

## 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.

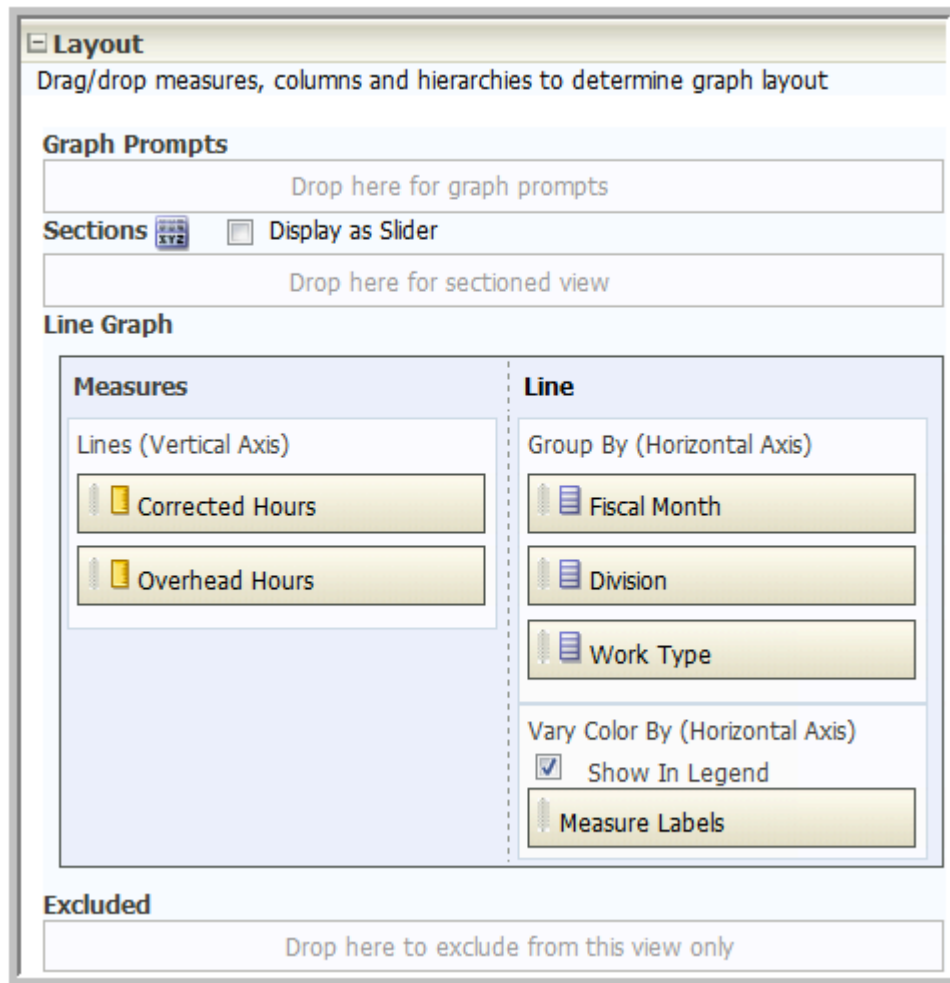


Since we used the New View icon on the tool bar, the view was not automatically opened in the editor. To edit a view, you may use one of two techniques:

- 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,
  - 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.

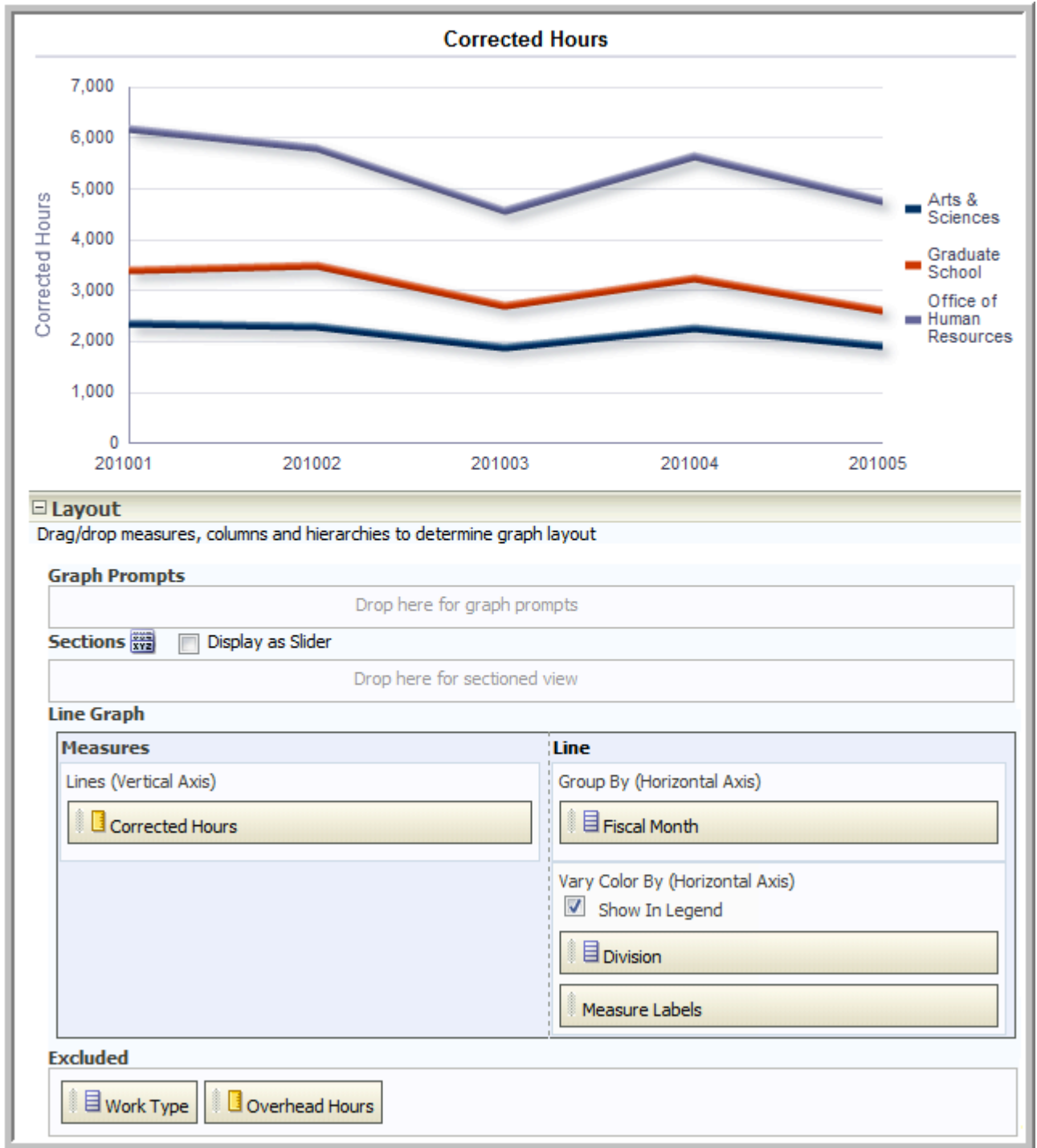
- When a graph is created, all of the component columns in the analysis are included. It's up to us to exclude some columns and rearrange the others to create the results we want to see.

The initial graph layout will look something like this:



- 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.
- 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.
- 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.

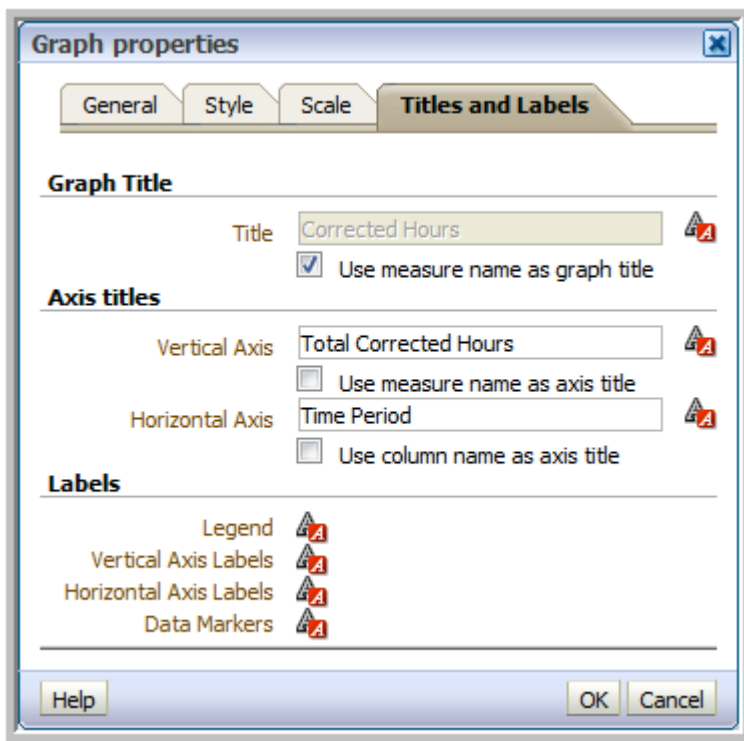
11. Compare your finished layout and graph to this screenshot:



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.

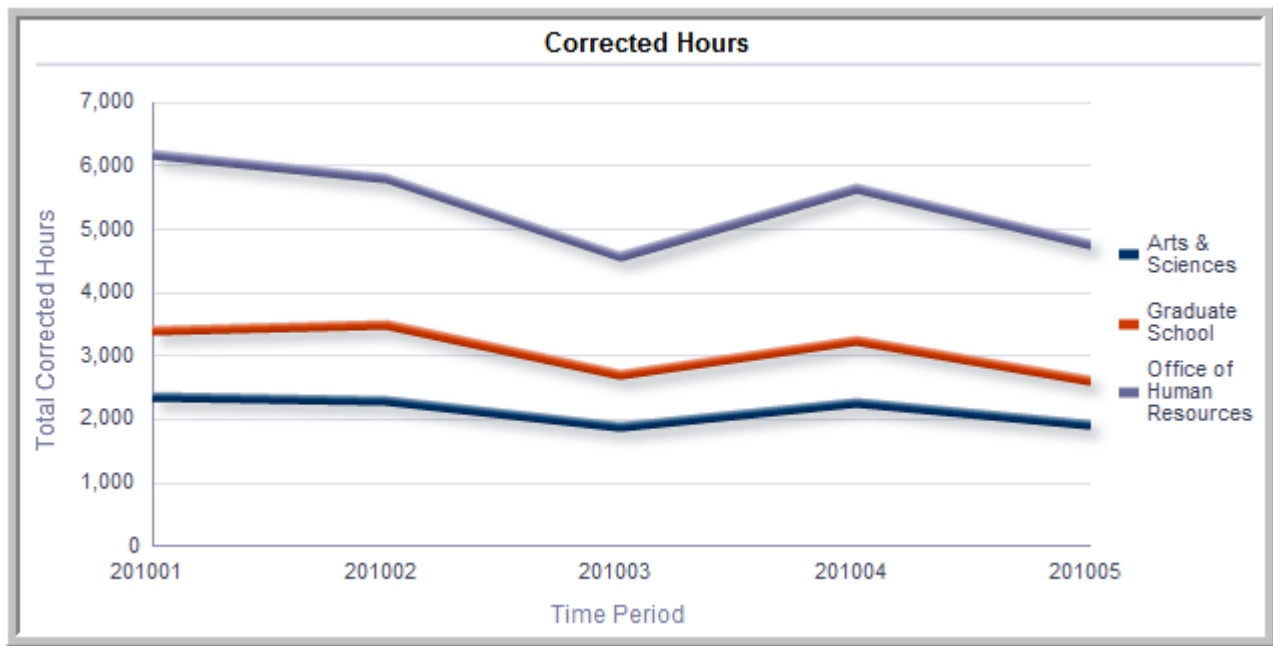


13. Let's change our axis labels. Click the **Titles and Labels** tab.
14. **Untick** the Vertical Axis and Horizontal Axis check boxes as shown here, and change their respective titles to **Total Corrected Hours** and **Time Period**.

