	86
		Operational Support	201006	83
YTD	Arts & Sciences	Non Billable	201001	899
			201002	864
			201003	886
			201004	738
			201005	863
			201006	34
		Operational Improvement	201001	35
			201002	95
			201003	34
			201004	[illegible]

9. Save the analysis as **Combo Query.**

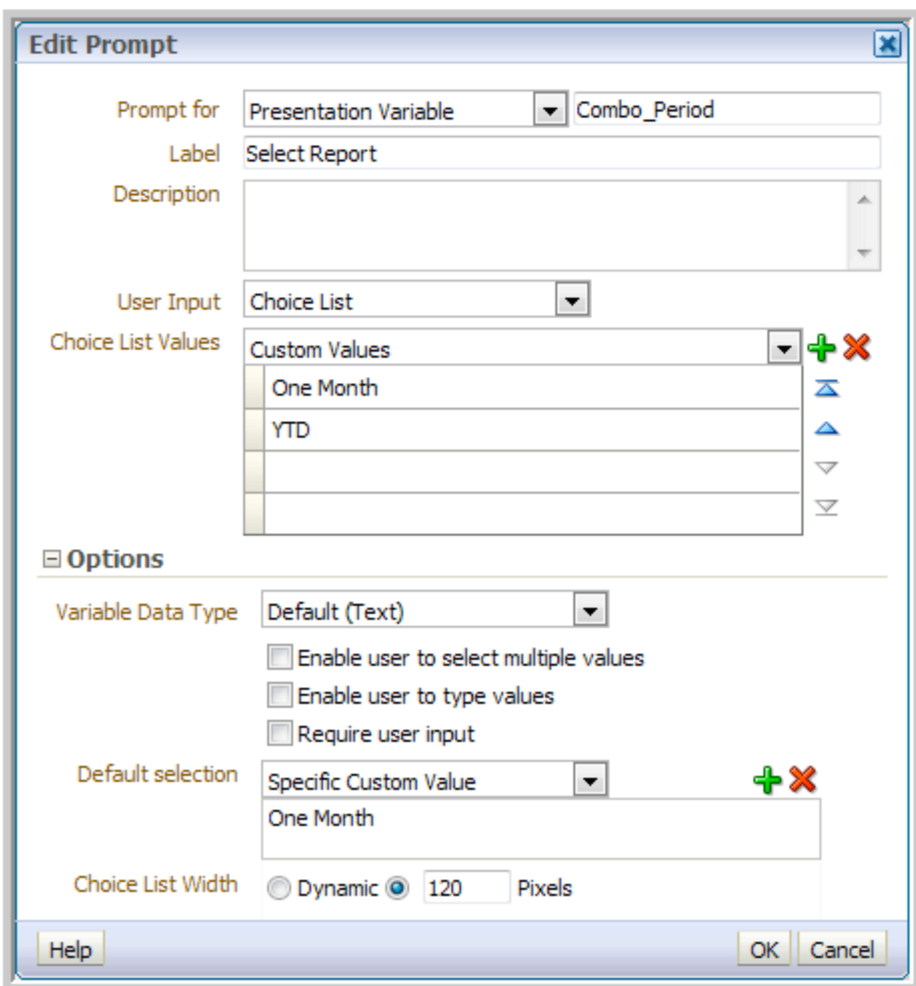
Now, what can we do with this analysis? Perhaps we could put it onto a dashboard, and use a dashboard prompt to allow us to switch back and forth between the Current YTD Months and the Current Fiscal Month views of the combined table.

10. Create a New Dashboard Prompt from the Training subject area.

This dashboard prompt will present the user with a dropdown list of two values that you will specify: **One Month** and **YTD**. These values must match the two values you used in the Which Report column.

11. Click the New icon, and select **Variable Prompt**.

12. Create the prompt using this screenshot as a guide. You will use the green signs to add (type) the two custom values and to select the default value.

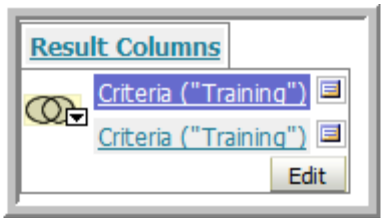


13. Save the dashboard prompt as **Combo Query Prompt**.

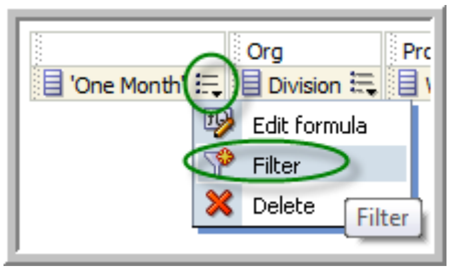
Now let's create a filter for our analysis so that when we put the dashboard prompt and the analysis onto a dashboard page, the analysis will be filtered based on the **Combo_Period** presentation variable.

14. Edit the **Combo Query** analysis that we created earlier.

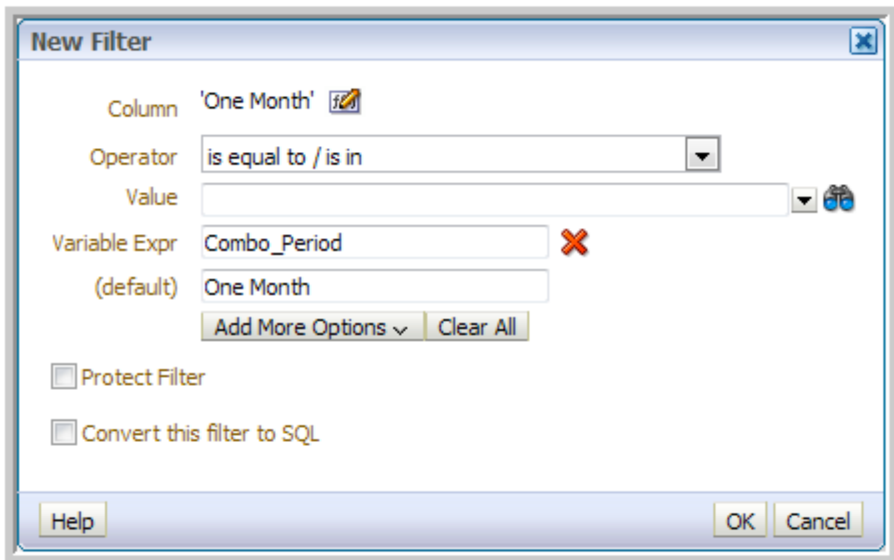
15. On the Criteria tab, click to highlight the first analysis link.



16. Click the Filter icon for the first column.



17. We want to filter this analysis based on a match between the value in the first column ('One Month') and the value that the user selected from the dashboard prompt and stored into the Combo_Period presentation variable. Using techniques learned in an earlier lesson, click the **Add More Options** button, select **Presentation Variable**, and complete the dialog as shown here.

