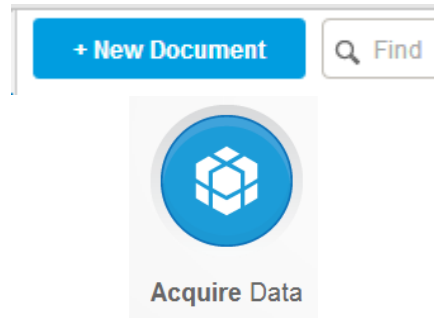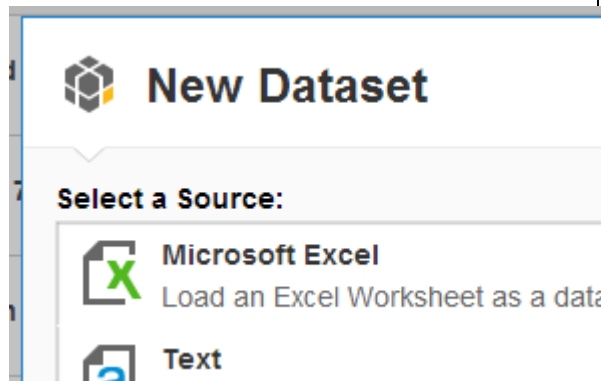# SAP Lumira Hands-on Workshop (rev. SP19)

Scenario and Objectives

You are in charge of analyzing results of Red Box (a DVD rental company).   In this lab, you will use a file containing rental data for the year 2013 and:

- ❑ Acquire data from an Excel file
- ❑ Enrich and enhance your data set for analysis purposes
- ❑ Visualize the data and compose your own "story boards"
- ❑ Share your data in Lumira Cloud and show it on a mobile device

Objective 1:

Acquire data

Action	
Start Lumira. If you default to the "**My Items**" screen, click on the "**New Document**" button. Otherwise, from the "**Home**" screen, click on the icon labeled "**Acquire Data**"	
Note the various data source options available to us, especially the Universe. For our exercises, though, we will use the Excel files provided. Select "Microsoft Excel" within the **New Dataset** window, or select a previous file if applicable. Locate and select the file "RedBox Rental Data.xlsx"	

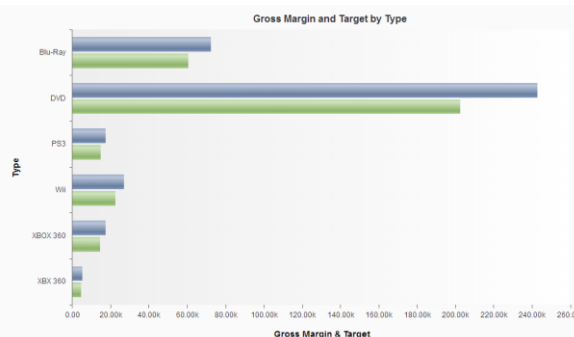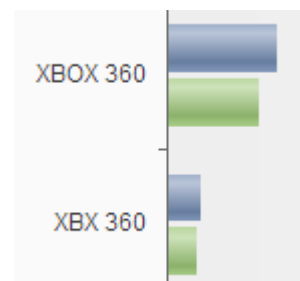|	
Note the Sheet and Advanced options Scroll to the end of the data set and remove column 'Split PCT' by unchecking the box. Do the same for 'Gross Margin PCT' and 'Retailer Split PCT' Click "**Create**" to acquire the data for analysis	
Now that we have acquired a data set, the default "room" is **Visualization**. So let's begin our analysis with a simple visual.	
The default chart type is a **Bar Chart**. Drag 'Gross Margin' onto the bar chart or Y Axis feed. Do the same for 'Target'. Next, drag 'Type' onto the chart or into the X Axis feed. And you get a bar chart representing the Target achievement per type of disc rented.	
You might notice a potential data discrepancy in the 'Type' dimension. "*XBX 360*" is obviously a typo and should be corrected. So let's switch to data preparation mode to make that correction and some additional modifications for our continued analysis.	
Click on "**Prepare**" so we can work on the data in that room.	
Before we move back to our data cleansing issue, I also noticed that we are missing a dimensional value for the Studio associated to the title. So let's merge an additional data set to get that value. Click on "**New Dataset**" in the upper right menu options Locate "Redbox Studio Addon.xlsx" and create the additional data set as before	

In the upper left corner, switch back to our original data set

Back on the upper right corner, select "**Combine as**" > "**Merge**"
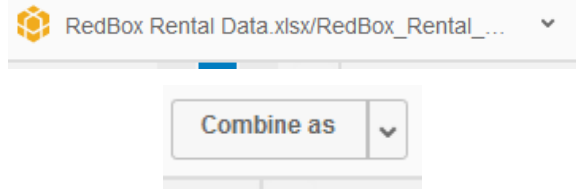
The Merge window should auto-select 'Title' in each column. Note at the bottom of the window that the tool will identify keys, suggest matches, and indicate match compatibility. In this case 100%. Note merge options as well.

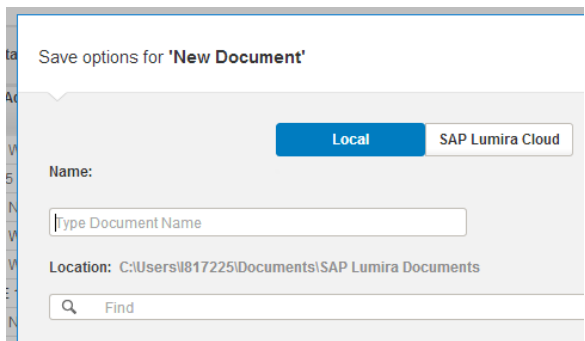Click 'Merge' to complete the operation. You will find the 'Studio' attribute next to the 'Title' attribute

To complete Objective 1, save the document.