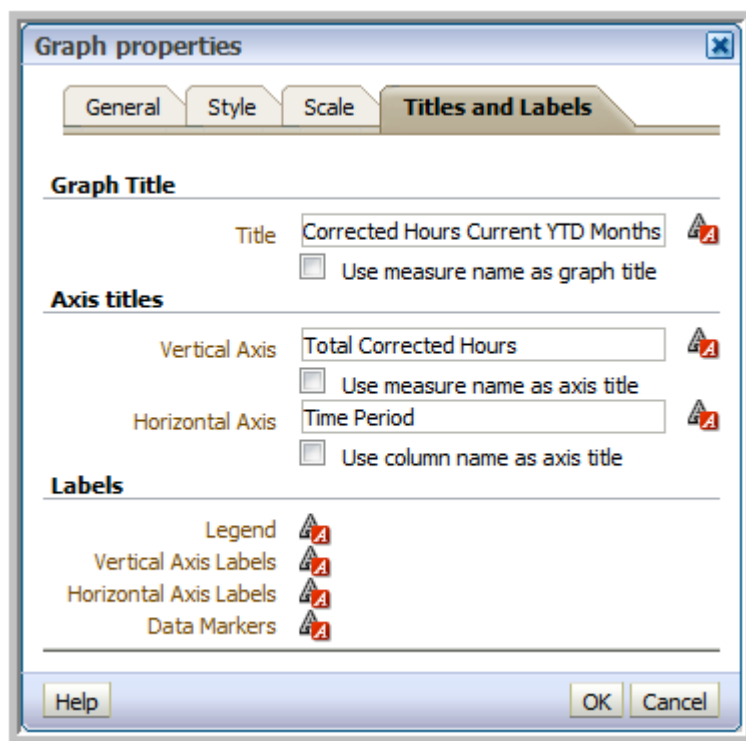


15. Click **OK**

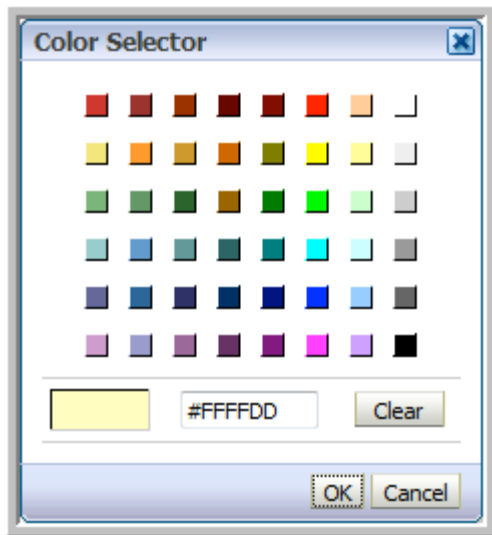
16. Compare your graph to this screenshot:



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.

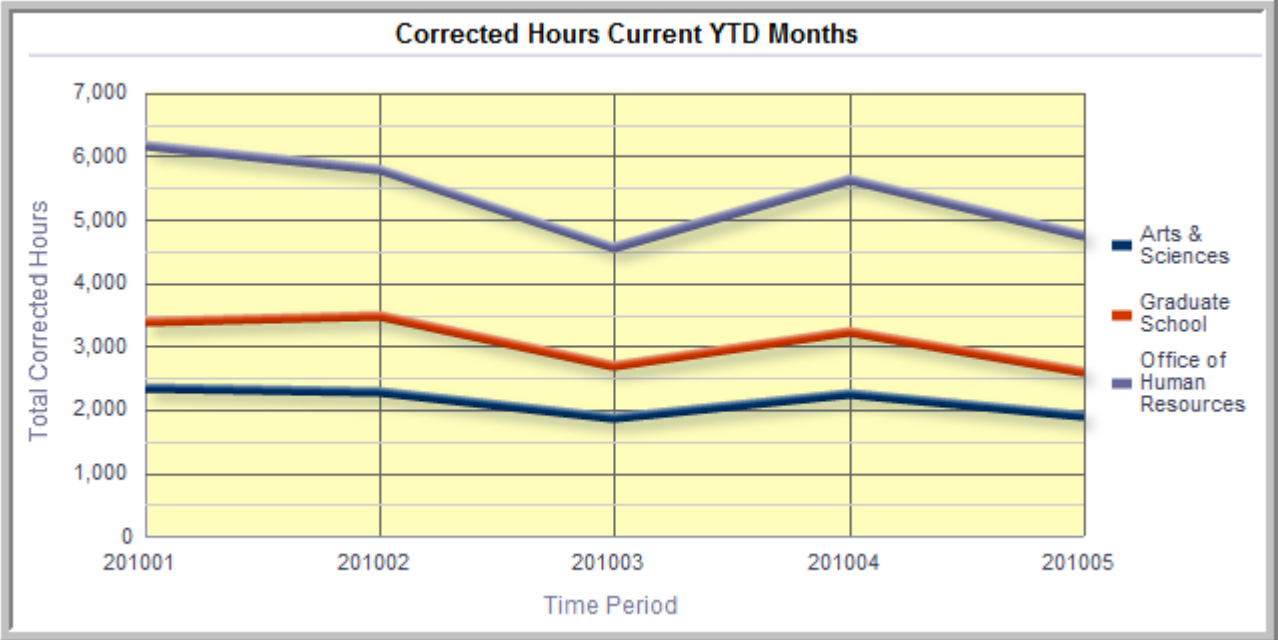


19. Let's change the graph background color and the color of the grid lines. Click the **Style** tab.
20. Under **Plot Area**, click the dropdown box for the **Background**.
21. In the Color Selector dialog box, type #FFFFDD (a very pale yellow) into the box below the color swatches and click **OK**.



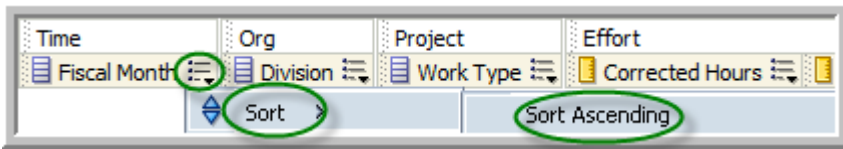
22. Still in the Plot Area:
  - a. Click the **Specify** radio button for the Gridlines.
  - b. Tick both of the checkboxes for the Major Grid (Horizontal Lines and Vertical Lines) and the one checkbox for the Minor Grid (Horizontal Lines).
  - c. Click the **Major Grid Color** dropdown box and set the major grid line color to dark grey (8<sup>th</sup> column 5<sup>th</sup> row, #666666).
  - d. Click the **Minor Color** box and set the minor grid line color to medium grey (8<sup>th</sup> column, 3<sup>rd</sup> 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:

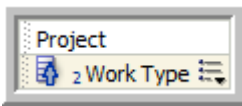


Now let's sort the legend in reverse alphabetical order. In an earlier exercise, you learned that the table of results is, by default, sorted in ascending order starting with the leftmost column and working toward the right. That's what we want for this table. We still want **Fiscal Month** as our primary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

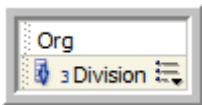
- 23. Click **Done** at the top right of the editor screen to close the editor and accept your changes.
- 24. Return to the Criteria tab. All sorting is established on the Criteria tab.
- 25. If not already set, establish **Fiscal Month** as the initial sort column (ascending).



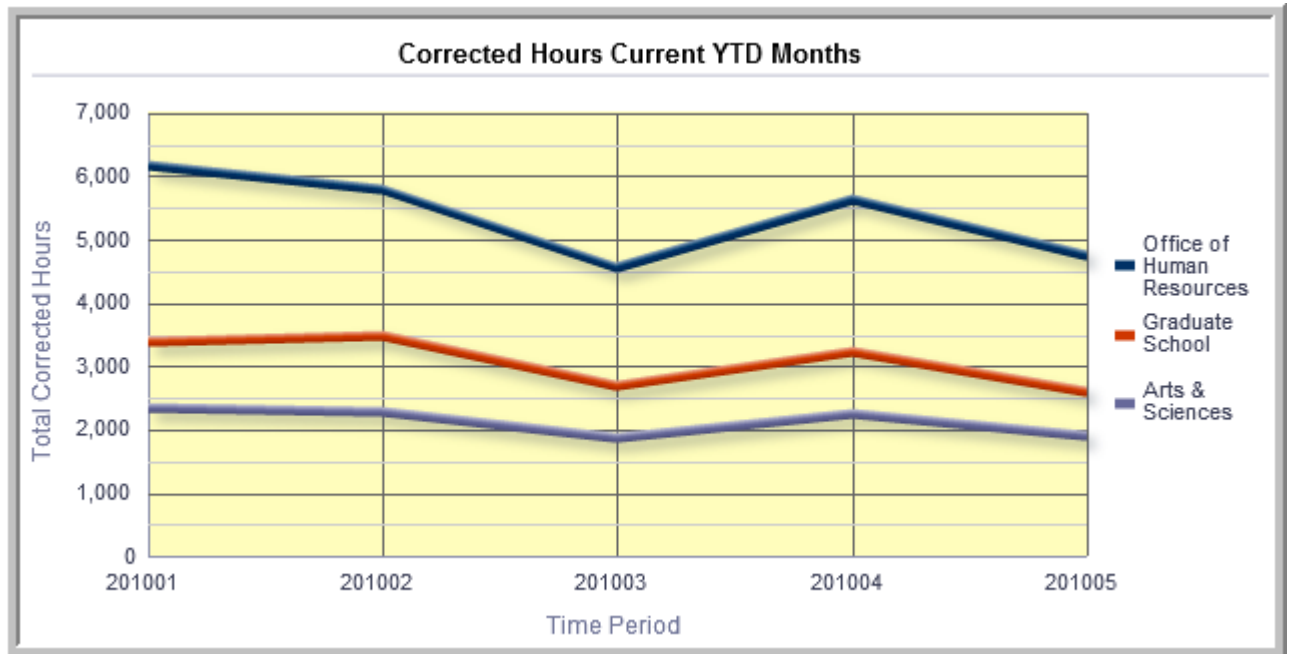
- 26. **Add** an ascending sort for the **Work Type** column. The arrow points up (ascending sort order), and the number 2 indicates that this is the second sort.