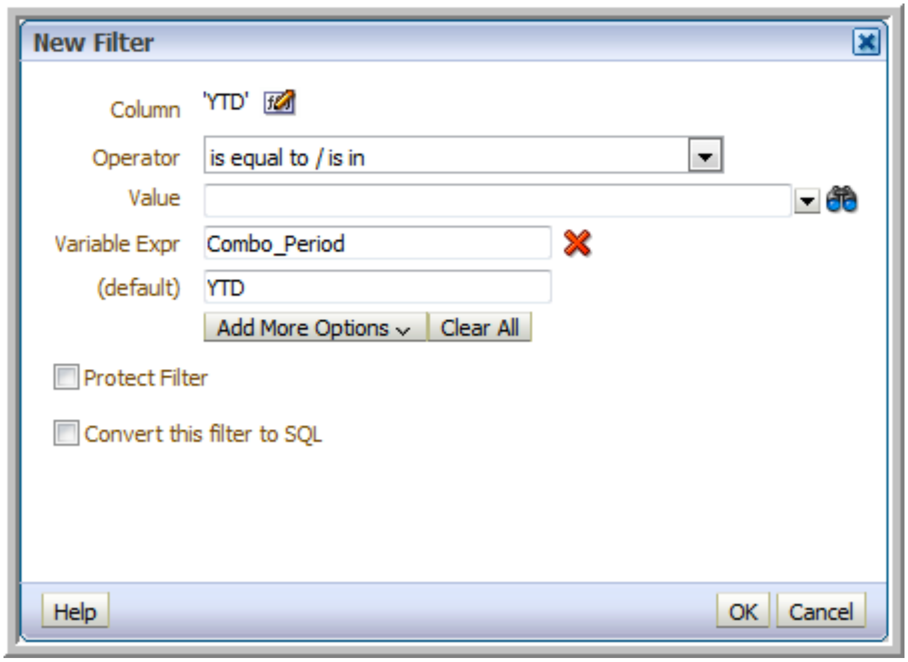


How does this work? This filter is applied against the first of the two joined analyses. It is read as: Return all rows where 'One Month' (i.e. the value in the first column) is equal to the value stored in the Combo_Period presentation variable. The filter will either return ALL rows, or NO rows, from the first analysis, depending on the dashboard prompt selection made by the user.

But why include a default? While we are working as developers in Answers, the value of Combo_Period is null. In fact, Combo_Period doesn't even exist outside of the dashboard. For that reason, we're asking Answers to **pretend** that Combo_Period has a value, so that we can see some results as we are developing the combined analysis.

18. Likewise, choose the second criteria set, and start a filter for the first column.

19. Create this filter:



20. Resave the analysis as **Combo Query.**

Now let's combine the prompt and the query onto the dashboard. Using techniques learned earlier, and without any screenshots, execute these instructions:

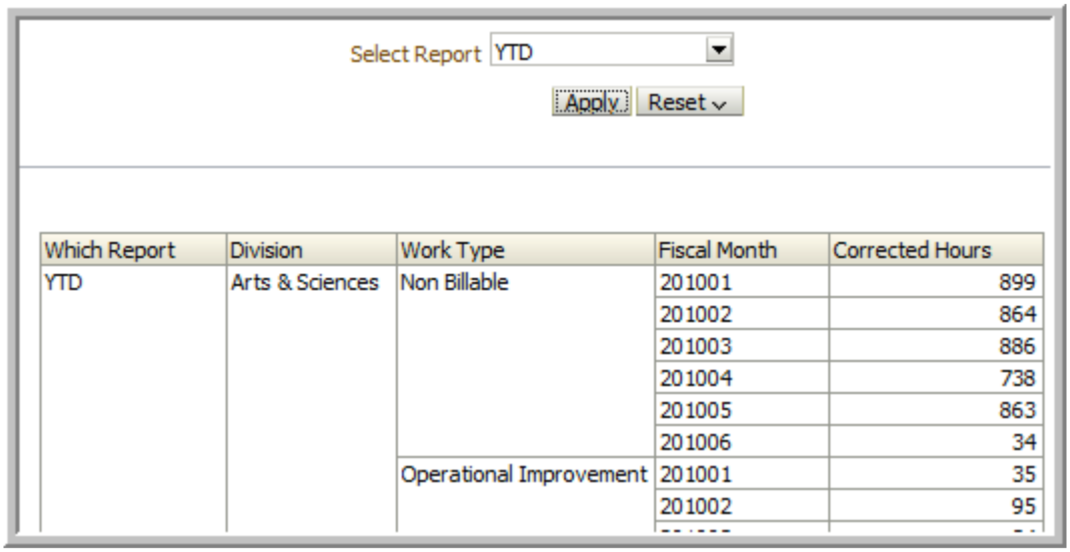
21. Return to the My Dashboard and open the dashboard editor.

22. Add a new page called **Combo**.

23. Drag and drop the **Combo Query Prompt** and the **Combo Query** onto the new page.

24. Save and Run the dashboard.

25. We set the default to the **One Month**. Select **YTD** from the dropdown and click **Apply** to see the results.



Which Report	Division	Work Type	Fiscal Month	Corrected Hours
YTD	Arts & Sciences	Non Billable	201001	899
			201002	864
			201003	886
			201004	738
			201005	863
			201006	34
		Operational Improvement	201001	35
			201002	95

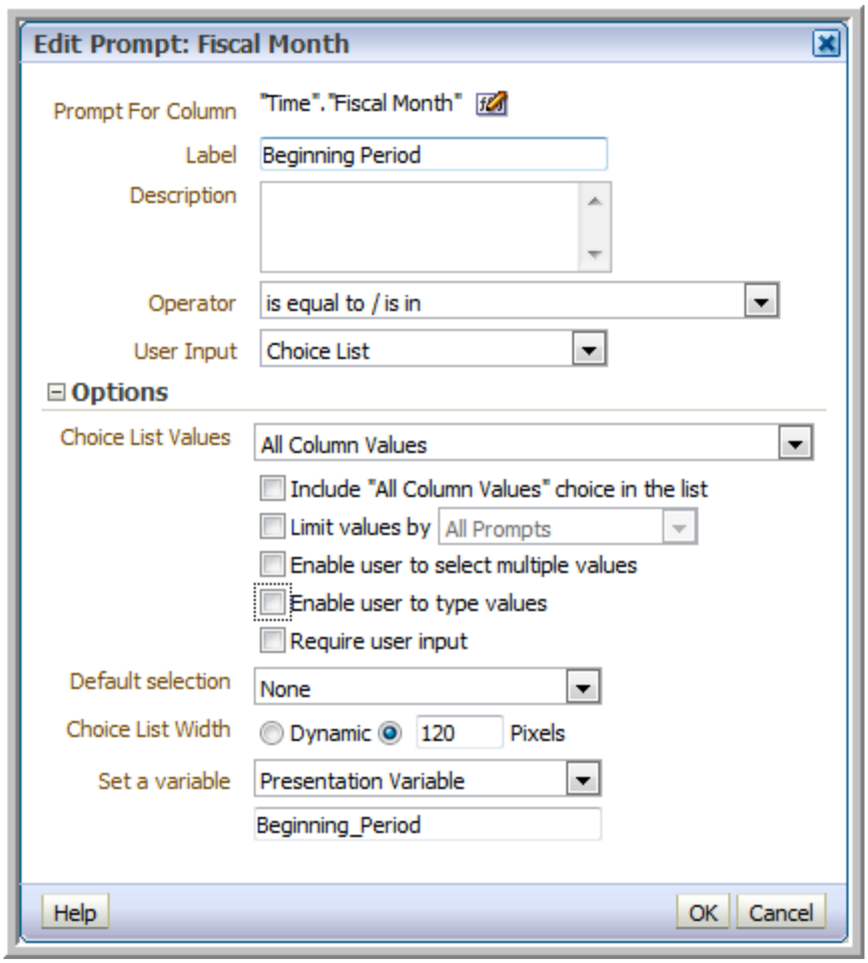
Exercise 8d: Subtracting One Time Period From Another

It is often useful to compute a difference between different time periods of the same fact column. For example, if we were interested in comparing Corrected Hours Year-over-Year, we could easily create an AGO column in the repository, or create that same column in Answers.