Click on the menu item **File** > **Save As** …

In the pop-up window type in the name: "My Workshop". For this exercise ensure "**Local**" is selected but note we can save directly to the Cloud.

Click Save

Objective 2:

Enrich and enhance your data set for analysis purposes

Action	

Let's return to the data problem we found in Objective 1. First, switch to "**Facets**" Mode by selecting

the 🔲 icon on the far left side of the upper menu bar. Note that the faceted view gives easier insight into dimensions.
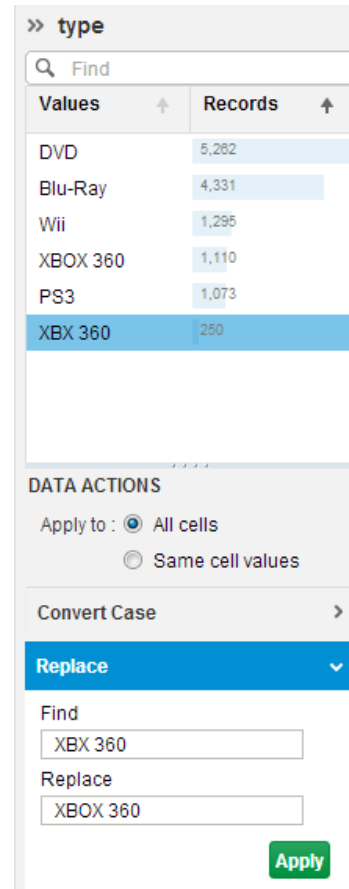
Now let's use the "**Manipulation Tools**" and contextual data actions to make corrections or changes.

Contextual Data Actions: If the Manipulation Tools on the right side of the screen are not open, click the ⟪ icon to open them. Then select the 'Type' dimension on the left panel. This will take you directly to that dimension. On the right hand side of your screen you will see a set of Data Actions appropriate to the dimension type selected. Highlight the value "*XBX 360*" and correct it to "*XBOX 360*" using an appropriate "**Data Action**"	**» type** 🔍 Find | Values ⬆	Records ⬆
DVD	5,262
Blu-Ray	4,331
Wii	1,295
XBOX 360	1,110
PS3	1,073
XBX 360	250 | **DATA ACTIONS** Apply to : ⦿ All cells 　　　　　○ Same cell values **Convert Case** ＞ **Replace** ⌄ Find XBX 360 Replace XBOX 360 **Apply**

Question: How many rows containing "XBOX 360" are there in your data set?

Use the "**Duplicate**" Data Action to replicate the column 'Rating'

Rename the obtained column to 'Rating Description'

Using a **Data Action**, modify each code in the column with following values:

- "*E*" = "*Everyone*"
- "*T*" = "*Teenager*"
- "*PG-13*"= "*Parents Strongly Cautioned*"
- "*NR*" = "*Not Rated*"
- "*R*" = "*Restricted*"
- "*M*" = "*Mature*"
- "*PG*" = "*Parental Guidance Suggested*"

Use a **Data Action** to set all the values of the column to Uppercase

rating	
Values ↑	**Records** ↑
PG-13	4,361
R	3,624
M	1,657
PG	1,351
E	1,271
T	800
NR	257

DATA ACTIONS

Duplicate

Split ›

Convert Case ›

Replace ⌄

Find

Replace

Apply

Select the 'Genre' dimension and use a **Data Action** to create a custom grouping.

Group all genres other than Game into "*Movie*"

Rename 'Genre Groups' to 'Disc Type'

Click **OK** to complete the task

🔷 **Create groups from "Genre"**

Create groups for values within this column. Values that you don't want to group can remain unchanged.

COLUMN VALUES:

Values ↓	Records ↓
Comedy	4,384
Game	3,728
Action	2,098
Drama	1,665
Family	929
Horror	517

Dimension Name:

GROUPS:

- Movies
  - Comedy
  - Action
  - Drama
  - Family
  - Horror

Add

Remove

Question: How many movies versus games are in your data set?

Finally, let's use **Create Calculation** to remove the Zip-10 code from the dimension 'Zip_Augmented' Did you create a calculated dimension or measure? What **formula** did you create? Rename 'Zip_Augmented (2)' to 'Zip-10'	
Default semantic enrichment detection: Note that Lumira has automatically determined which data are measures Lumira has also detected 4 data elements as potential Date/Time or Geo fields which can be further enriched	
Geographic semantic enrichment: Scroll through the list of attributes until you find 'City' Click on the cog icon 🔧 and note some of the options available to you. Select "**Create a Geographic hierarchy**…", then select "**By Names**" Note that the system has suggested a match between the 'City' category and the 'City' column. You can select 'State' for 'Region' but you don't have to. Click "**Confirm**" 63 cities total should be solved, clock "**OK**" Note that a Geography Hierarchy has been created.	