- 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.

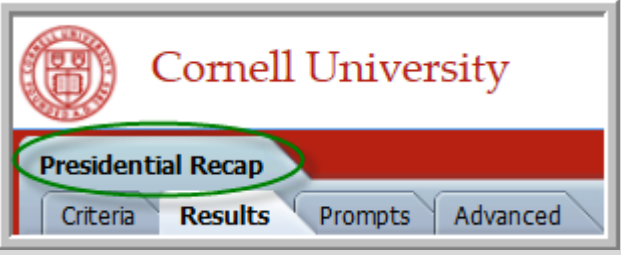


29. Click **Done**.
30. Resave the **Presidential Recap** analysis.



## Exercise 4b: Vertical Bar graphs

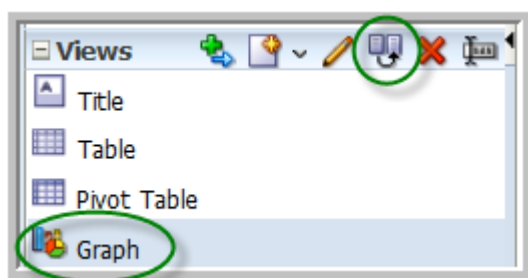
OBIEE features many different types of graphs. In the previous exercise, we created a line graph. Perhaps we would like to also create a vertical bar graph to display the data in our analysis. Although we could create a new view using the same techniques that we learned in the previous exercise, let's 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.

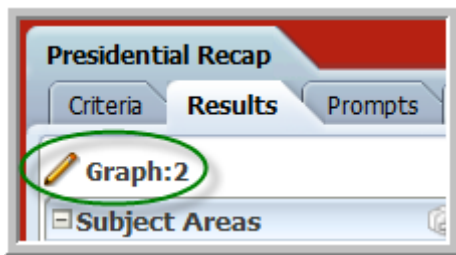


The screenshot shows the top-left corner of the OBIEE interface. It features the Cornell University logo and the text 'Cornell University'. Below this, there is a red horizontal bar with the text 'Presidential Recap' in white, which is circled in green. Underneath the red bar are four tabs: 'Criteria', 'Results', 'Prompts', and 'Advanced'. The 'Results' tab is currently selected and highlighted.

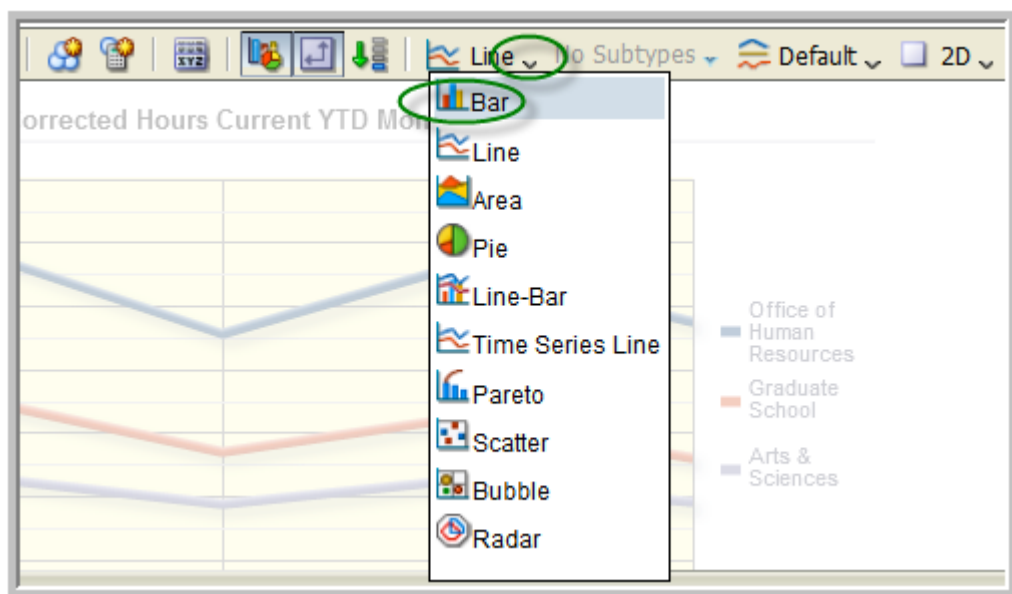
1. If necessary, click the Open  icon on the tool bar and select the **Presidential Recap** analysis.
2. Click the **Results** tab so that you can see the **Views** section at the bottom left of the screen.
3. Click to highlight the **Graph** view in the list of views, then click the **Duplicate View**  icon in the Views header.



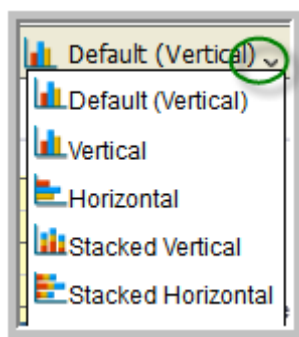
- Take a look at the top left of the working area, just below the Results tab. You will know that you are actively editing a view when the pencil icon and the name of the view are shown in this location. The **Done** and **Revert** buttons will also be visible below the two save icons.



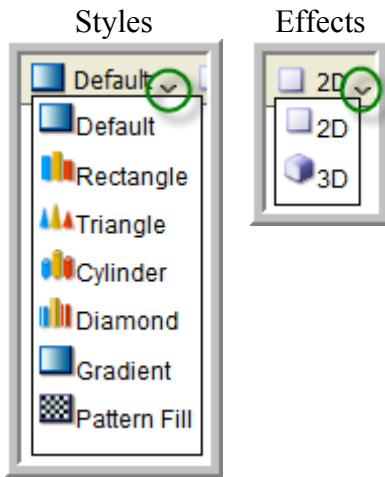
- On the toolbar immediately above the graph, click the **Graph Type** dropdown arrow, and select **Bar** from the list. Notice that there are 10 different types of graphs available in OBIEE.



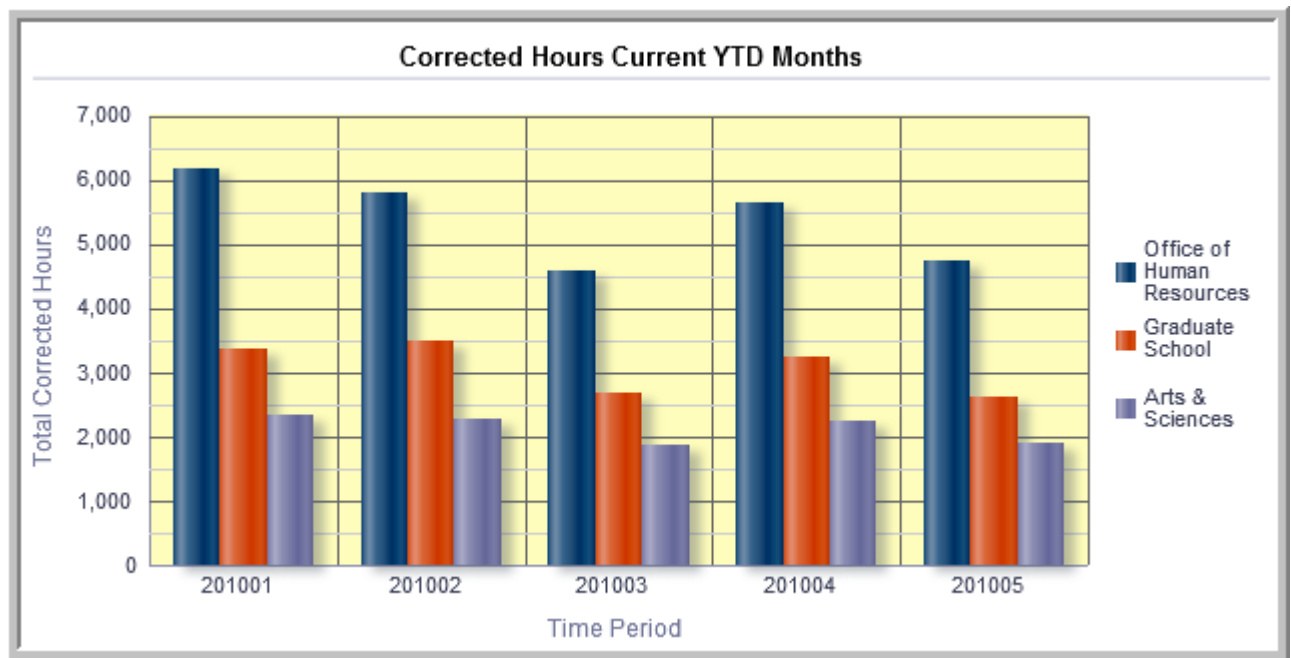
- The default Bar graph is a Vertical bar, and that's what we want. However, you may click on the Graph Subtype dropdown arrow to see the other subtypes of Bar graphs that are available.