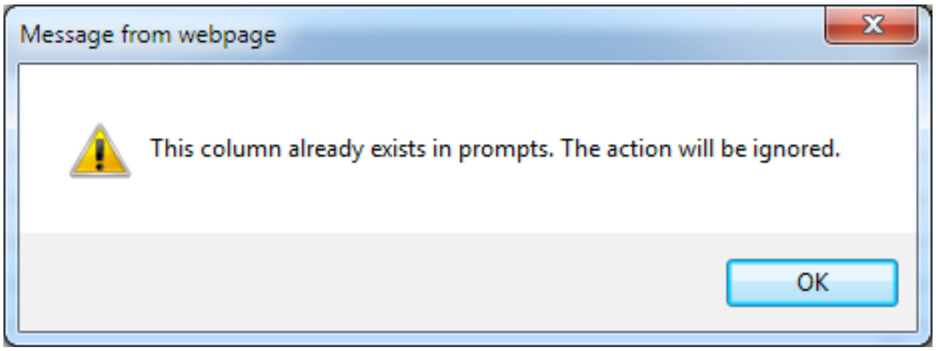
But what if our users want to be able to select **any** two Fiscal Months of data and compute the difference between them? To accomplish this, we will create a dashboard prompt that allows them to set both starting and ending Fiscal Months, and then use the results of that prompt to filter the analysis results. In this exercise, we'll learn how to use the FILTER function in an Answers custom column.

1. Let's create the dashboard prompt first. Create a new Dashboard Prompt.

2. For the first prompt, click the green icon to create a Column Prompt for the Fiscal Month column, with the parameters shown here. This will create a dropdown list of Fiscal Months, with the user's selection stored in the Beginning_Period presentation variable.



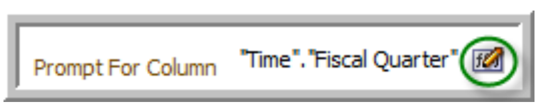
3. Next, we'd like to be able to produce an identical dropdown list labeled 'Ending Fiscal Month', and store the user's selection in a presentation variable called Ending_Period. Since we want two identical dropdown lists of Fiscal Months, click the green icon to add a second prompt as a Column Prompt for Fiscal Months. Or can you?



Unfortunately, OBIEE doesn't allow us to add the same column twice on a dashboard prompt. To circumvent this restriction, we'll add a different column, then **change it** so that it **looks** exactly the same as Fiscal Month.

4. Click the green icon and start a Column Prompt for the Fiscal Quarter column.

5. The key to this workaround is found in the Edit Formula icon at the top of the Prompt dialog. Click that icon (circled here).

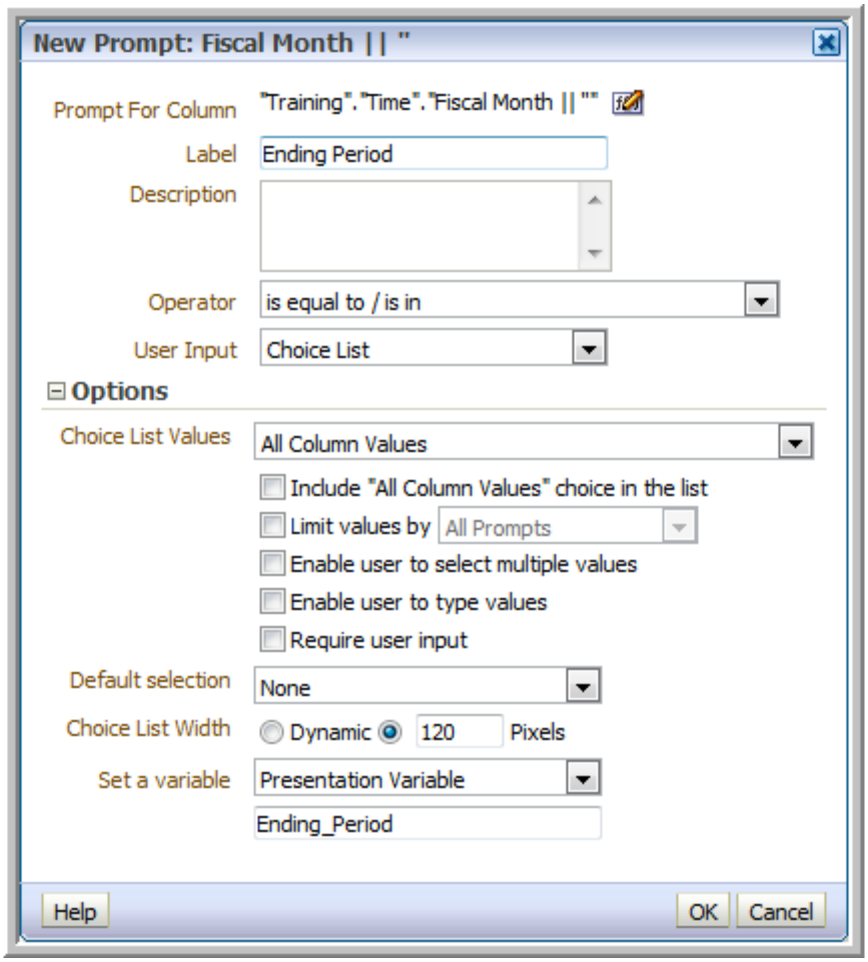


6. Change the column formula to a concatenation of the Fiscal Month column and a null: (**two single quotes** without any space in between).

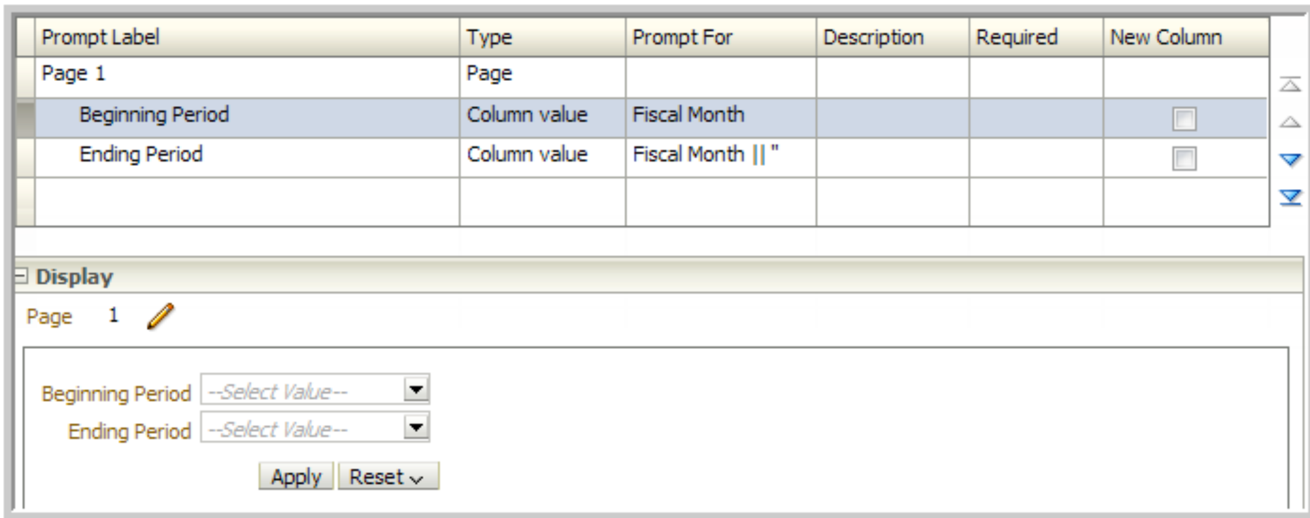
   "Time"."Fiscal Month" || ''

   Even though OBIEE won't let us put Fiscal Month on the dashboard prompt twice, it WILL let us put something onto the prompt that **looks** like Fiscal Month.