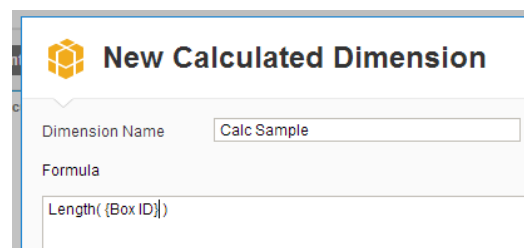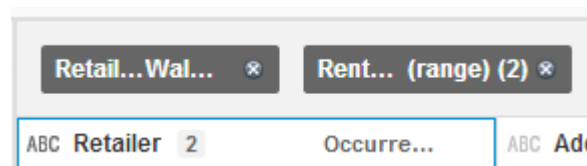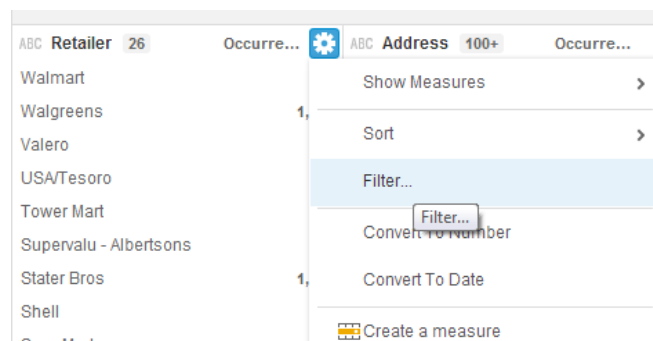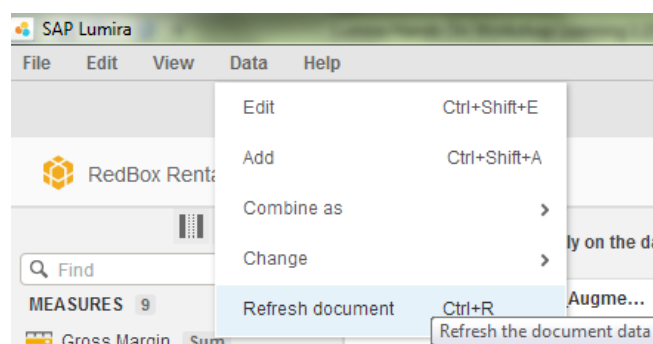|	
Date/Time semantic enrichment: Follow a similar path for the 'Date' attribute in order to create a time hierarchy Note that you can rename the hierarchies once established	DIMENSIONS 32 Geography_City Time_Date Year (Year Level) Quarter (Quarter Level) Month (Month Level) Day (Day Level)
Custom Calculations: You can create both custom dimensions and custom measures Create a Calculation Dimension which gives the length of the 'Box ID' dimension values using the Length() function Examine other functions to see what kind of additional calculations you might be able to create	**New Calculated Dimension** Dimension Name Calc Sample Formula Length({Box ID})
Filter Data Set: Filter the Dimension 'Retailer' on values "*Walmart*" and "*Circle K*" Select column 'Retailer' and use the settings ⚙ on either the left panel or in the header to access the Filter option Filter the dimension 'Rental Count' to keep a range between 20 and 120. Note the range sliders for a numeric value. Use the sliders or type values into them to select the range of values to be filtered. Remove all the filters in 2 clicks via the breadcrumbs	ABC Retailer 26 Occurre... ⚙ ABC Address 100+ Occurre... Walmart Show Measures > Walgreens 1, Valero Sort > USA/Tesoro Filter... Tower Mart Convert To Number Supervalu - Albertsons Stater Bros 1, Convert To Date Shell Save Mart Create a measure Retail...Wal... ⊗ Rent... (range) (2) ⊗ ABC Retailer 2 Occurre... ABC Add
Refresh Data Set: Open the source file in Excel and add some rows with random data, preserving the patterns of the columns. Save the file. In Lumira, Refresh you data set in the document In Data menu, click on "**Refresh document**" Check that new rows are added, but also that all transformations made previously are replayed on all rows, including the new ones.	SAP Lumira File Edit View Data Help Edit Ctrl+Shift+E RedBox Renta Add Ctrl+Shift+A Combine as > ly on the dat Q Find Change > MEASURES 9 Refresh document Ctrl+R Augme... Gross Margin Sum Refresh the document data
Save your document to complete this objective	
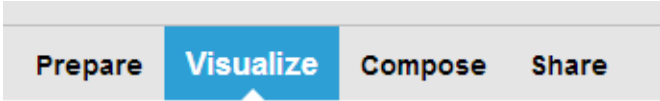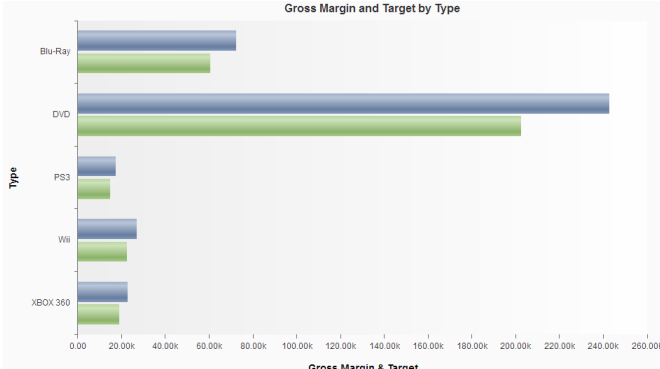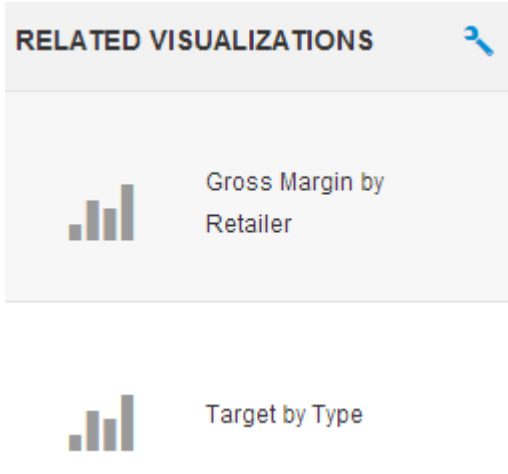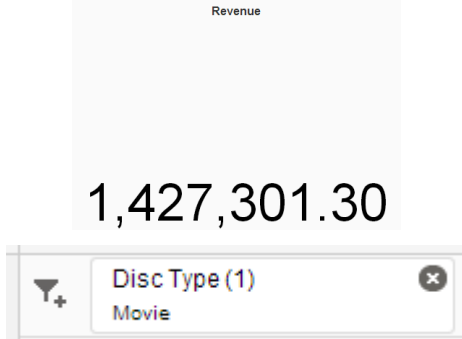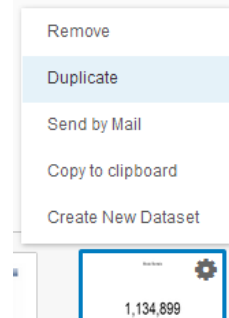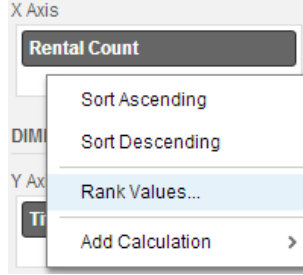
Objective 3:
Make visual discoveries and compose your story