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

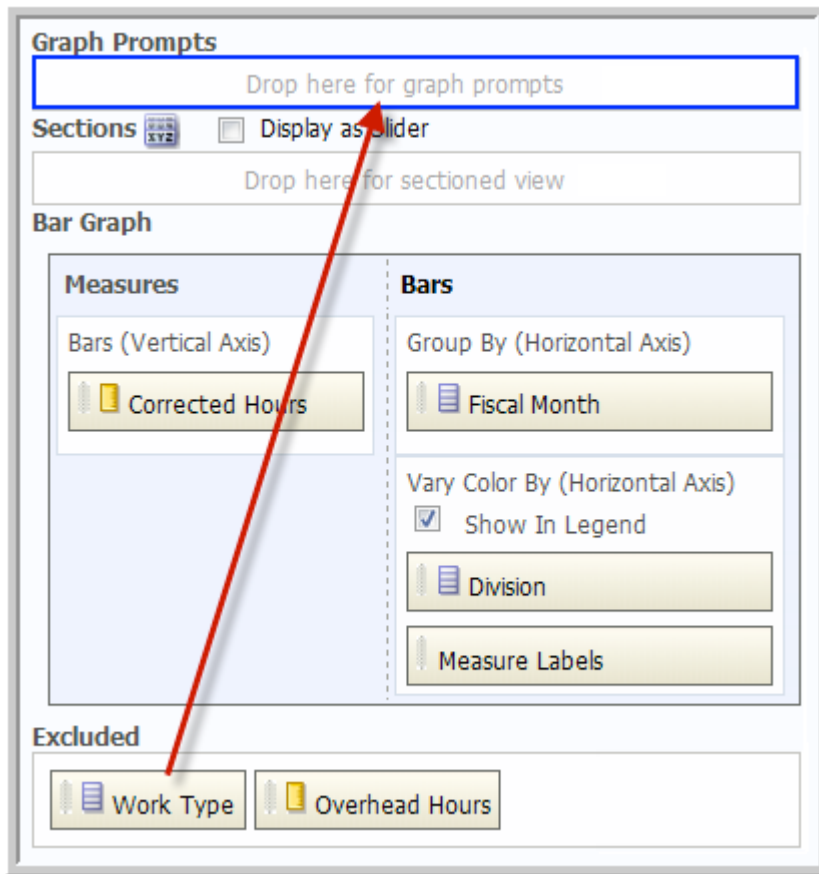


8. Compare your graph results to this picture.

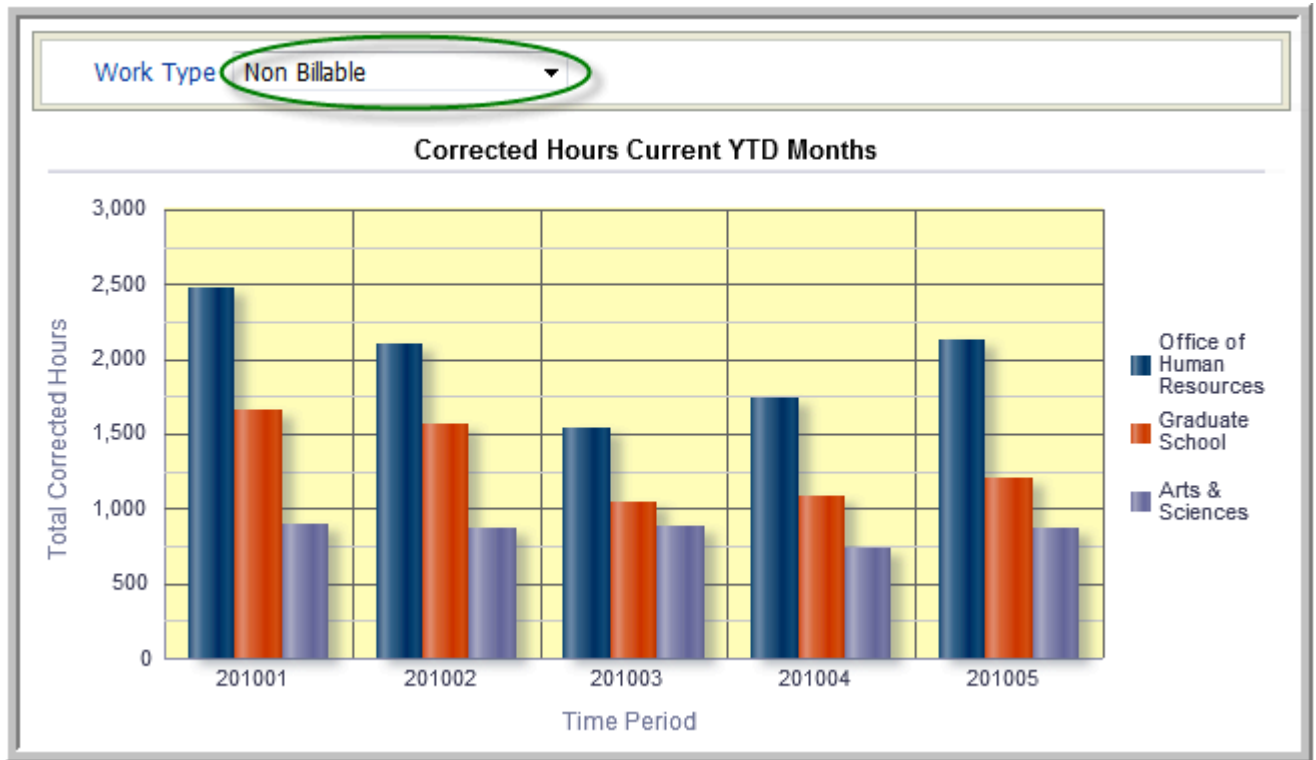


As was the case with the Line graph, **Fiscal Month** labels are displayed on the **horizontal** axis. The values for **Corrected Hours** are displayed on the **vertical** axis. Each Division is represented in the body of the graph and in the **legend**.

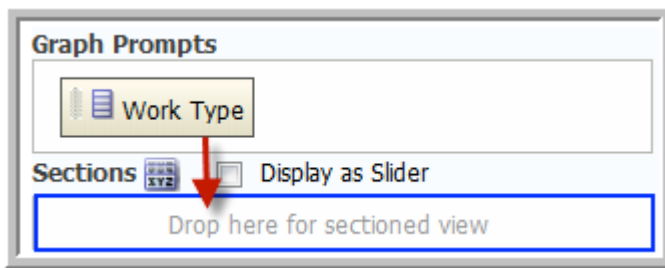
9. New in OBIEE 11g is the ability to use the **Graph Prompts** area and the **Sections** area within the Layout panel to display individual graphs for each value of a column. Working in the Layout section, and using the techniques learned in the Line Graph exercise, drag the Work Type tile out of the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

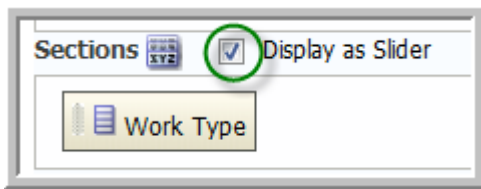


11. Return to the Layout panel again, and drag the Work Type tile down into the Sections zone.

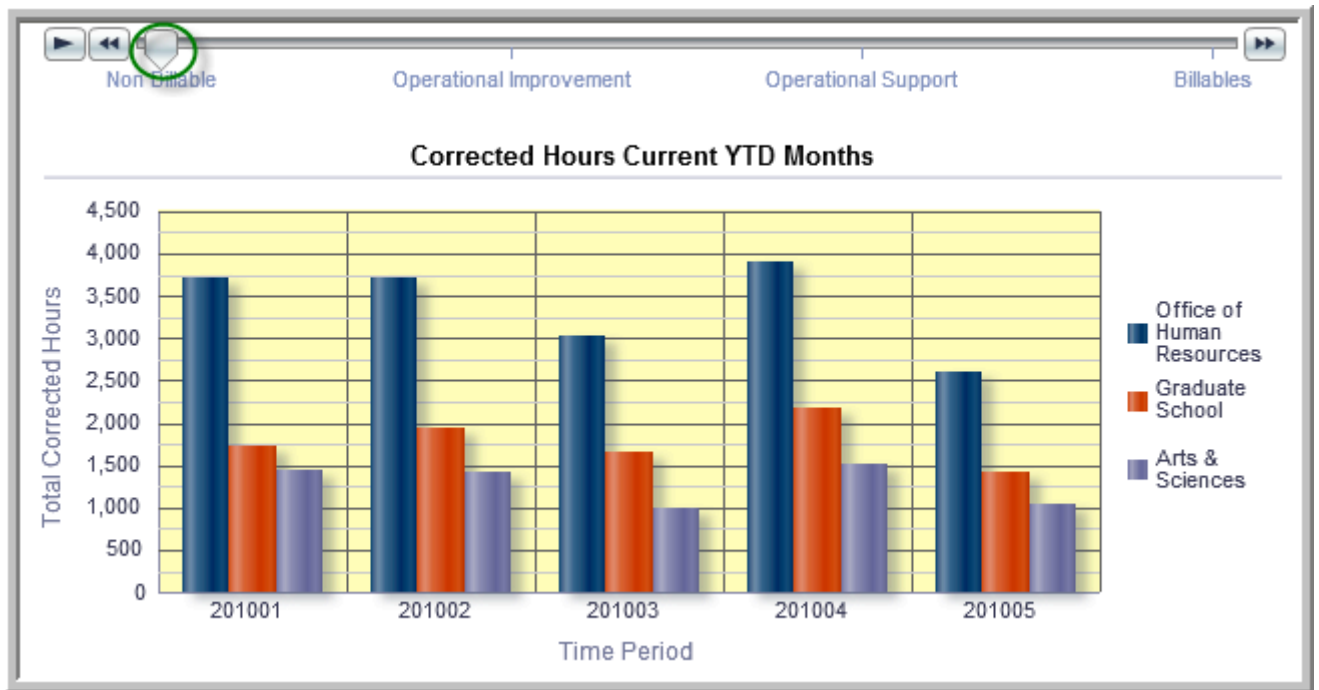





12. Notice that each value of Work Type is now represented in its own separate graphs.

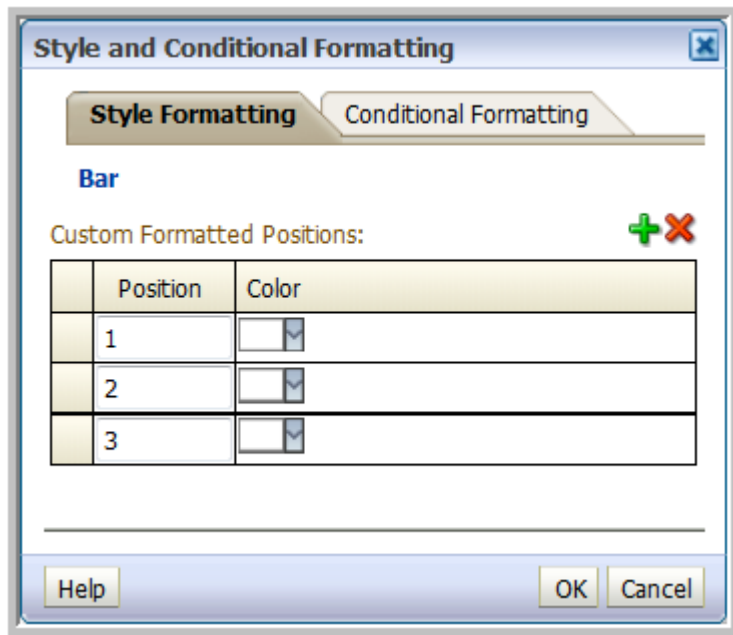
13. Finally, click the **Display as Slider** checkbox.