7. Create the remainder of the prompt using the parameters shown here.



8. Compare your results to this screenshot:

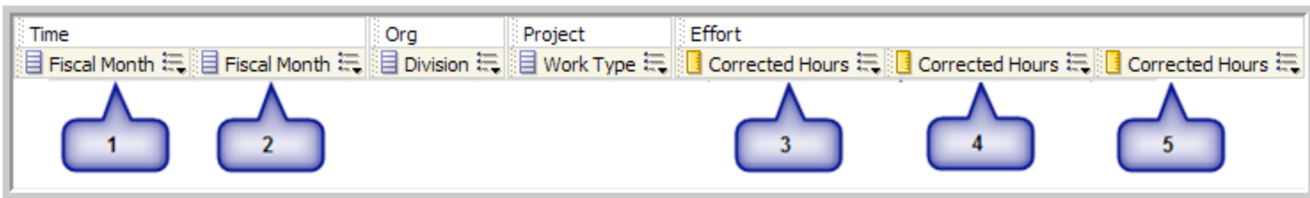


9. Test the prompt using the Preview icon, making sure that you can see the full list of sorted Fiscal Months in both dropdowns.

10. Save the dashboard prompt as **Period vs Period Prompt.**

Now let's create an analysis that will use those presentation variables.

11. Create this new analysis in Answers, including the Fiscal Month column twice, the Division and Work Type columns once each, and the Corrected Hours column three times.

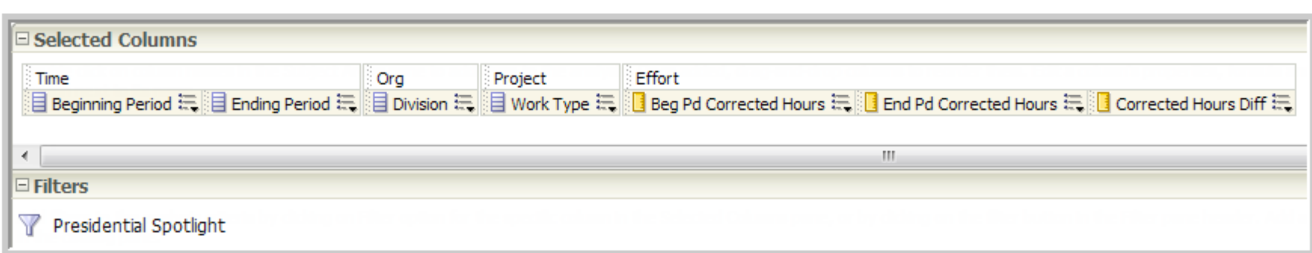


12. Apply the **Presidential Spotlight** filter.

13. Referring to the column numbers on the callouts above, change the formulas and custom headings as shown in this table. Columns 1 and 2 **do** need those leading and trailing single quotes. (The 5th column is just column 4 minus column 3. You may use copy/paste to assist in creating this formula.)

Col	Heading	Formula
1	Beginning Period	'@{Beginning_Period }{**201001**}'
2	Ending Period	'@{Ending_Period}{**201006**}'
3	Beg Pd Corrected Hours	FILTER("**Effort**"."**Corrected Hours**" USING ("**Time**"."**Fiscal Month**" = '@{Beginning_Period}{**201001**}'))
4	End Pd Corrected Hours	FILTER("**Effort**"."**Corrected Hours**" USING ("**Time**"."**Fiscal Month**" = '@{Ending_Period}{**201006**}'))
5	Corrected Hours Diff	FILTER("**Effort**"."**Corrected Hours**" USING ("**Time**"."**Fiscal Month**" = '@{Ending_Period}{**201006**}'))- FILTER("**Effort**"."**Corrected Hours**" USING ("**Time**"."**Fiscal Month**" = '@{Beginning_Period}{**201001**}'))

The end result will look like this.



14. Save the analysis as **Period Vs Period Difference.**

15. Return to the Dashboard, add a new page called **Period Diff,** and add the dashboard prompt and analysis that you just created.

16. Save the dashboard and test the results.

Begin 201002 **End** 201005 Apply Reset

Beginning Period	Ending Period	Division	Work Type	Beg Pd Corrected Hours	End Pd Corrected Hours	Corrected Hours Diff
201002	201005	Arts & Sciences	Non Billable	864	863	-1
			Operational Improvement	95	19	-76
			Operational Support	1,311	1,010	-301
		Graduate School	Non Billable	1,562	1,195	-367
			Operational Improvement	239	235	-4
			Operational Support	1,688	1,177	-511
		Office of Human Resources	Non Billable	2,097	2,128	32
			Operational Improvement	1,350	781	-568
			Operational Support	2,346	1,825	-521

Lesson 9: Using Session, Repository, and Presentation Variables

System Session Variables

Name	Type	Titles, Narratives, Static Text	Column Formulas	Example Value
system.currentTime	DateTime	@{system.currentTime} (apparently Standard GMT)	@{system.currentTime}	11/28/2007 4:37:06 PM
system.productVersion	Text	@{system.productVersion}	'@{system.productVersion}'	10.1.3.4 (Build 080726.1900)
session.locale	Text	@{session.locale}	'@{session.locale}'	en-us
session.language	Text	@{session.language}	'@{session.language}'	en
session.rtl	Text	@{session.rtl}	'@{session.rtl}'	false
session.loginTime	DateTime	@{session.loginTime}	@{session.loginTime}	11/28/2007 4:32:12 PM
session.logoutTime	DateTime	@{session.logoutTime}	@{session.logoutTime}	1/1/1970 12:00:00 AM
session.lastAccessTime	DateTime	@{session.lastAccessTime}	@{session.lastAccessTime}	11/28/2007 4:35:02 PM
session.currentUser	Text	@{session.currentUser}	'@{session.currentUser}'	j_jones
session.timeZone	Text	@{session.timeZone}	'@{session.timeZone}'	(GMT-06:00) Central Time (US & Canada)
user.homeDirectory	Text	@{user.homeDirectory}	'@{user.homeDirectory}'	/users/j_jones
user.id	Text	@{user.id}	'@{user.id}'	j_jones
user.displayName	Text	@{user.displayName}	'@{user.displayName}'	John Jones

Non-System Session Variables (examples)

Example	Type	Format (Title, Narrative*, Static Text)	Format (Column Formula)	Example Value
Sel_Mo	Not Date	@{biServer.variables["NQ_SESSION.Sel_Mo"]}	VALUEOF(NQ_SESSION.Sel_Mo)	Jul-04
Expire_Date	Date	*Date-type session variables will not display here; must be CAST as text first*	VALUEOF(NQ_SESSION.Expire_Date)	12/31/2009 12:00:00 AM

Repository Variables (examples)

Example	Type	Titles, Narratives, Static Text	Column Formulas	Example Value
Current_Fiscal Month	Non Date	@{biServer.variables["Current_Fiscal Month"]}	VALUEOF("Current_Fiscal Month")	Jul-04
Start_Date	Date	@{biServer.variables["Start_Date"]}		TIMESTAMP '2004-02-29 00:00:00'
Start_Date	Date		VALUEOF("Start_Date")	2/29/2004 12:00:00 AM

Presentation Variables (examples)

Example	Type	Title, Narratives, Static Text	Column Formulas	Example Value
My_Text	Text	@{My_Text}{Hello}	'@{My_Text}{Hello}'	Hello
My_Date	Date	@{My_Date}{31-DEC-2009}	'@{My_Date}{31-DEC-2009}'	1999-10-31 00:00:00
My_Number	Number	@{My_Number}{100}	@{My_Number}{100}	100