Before we begin the exercise let's look at an actual "infographic" produced by RedBox. These visual representations of data, insight, and knowledge are meant to convey complex information quickly and clearly. We will build something similar in this exercise as well as some more traditional "storyboards".

Action

| So with this example in mind, let's move back to the "**Visualize**" room for some visual analysis and development of components for our own story board complete with infographic. | Prepare **Visualize** Compose Share |

| Note that our original **Bar Chart** is still active and that our data "cleansing" of the 'Type' dimension has carried through. | Gross Margin and Target by Type |

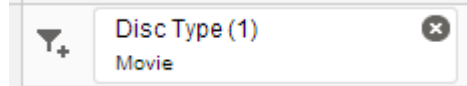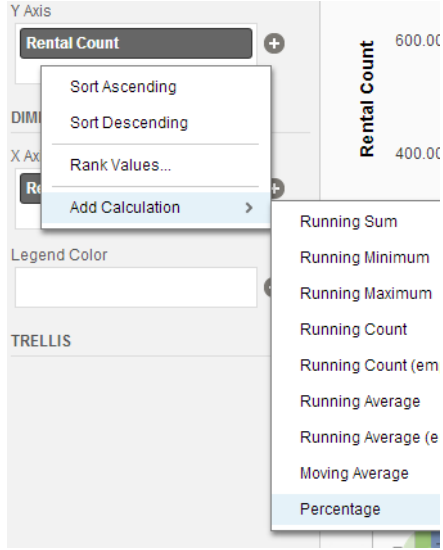| In case you don't know where to begin your visual analysis, you can click the 💡 light bulb icon above the chart types and see a series of suggested visualizations which might drive your analysis. These are fully functional charts and using the 🔧 wrench icon allows you to filter for measures and dimensions you are most interested in.

For now, let's return to the charts gallery | **RELATED VISUALIZATIONS** 🔧

Gross Margin by Retailer

Target by Type |

| **Question: Which disc type is most exceeding its target?** | |

| For our Storyboard, let's use the "Redbox by the numbers" concept to highlight some information, first about Revenue at a high level.

Charts auto-save so add another by clicking the ➕ icon. Select the **Numeric Point Chart** type

Drag the "Revenue" measure onto the chart

Use the 🔽 Add Filters icon to filter for 'Disc Type' = "*Movie*" | Revenue

1,427,301.30

Disc Type (1)
Movie |

Repeat this for 'Disc Type' = "*Game*" The easy way is to duplicate the first **Numeric Point Chart**. Using the ⚙ cog icon on the first chart, select duplicate. Modify the data filter appropriately for games.	Remove Duplicate Send by Mail Copy to clipboard Create New Dataset ⚙ 1,134,899
Next, let's generate some Top 3 looks at both Movie and Game rentals. Add a new visual, selecting a **Bar Chart** Drag 'Rental Count' and 'Title' onto the chart or into their respective trays, or use the ⊕ icon next to each tray and select Now use the cog ⚙ icon for the 'Rental Count' measure in its X-Axis tray to Rank the Values Select the top 5	X Axis **Rental Count** Sort Ascending Sort Descending DIM Rank Values... Y Ax Add Calculation ＞ Ti
Use the ▼₊ Add Filters icon to filter for 'Disc Type' = "*Movie*" Once again, repeat this for 'Disc Type' = "*Game*" on a duplicate or new chart	▼₊ Disc Type (1) ⊗ Movie

Finally, let's generate a quick view into how customers rent from Redbox.
 	
 Using a **Column Chart**, drag 'Rental Count' and 'Reserved' onto the chart.
 	
 Using the cog ⚙ icon once again, Add a calculation so that we are looking at Percentage rather than the value.
 	
 Note that for different chart types, there will be different calculation options. That includes predictive trend lines for line charts.
 	
 Rename this visualization with the title "*How are we reserving discs?*"
	Y Axis
	 Rental Count ⊕ 600.00
	 Sort Ascending
	 DIM Sort Descending
	 X Ax Rank Values...
	 Re Add Calculation ＞ Running Sum
	 Legend Color Running Minimum
	  Running Maximum 400.00
	 TRELLIS Running Count
	  Running Count (em
	  Running Average
	  Running Average (e
	  Moving Average
	  Percentage

Question: What insight into how customers reserve rentals can you discern?	