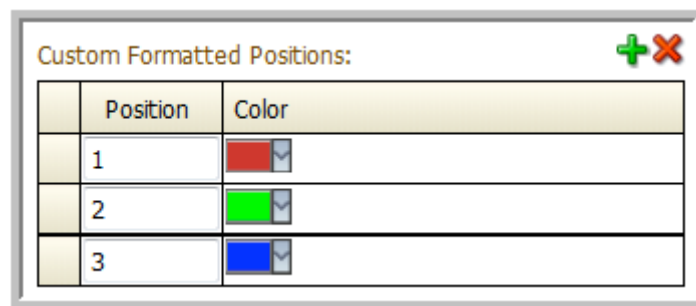
14. The four values of Work Type are visible in a slider bar above the graph. To see how the slider works, drag the pointer (circled in green) between Work Type labels, and experiment with the playback arrows on either side of the slider.



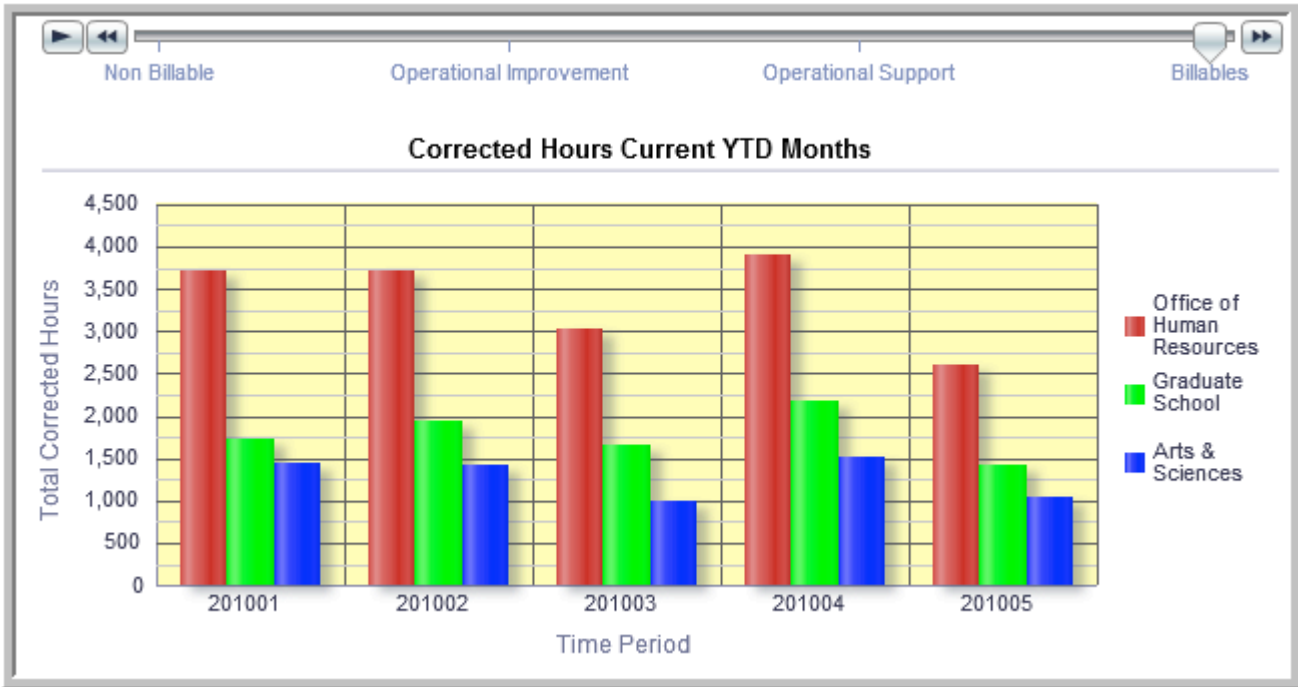
15. Let's change the colors of the vertical bars. Click the Graph Properties  icon in the toolbar.
16. Click the **Style** tab, then click the **Style and Conditional Formatting**  icon.
17. There are three bars, so let's specify colors for all three. Click the Add New Position  icon three times.




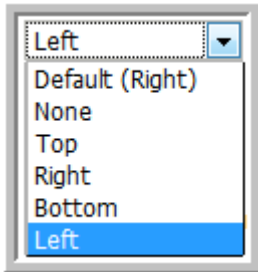
- a. Click the **Color** dropdown for Position 1, select the top left color (red) and click OK.
- b. Likewise, select some shade of green as the color for Position 2.
- c. Likewise, select some shade of blue as the color for Position 3.



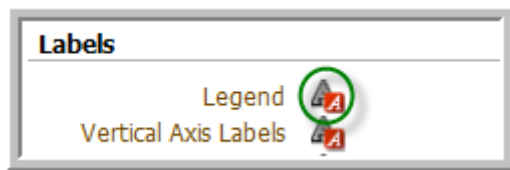
- d. Click **OK** twice to close the dialog boxes and view the results (as shown on the next page).



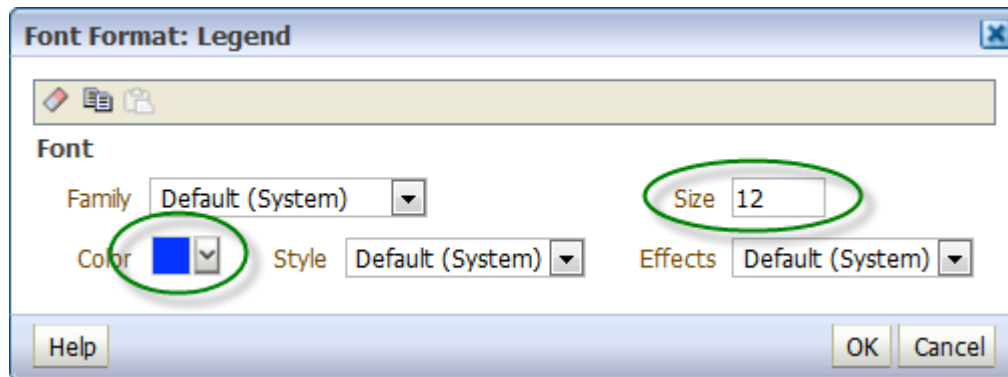
18. Let's change a few more graph properties. Click the **Graph Properties**  icon again.
19. Let's move the legend to the other side of the graph. On the **General** tab, change the value of the **Legend** dropdown to **Left**.



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**.

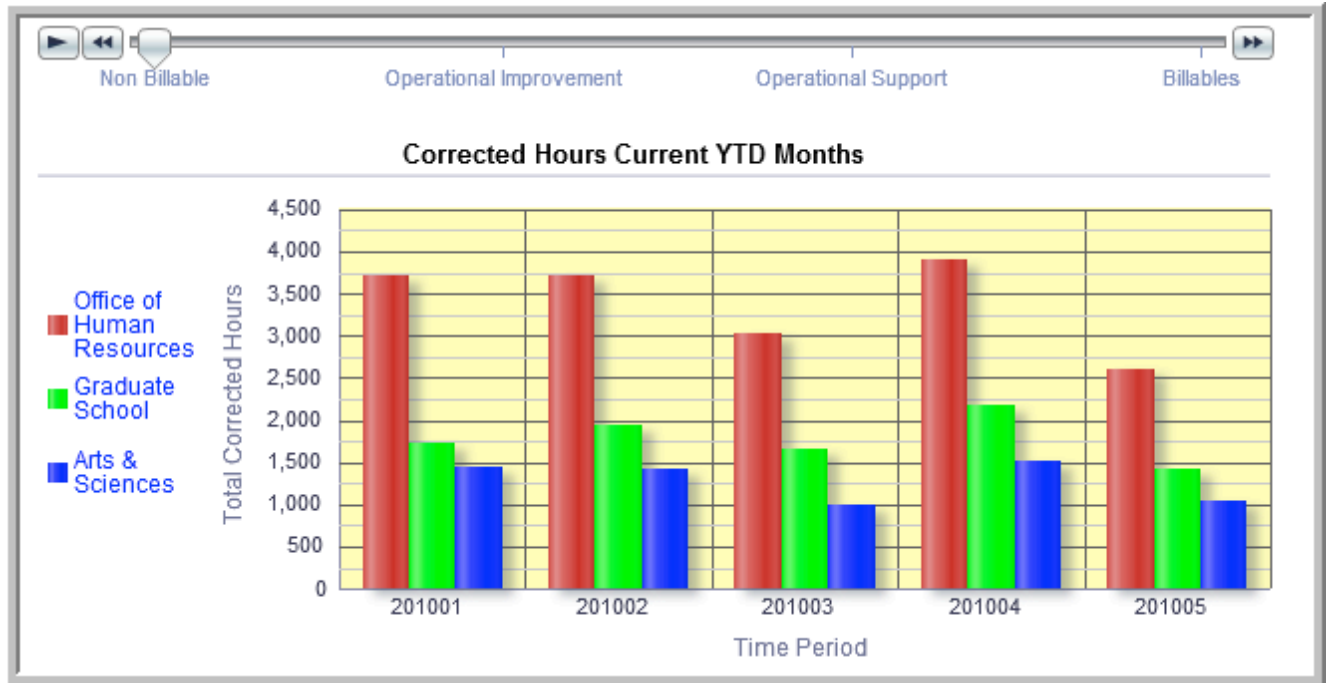


- c. Using techniques learned earlier, change the Font color to a selection of your choice.
  - d. Type 12 as the Size (point size) of the font.



- e. Click OK twice to redisplay the graph results.

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

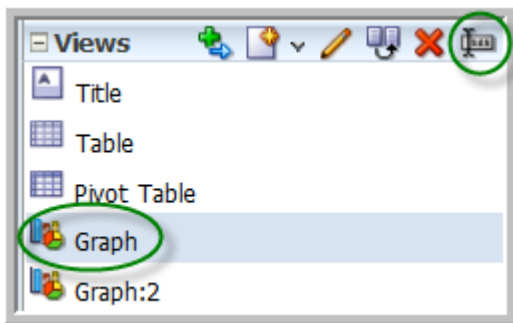


22. Resave the **Presidential Recap** analysis.

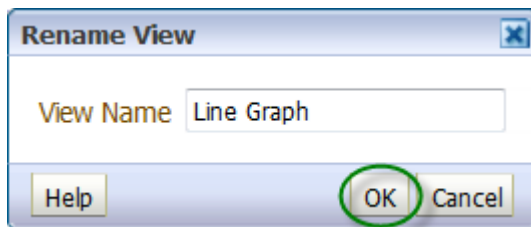
## Exercise 4c: Renaming Views

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.