Appendix A: Graph Types Available in OBIEE

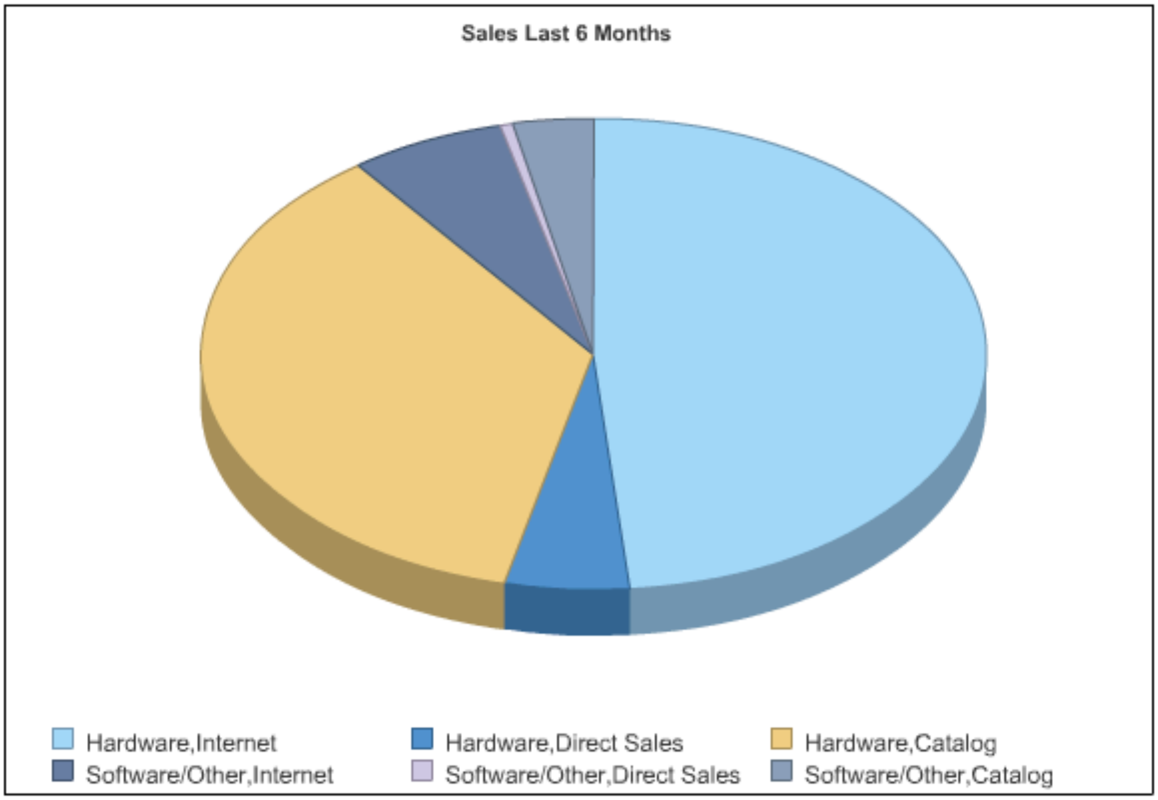
OBIEE provides a wide variety of graph types to assist with data analysis, including:

- Pie
- Bar
- Line
- Line Bar Combo
- Pareto
- Scatter
- Area
- Radar
- Step
- Bubble

Each graph type is illustrated in the generic images on the following pages. The data represented in the graphs is not representative of any Cornell data.

Pie

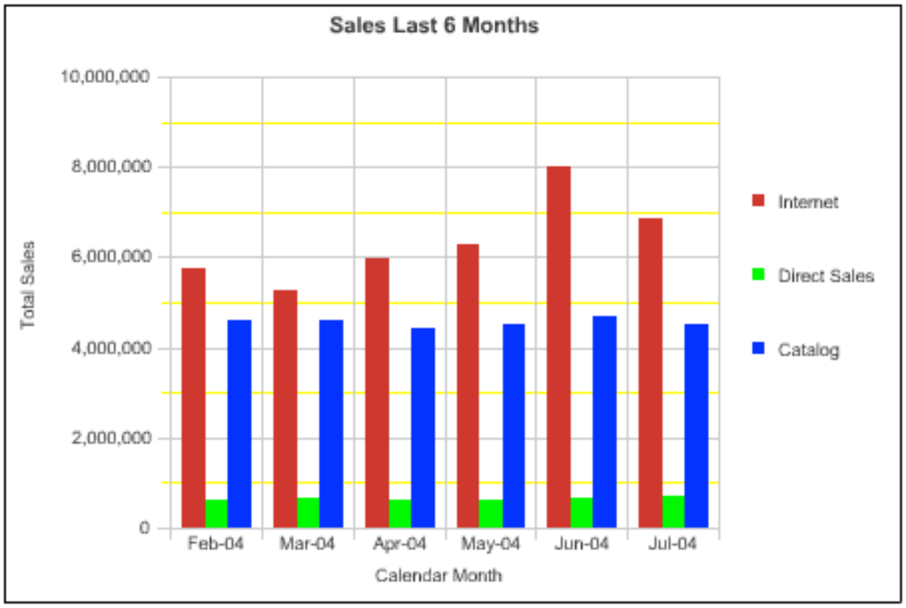
A Pie graph shows data sets as (typically) percentages of a whole. They are useful for comparing parts of a whole.



(If you're looking at a black and white printout of these graphs, they look a lot better in color!)

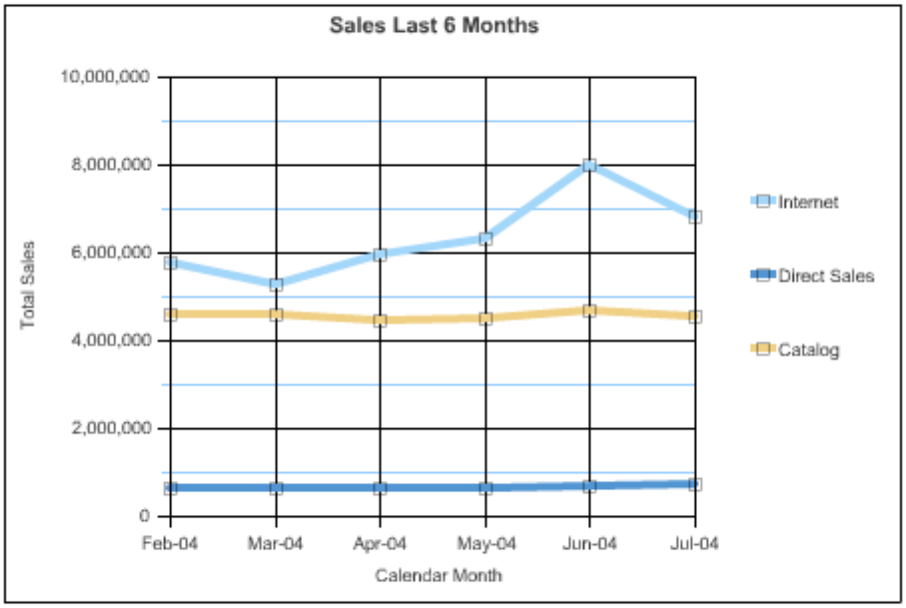
Bar

Bar graphs draw comparisons between items, but not as percentages of the whole.