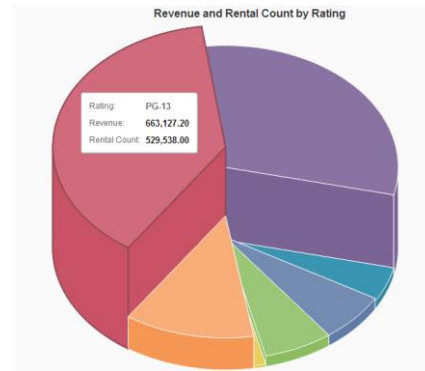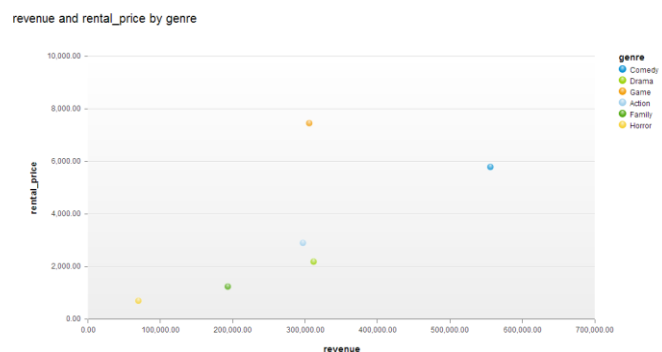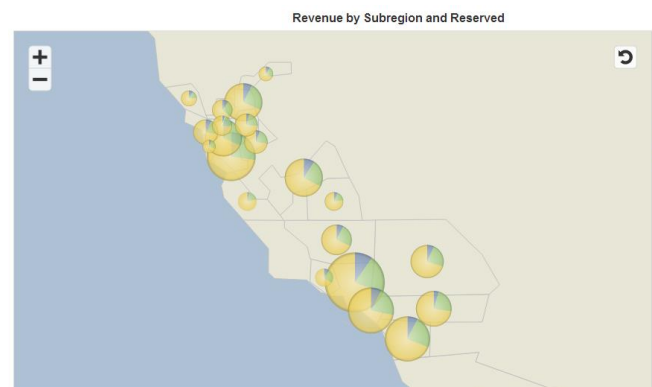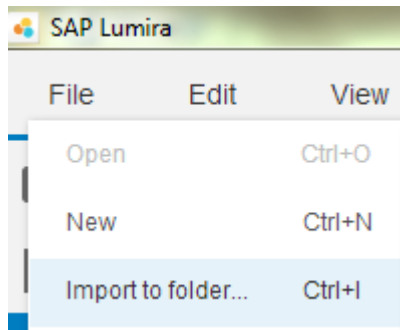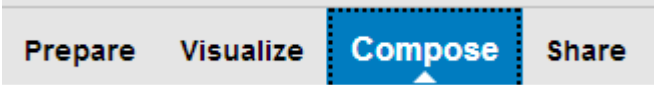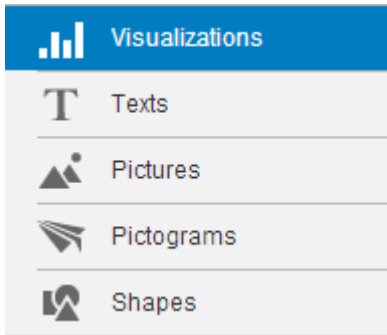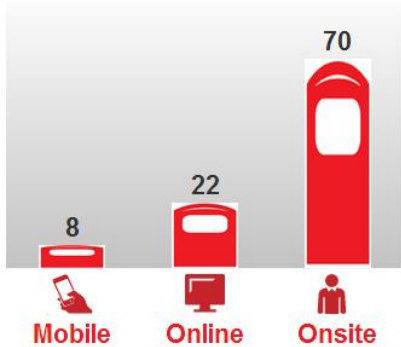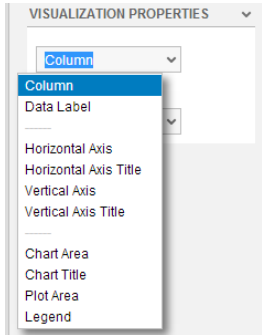|	
With our Infographic taken care of, let's now turn to more traditional "storyboard" needs and provide some Revenue analysis to go along with our Infographic. In the pie family choose the **Pie with Depth Chart** Add 'Revenue' to the chart or in 'Pie Sectors' Add 'Rental Count' to the chart or 'Pie Depth' Add 'Rating' to the chart Rename the chart to "Revenue/Rentals by Rating"	 Revenue and Rental Count by Rating Rating: PG-13 Revenue: 663,127.20 Rental Count: 529,538.00
Add a new chart. Switch to the Scatter family and select the **Scatter Plot** Drag 'Revenue' and 'Rental Price' onto the chart or Y Axis feed(s) Add 'Genre' to the chart or Legend Color If you have the time, experiment with additional options. Perhaps add 'Rating Description' to the Legend Shape tray. Maybe add 'Month' or 'Quarter' to the Animation tray and see if similar correlations occur over time.	 revenue and rental_price by genre
Question: Is there an outlier on the correlation between revenue and rental price?	
For our final chart, let's create a Geo chart. From the choices, select **Geo Pie Chart** Drag 'Revenue', 'Disc Type', and 'Subregion' onto the chart or their corresponding feed Once again, use the ⅂₊ Add Filters icon and use 'State' or 'Region' to filter for only "*California*" Save the chart for a Geographic view of Revenue, by county, and the genre of disc rented.	 Revenue by Subregion and Reserved
At this point, go to the menu and close your file with **File -> Close**. When prompted, save changes to your document.	 **Save Document** Do you want to save the changes in the current document? Yes No