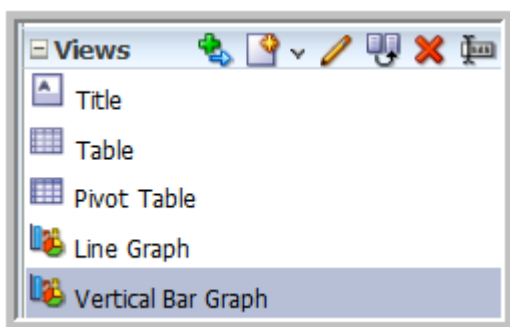
1. As noted earlier, in order to do any work with views, we must be on the Results tab. Click on the Results tab if necessary.
2. In the **Views** section, highlight the **Graph** view, and click the **Rename** icon on the Views header.



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.

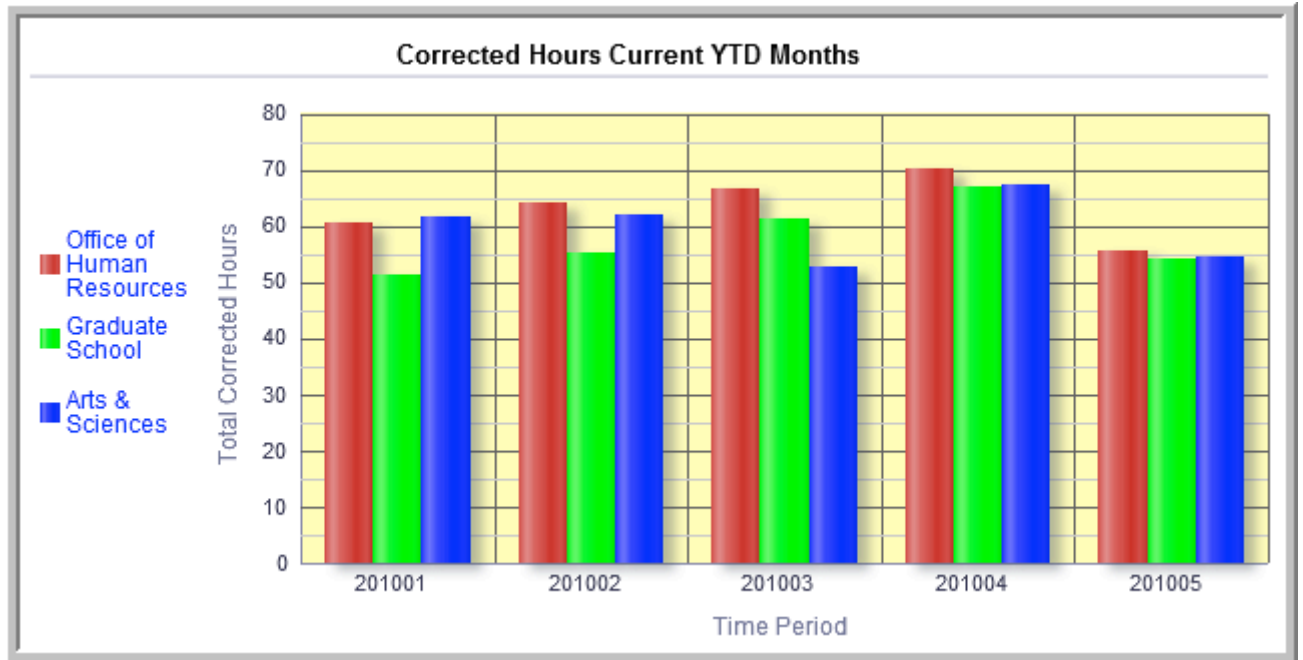
1. Still working with the **Presidential Recap** analysis, and on the Results tab, highlight the Vertical Bar Graph view in the Views list, and duplicate it  to create a new Graph.
2. Notice that the name Vertical Bar Graph is shown as the name of the view being edited. Currently, there are currently **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.

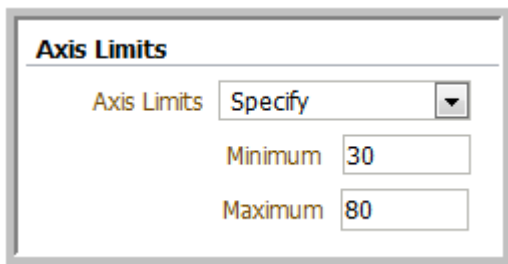
3. Drag the Work Type column tile into the Excluded area.
4. Using techniques learned earlier, **but remaining on the Results tab**, move the mouse into the Subject Area listing, drill down into the **Measures and Detail ... Effort** folder, and add the **Applied %** column from the Effort table.
5. 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:

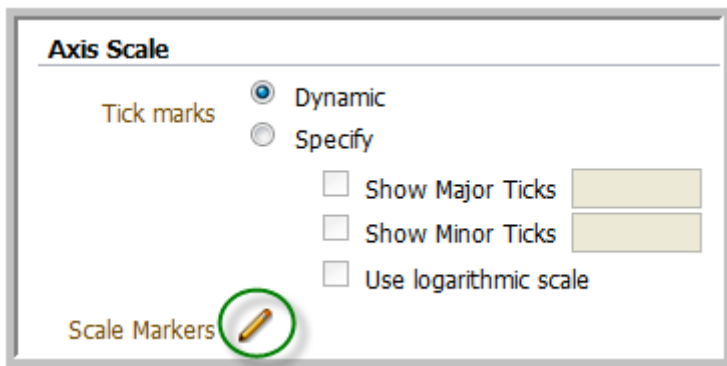


The University administration has determined that the target for Applied % for each Division should be in a range between 55% and 60%, and that a value lower than 52% is cause for concern. Let's add some scale markers to our graph to help us see which values fall within or outside of those limits.

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.

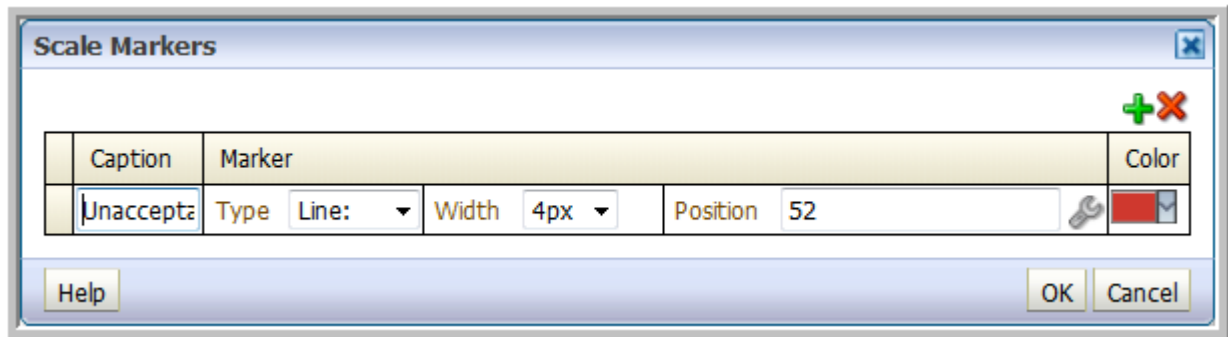


9. Next, let's add our first scale marker. Click the **Edit Scale Markers**  icon.



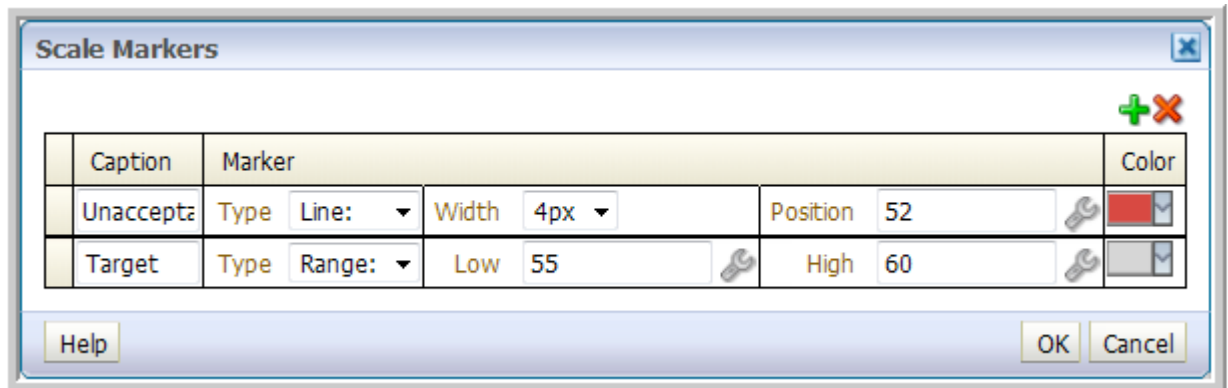
**Scale Markers** are lines or bands of color that help the reader to quickly interpret results.

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.

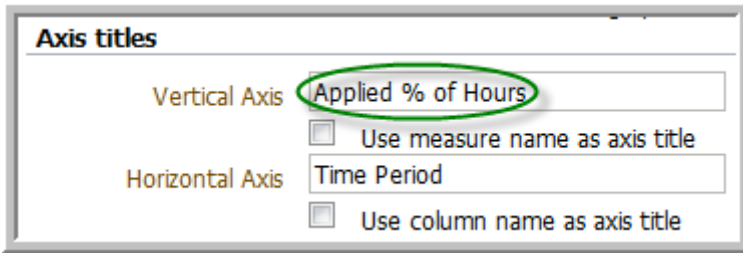
11. Click the green **+** icon again to add the second scale marker position. Complete the dialog as shown here. The second scale marker will be a **Range** of grey, with a low end of 55%, a high end of 60%, and a caption of **Target**.