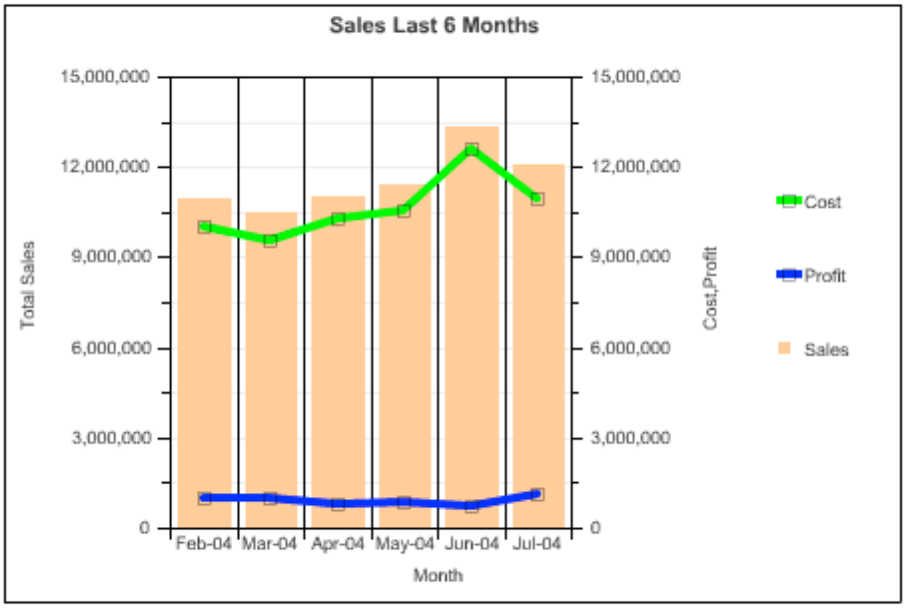
Line

Line graphs show one measure as it changes over time. Line graphs may contain multiple measures or dimension values on one graph, and are useful for revealing patterns and trends in data.



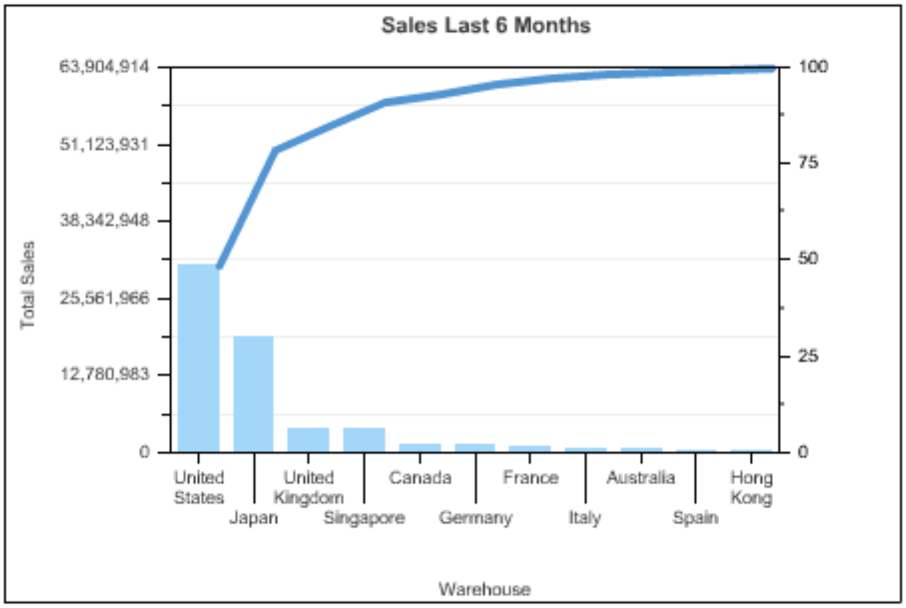
Line Bar Combo

The Line Bar Combo graph plots two different sets of data with two different ranges: one set as bars, one set as lines overlaid on the bars. Line Bar Combo graphs are useful for showing trend relationships between different data sets.



Pareto

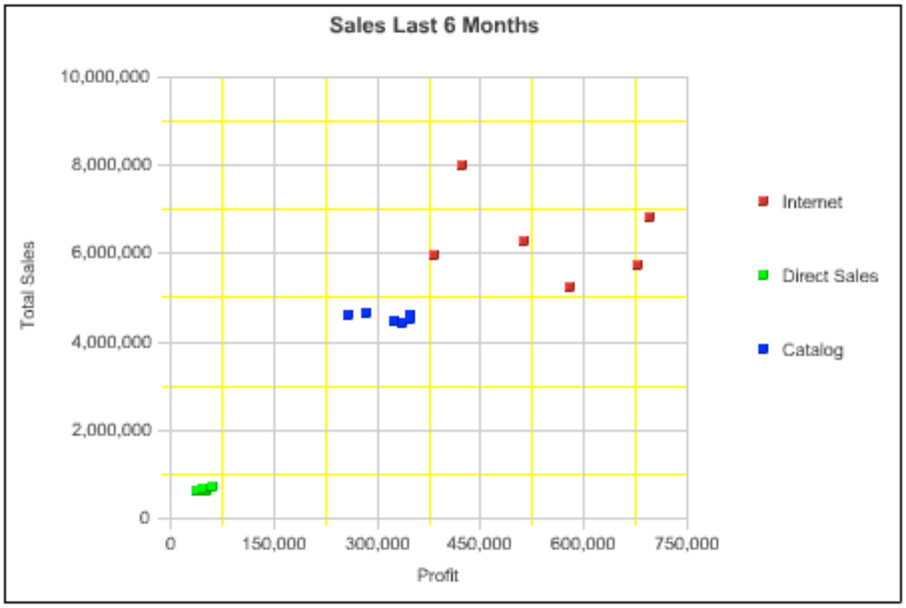
Pareto graphs combine the features of bar graphs and line graphs. They display criteria in descending order. In this graph type, the line shows a cumulative total of the percentages. Pareto graphs are useful for identifying significant elements or contributors, such as best and worst, or most and least. Bars on the left are relatively more important than those on the right.



Scatter

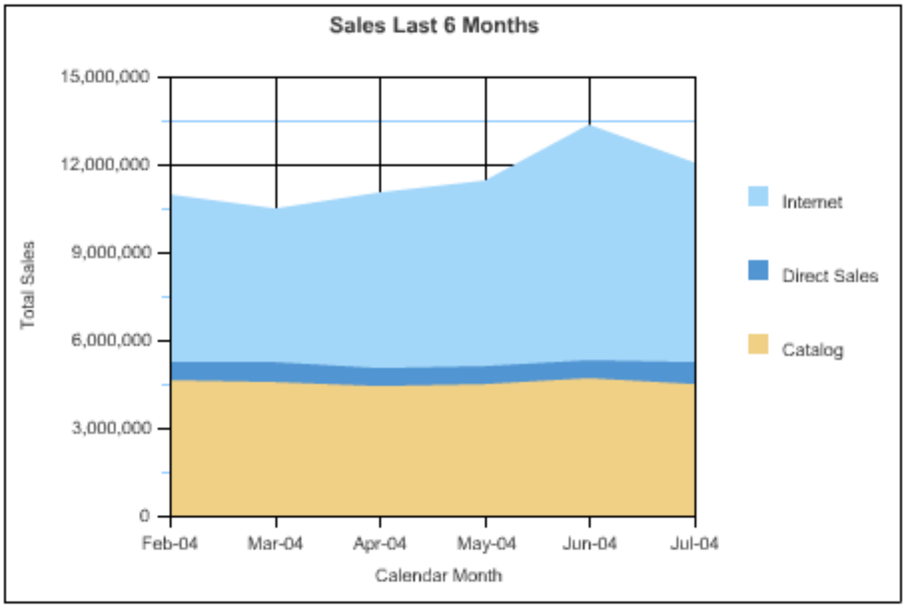
Scatter graphs show the correlation of two sets of numbers by plotting where they intersect. Each combination of x/y values is displayed as a discrete point, scattered in an x/y grid. Scatter graphs are useful for observing relationships and trends in large data sets.