Now return to the menu bar to import a new file. Go to **File -> Import to Folder** or **Ctrl-I** to import a LUMS file which contains exercises completed to this point as well as an Infographic starting point for the remainder of the workshop. When prompted, import the file "**SP19 Workshop.lums**". You may receive some Error alerts that certain images were not found. This is ok as you have not loaded local images into your environment but they are saved on the LUMS file.	SAP Lumira File Edit View Open Ctrl+O New Ctrl+N Import to folder... Ctrl+I
Enter the "Compose" room to modify a Storyboard you will ultimately modify and share.	Prepare Visualize **Compose** **Share**
Note the environment and possibilities to create or enhance an Infographic. You can use **Visualizations** you created in the **Visualize** room, add text, or choose from **Pictures**, **Pictograms**, or **Shapes** provided with the tool of you can import local files of those 3 types as well. For Pictograms, use an SVG file type.	Visualizations Texts Pictures Pictograms Shapes
For this Infographic, we used many of the visualizations created earlier in the workshop. Note that Revenue numbers are the **Numeric Point Charts** combined with Text, We have enhanced the **Bar Charts** for Top 5 rentals with **Pictograms**. We have also used **Pictograms** to extensively modify the look and feel of the "How are we renting?" **Column Chart**.	70 22 8 Mobile Online Onsite
You can experiment with the **Visualization Properties** on the right panel to see the types of modification available for each visualization. Either use the drop down list or select the part of the chart you want to modify. For purposes of time, do not modify the Infographic, this is more to get you comfortable with the environment.	VISUALIZATION PROPERTIES Column Column Data Label Horizontal Axis Horizontal Axis Title Vertical Axis Vertical Axis Title Chart Area Chart Title Plot Area Legend

Click on the **Preview** button to see what the page will look like on Desktop, Tablet, or Mobile device

Select **Tablet Preview** to see the whole page better.

Note that the 2 images in the upper right corner, one for Redbox and one for Lumira, are active hyperlinks to external web sites.
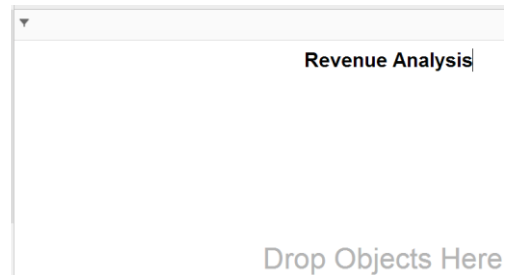
Click **Preview** once again to close this view.
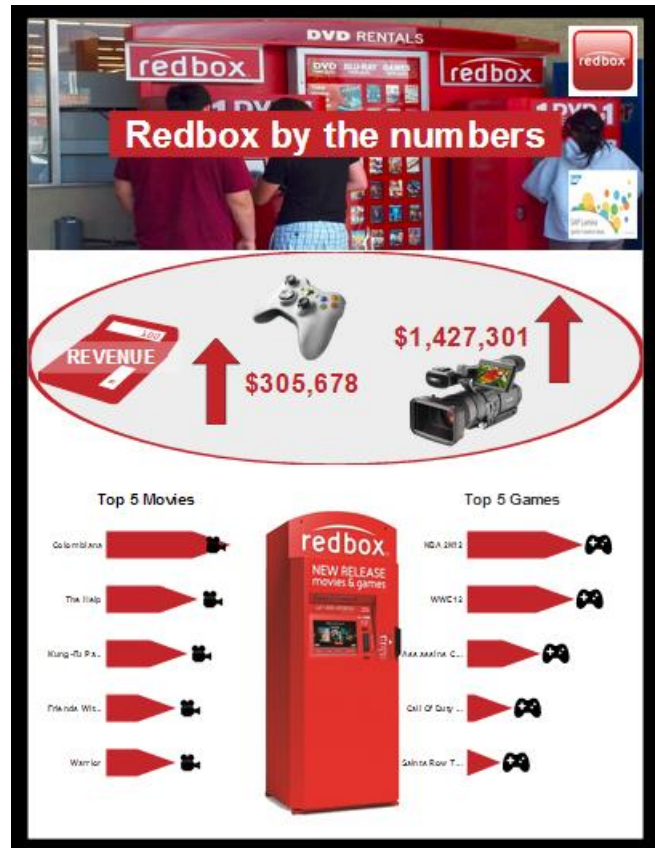
Click on the **Add Page** button to add a second page to our story
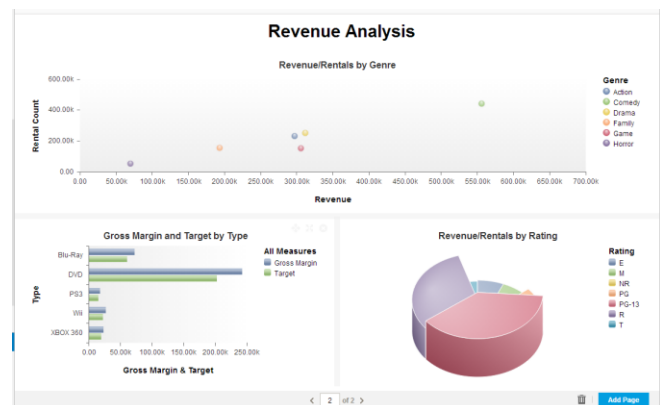
Select the **Board** type and use the Blank template