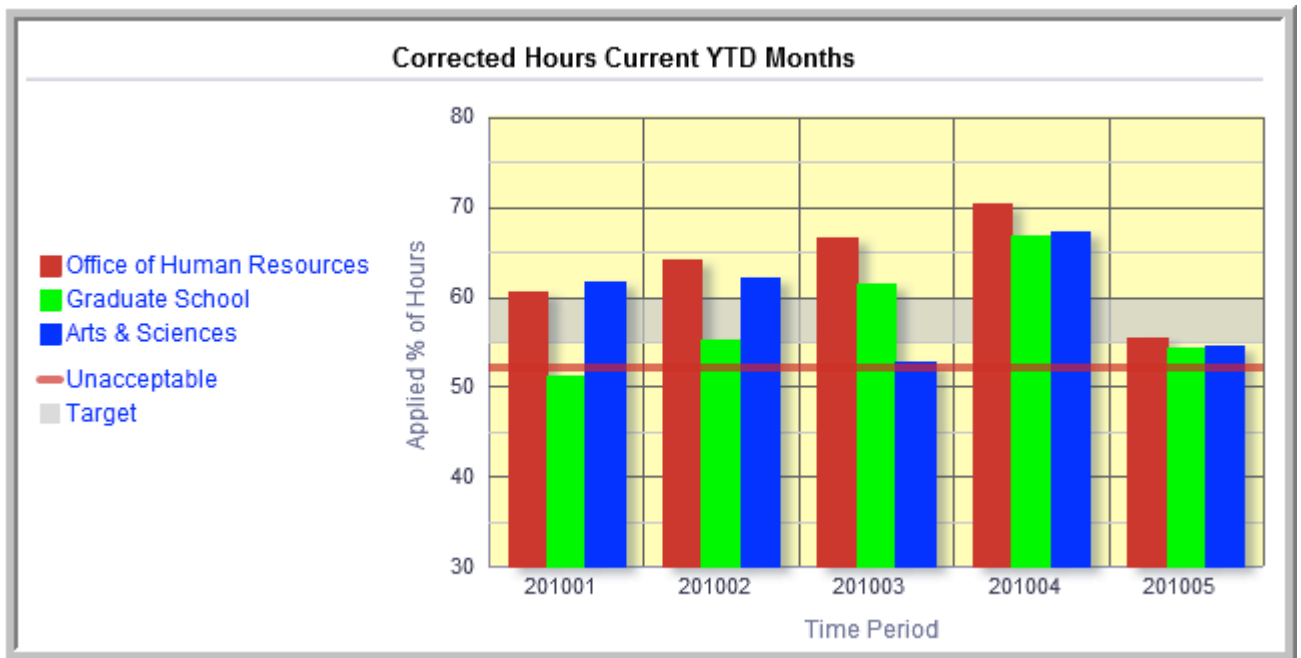
**Range** scale markers are displayed across the graph **behind** the graph elements.

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

- 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.



- The finished product should look something like this:



- Click **Done** to conclude editing of this view.
- In the Views area, rename the second Vertical Bar Graph as **V-Bar Applied %**.
- 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.**

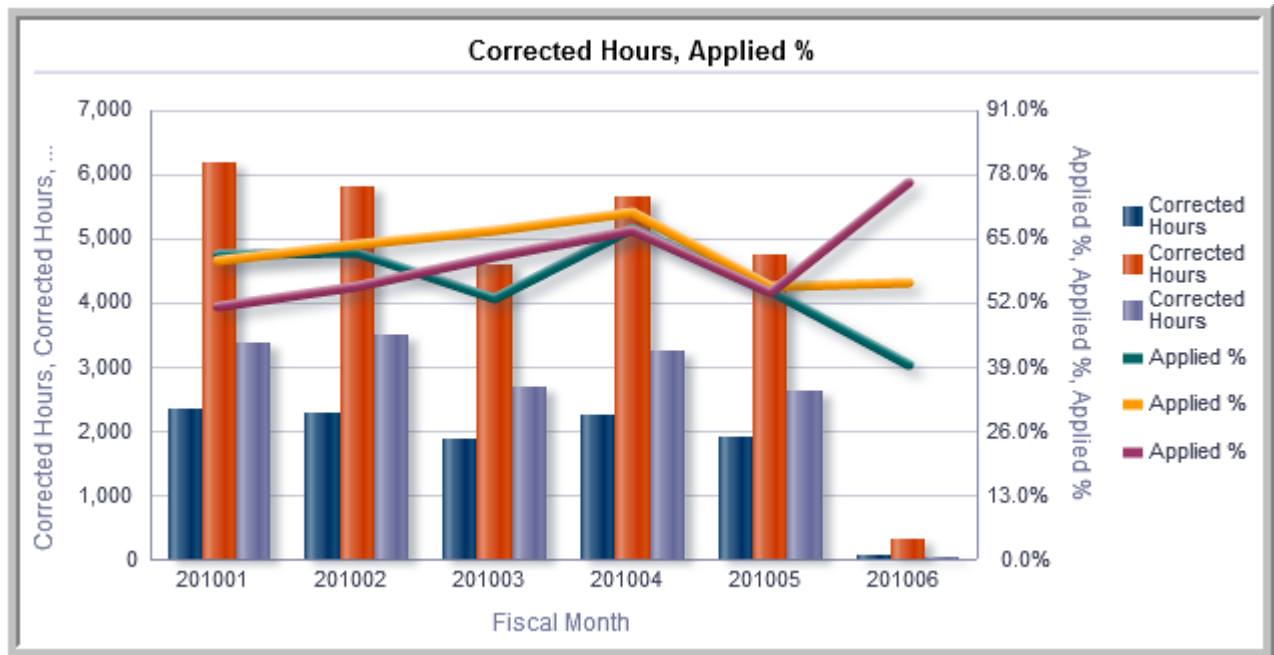


**Helpful Hint:** You can control the number of row values returned in the Narrative view by setting a value in the **Rows to display** field. By default, all queried rows are displayed.

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:



- 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.

The screenshot shows a configuration window for a BI tool. It is divided into three main sections: 'Measures', 'Bars and Lines', and 'Sample'.

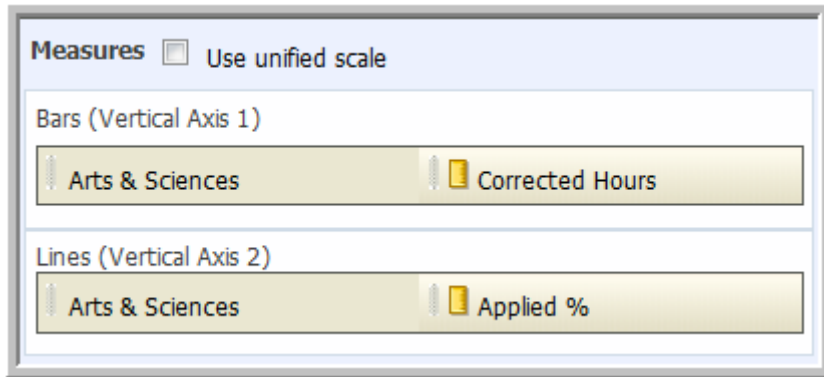
- Measures:** Contains a 'Use unified scale' checkbox. Under 'Bars (Vertical Axis 1)', there are three instances of 'Corrected Hours'. Under 'Lines (Vertical Axis 2)', there are three instances of 'Applied %'.
- Bars and Lines:** Contains 'Group By (Horizontal Axis)' with 'Fiscal Month' selected, and 'Vary Color By (Horizontal Axis)' with 'Measure Labels' selected. A 'Show In Legend' checkbox is checked.
- Sample:** Shows a preview of a bar and line chart. The legend on the right lists 'Corrected Hours' and 'Applied %' multiple times. Below the chart, the 'Fiscal Month' label is visible, and the 'Show Subject Area Folders' checkbox is circled in green.

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

This screenshot shows the 'Measures' section of the configuration window after the 'Show Subject Area Folders' checkbox has been ticked. The measures are now grouped by subject area folder.


- Bars (Vertical Axis 1):**
  - Arts & Sciences | Corrected Hours
  - Office of Human Resources | Corrected Hours
  - Graduate School | Corrected Hours
- Lines (Vertical Axis 2):**
  - Arts & Sciences | Applied %
  - Office of Human Resources | Applied %
  - Graduate School | Applied %

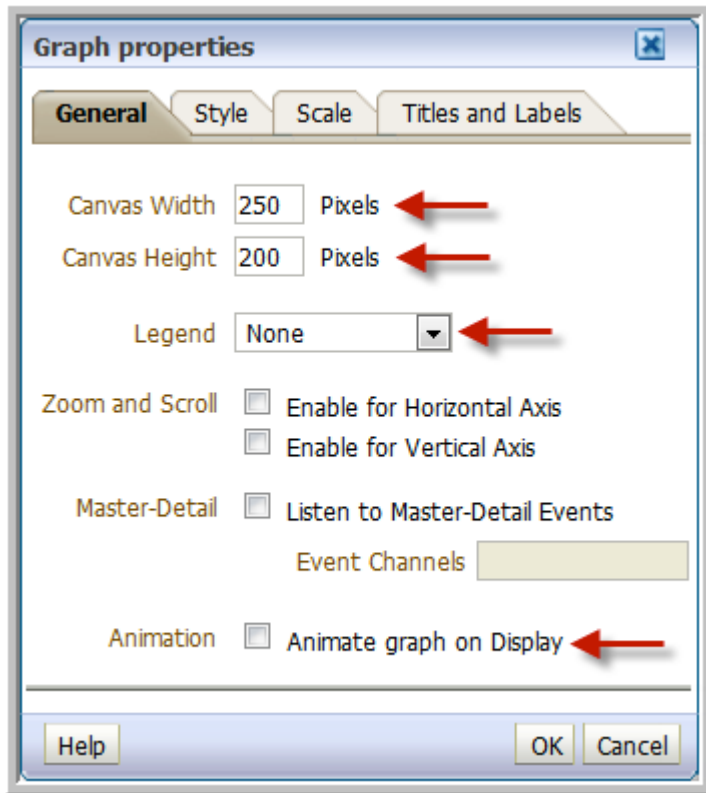
5. Now that we can see which columns belong with which folders, **exclude** (by dragging into the Excluded area) the Corrected Hours and Applied % columns associated with the Office of Human Resources and Graduate School folders, leaving only the two measures associated with Arts & Sciences present in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



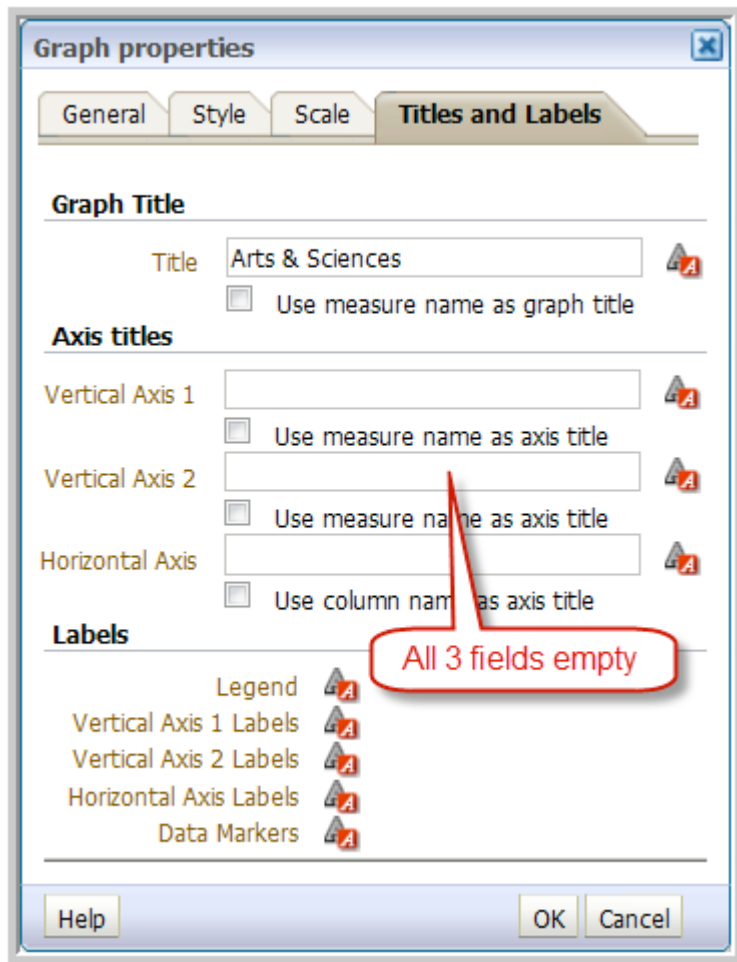
In the following steps, we will make several changes to the graph, including:

- 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).