Scatter graphs are built by plotting one fact on the x-axis and another fact on the y-axis.



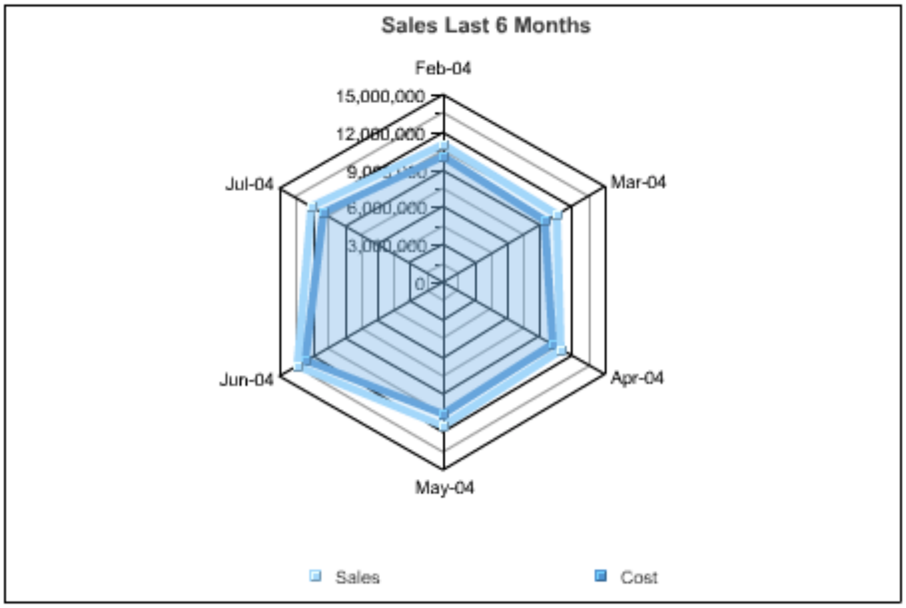
Area

An area graph is similar to a line graph, but with the areas under the lines filled in, which emphasizes the **amount** of change rather than the **rate** of change. Area graphs show the percentage of the whole that each variable comprises. They are useful for observing changes in cumulative value or percentage over time (for example, by comparing groups on certain measurements such as outcomes, and displaying group trends).



Radar

Radar graphs are graphical displays of the differences between actual and ideal performance. It plots the same information as a bar graph, but displays data radiating from the center of the graph. Each data element has its own value axis. Radar graphs are useful for examining overlap and distribution.

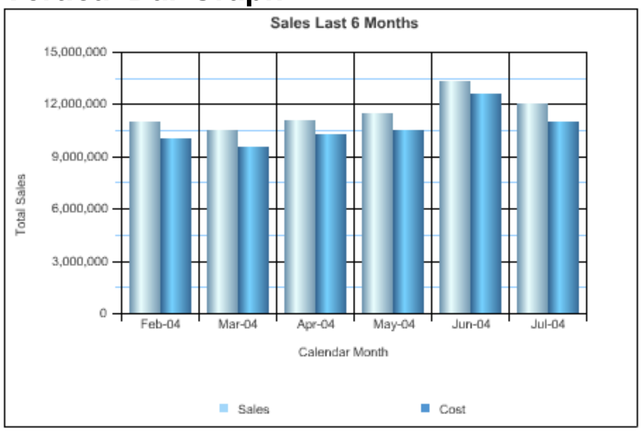


Notice that the values furthest out toward the edge are higher numbers.

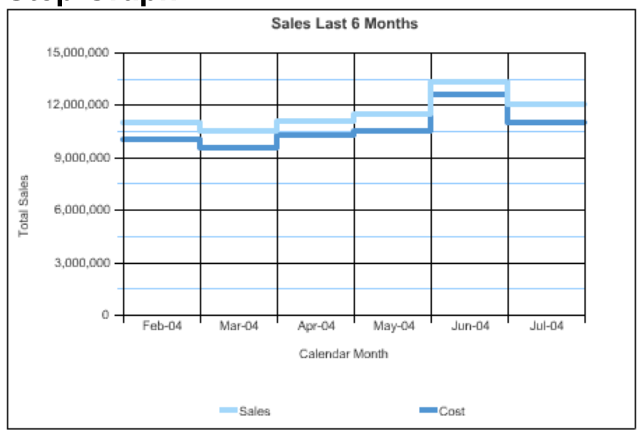
Step

A step graph is used to plot and compare facts. Step graphs are useful for illustrating trends in data in which values change discontinuously. Although they may be used similar to bar graphs, step graphs more clearly indicate upward or downward movement when viewing multiple graph components simultaneously. Compare the vertical bar graph with the step graph for ease of interpretation. Each component can be easily viewed and interpreted independent of the other(s) with the step graph.