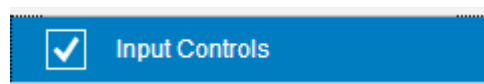Change the "Board Title" to "Revenue Analysis"

While on the **Visualizations** picker, add the following visuals, placed in whatever order appeals to you:

- The first **Bar Chart**, Gross Margin v Target
- The **Pie with Depth Chart**
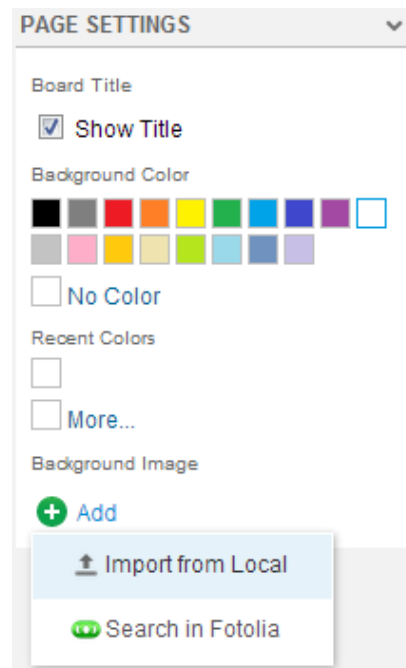- The **Scatter Plot**

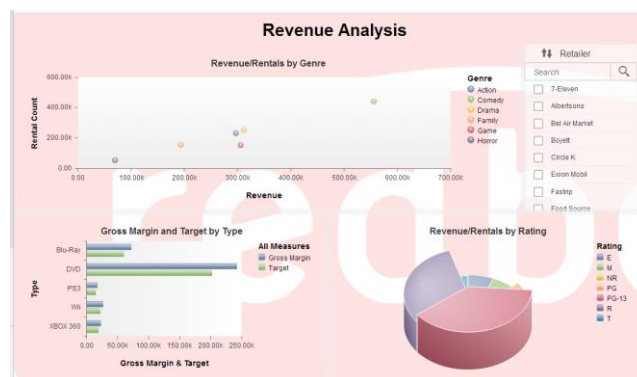|	
Now switch to the **Input Controls** picker Drag and drop the 'Retailer' dimension onto the board for use as a controlling object	
On the right panel, open the Page Settings and add a background image by clicking the Add icon Use the "Redbox R" file and set the opacity to 10%	
Your finished page should look something like this…	
Now click **Add Page** to add another page to the story. Drag the GeoChart visualization onto the board and, once again, use 'Retailer' as an Input Control Retitle the page to "California Sales" Click on the Preview button to see what the storyboard will look like in various formats	

Objective 4:

Share your story in Lumira Cloud and show it on a mobile device

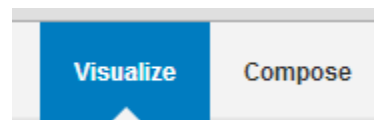| Action	
Move to the "Share" room	**Prepare Visualize Compose Share**
Highlight the "Revenue Analysis" Story Board and note how the sharing options change	Publish to SAP Lumira Cloud Publish to SAP Lumira Server
Select Publish to Lumira Cloud Enter your connection information Note that both data and the Story Board are exported	**Publish Story to SAP Lumira Cloud** Publish Story: Connected Name Overwrite Detail Redbox by the numbers Create new item RedBox Rental Data/RedBox_Rental_Data Create new item
Open Lumira Cloud in your browser and you should see the "Redbox by the numbers" Story Board as published Click to see the board in this interface	SAP Lumira™ Cloud https://cloud.saplumira.com Apps SAP Lumira Demos Live Instal **SAP** Lumira™ Cloud My Items Se ↑ Upload + Create Dataset All NAME Redbox by the numbers RedBox Rental Data/RedBox_Rental_Data