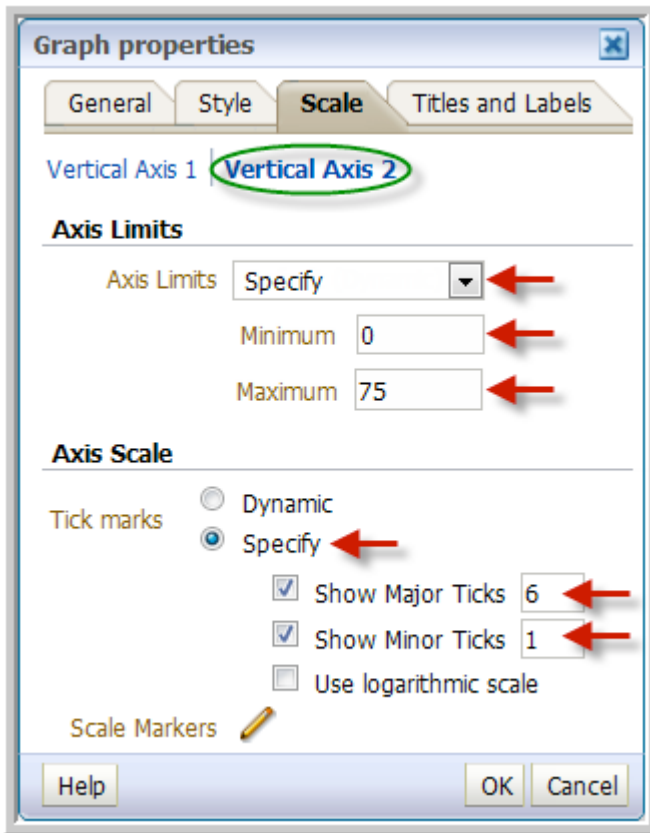
6. Open the Graph Properties  from the toolbar.
7. Shrink the graph to a size of 250 pixels wide by 200 pixels tall, remove the legend, and eliminate the graph animation. Continue to the next instruction (do not click OK).



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.



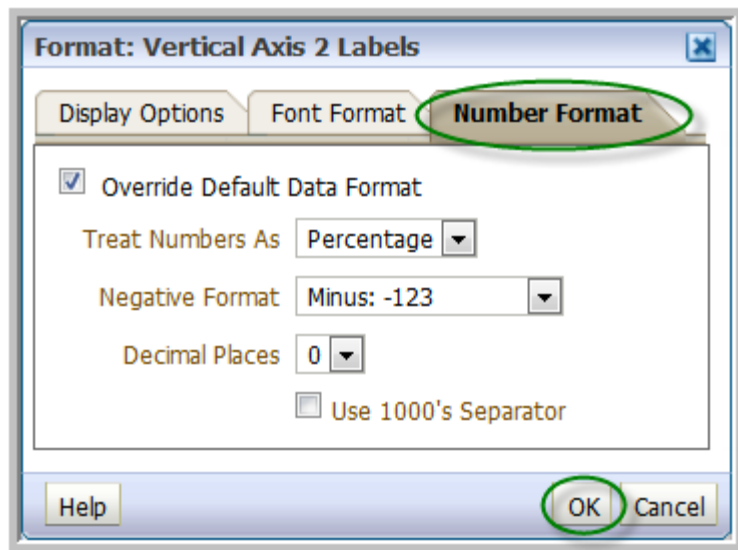
### Axis Limits Major Ticks and Minor Ticks

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.

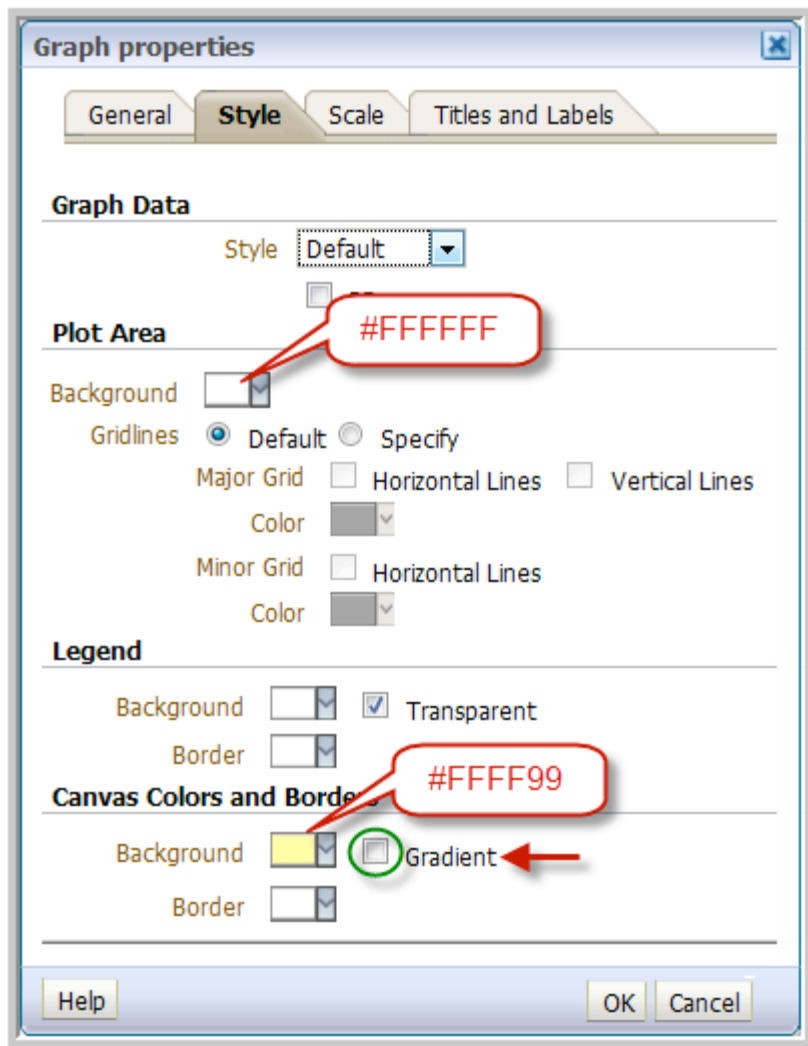
We would also like to see one unnumbered (**minor**) tick mark between each major tick.

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

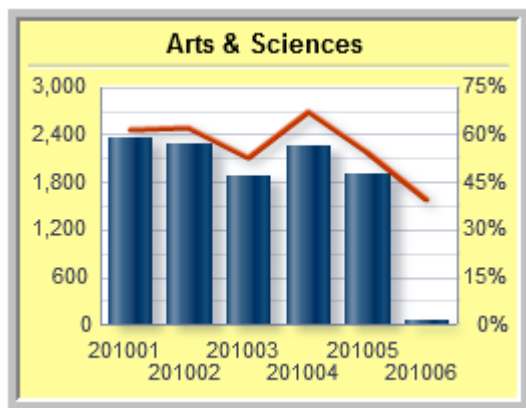
Vertical Axis 2 Labels 



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:



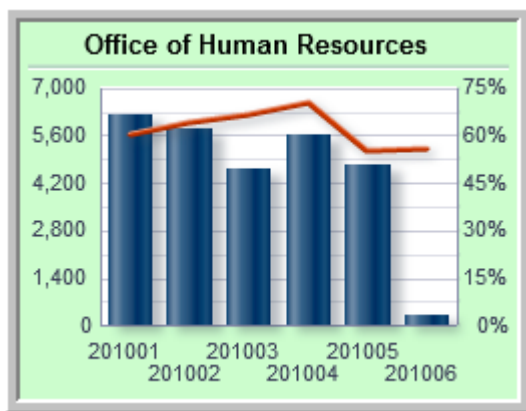
12. Click the **Done** button to conclude the editing of this graph.
13. Using the technique learned on page **Error! Bookmark not defined.**, rename the graph to **Arts & Sciences graph**.

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 %

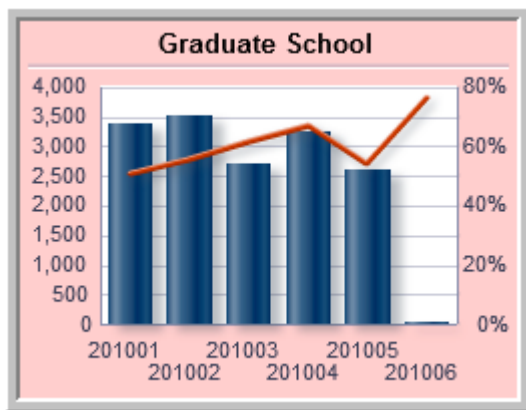
Graph Title: Graduate School

Axis Limits: Minimum: 0 Maximum: 75

Ticks: Major: 5 Minor: 1

Canvas Background Color: #FFCCCC (a pastel red)

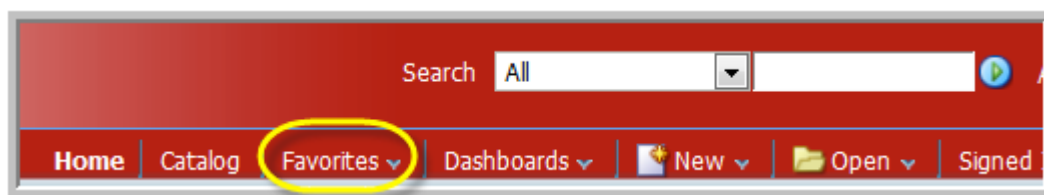
View Name: Graduate School graph



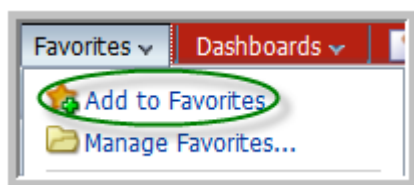
19. Resave the **Column Filters** analysis.

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.