Vertical Bar Graph



Step Graph

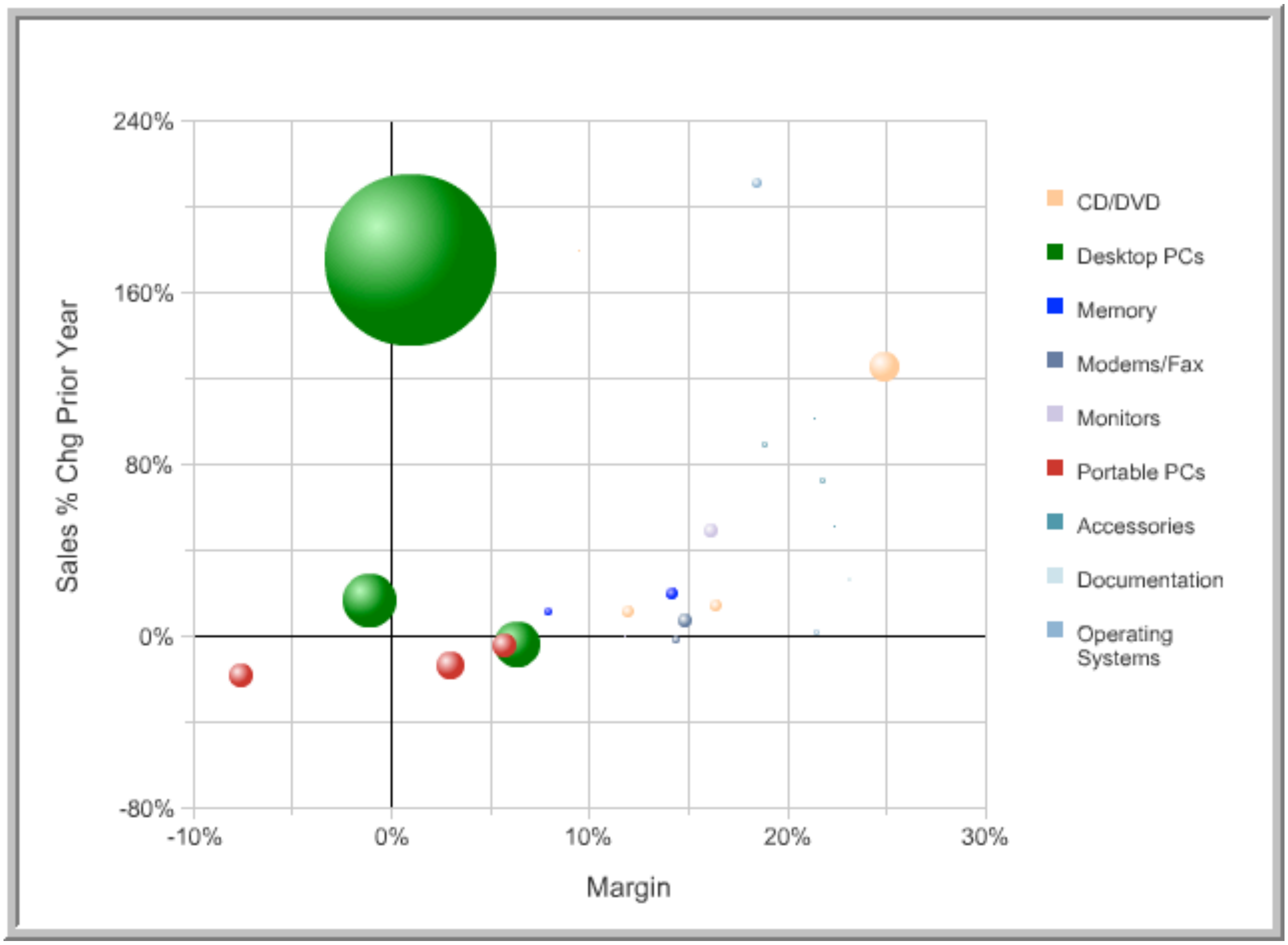


Bubble

Bubble graphs show three variables in two dimensions.

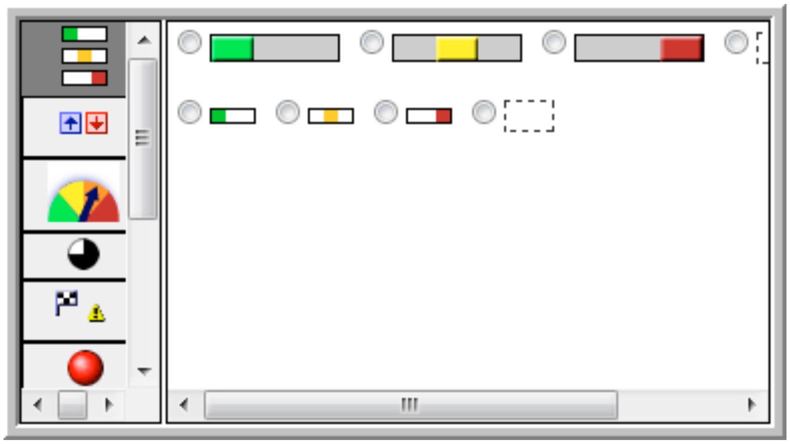
- One variable is represented by the location of the circle on the x-axis
- Another variable is represented by the location of the circle on the y-axis
- The third value is represented by the relative size of the circle.

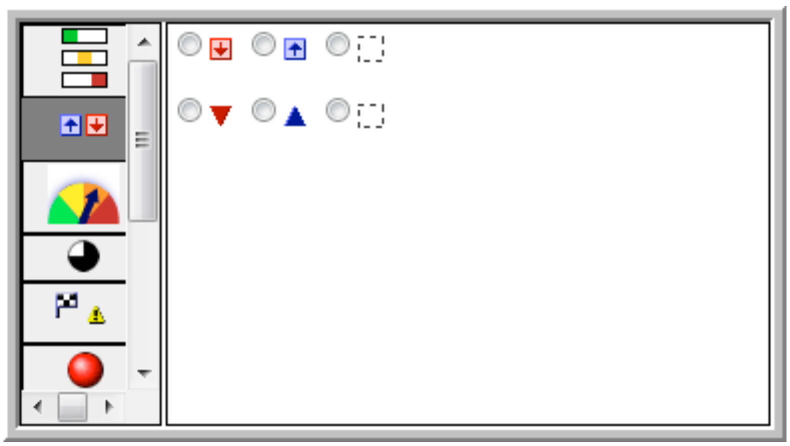
(This graph is not representative of the data presented in this training class.)

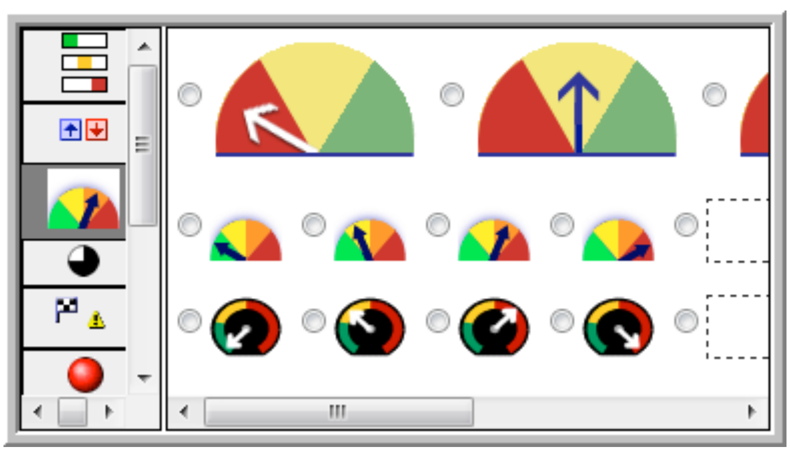


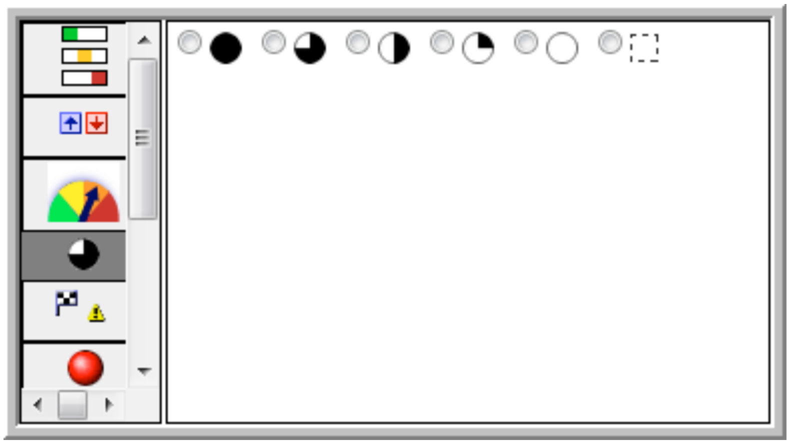
Appendix B: Built-In Images

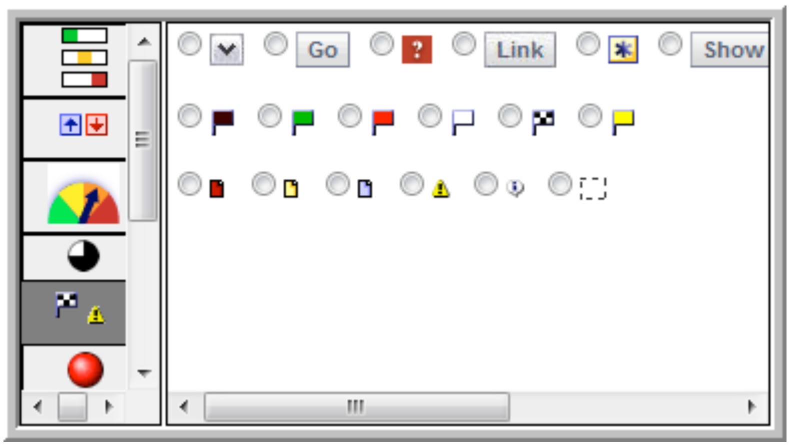
The following default images are included with OBIEE 11g for the purpose of conditional formatting:










Go
Link
Show