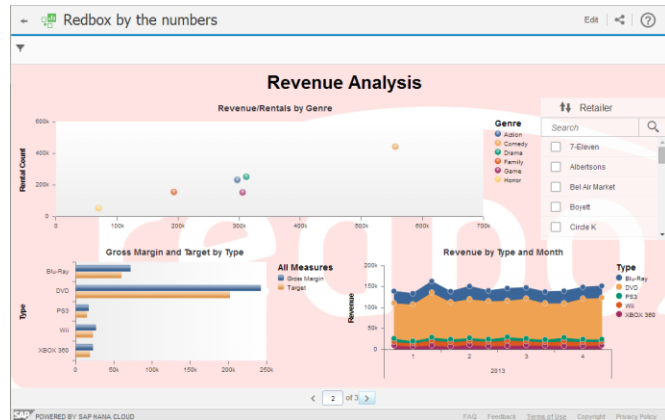|	
Click to edit the storyboard in this interface and you enter the same **Compose Room** as you experienced on the desktop. You'll note that the only Visuals in the Cloud are those that are on the story board. So let's create a new chart to place on this board Move to the **Visualize Room** and click ➕ to add a new chart	
Select an Area Chart Drag "Revenue", "Month", and "Type" onto the chart area	
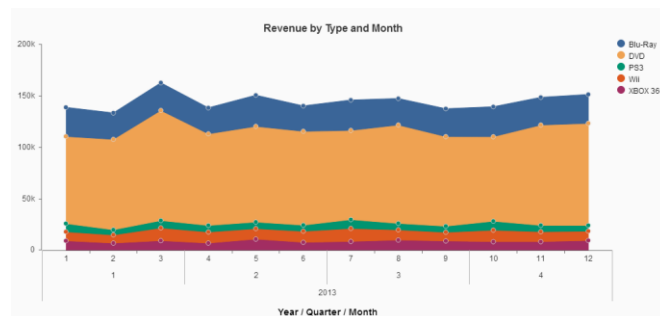
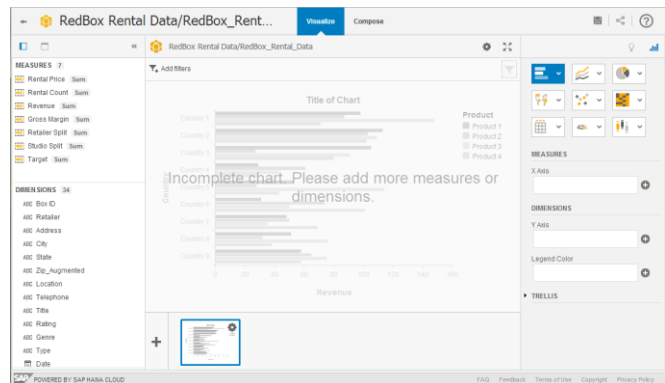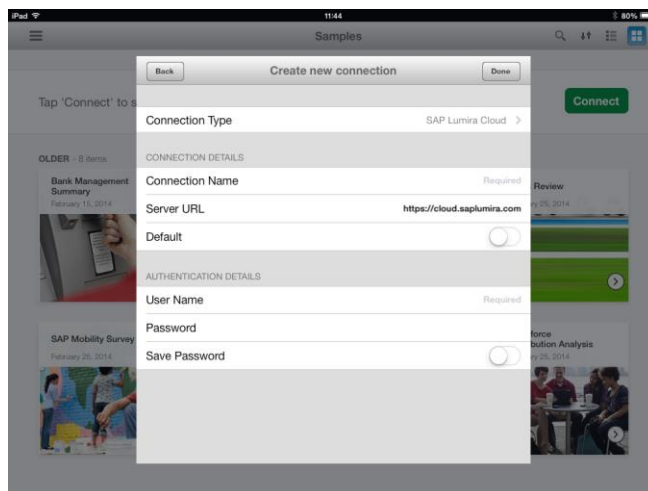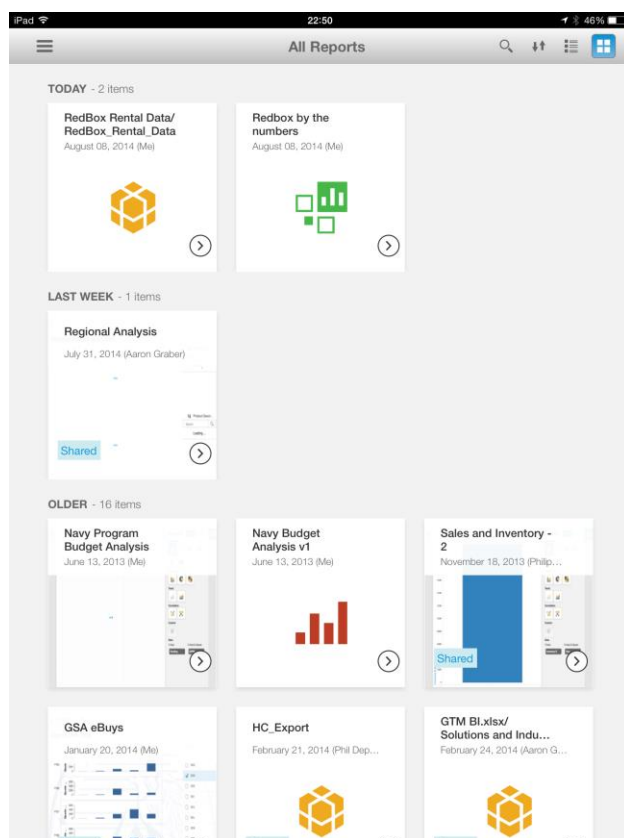|	
Switch back to the **Compose Room** and move to Page 2 Click to remove the **Pie with Depth Chart** Then drag the new Area Chart to the now open spot	
Return to Home. Now open the dataset instead of the storyboard. Upon opening you will see the **Visualize** and **Compose** rooms as before in the prior exercise but also the same as on the desktop These rooms share the same capabilities whether you access from the Desktop or the Browser (Lumira Cloud or Lumira Server)	
Create a new chart(s) on your own, then Log Out to complete the objective.	
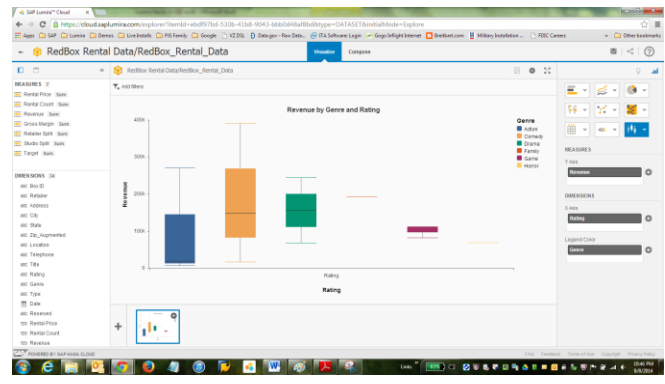
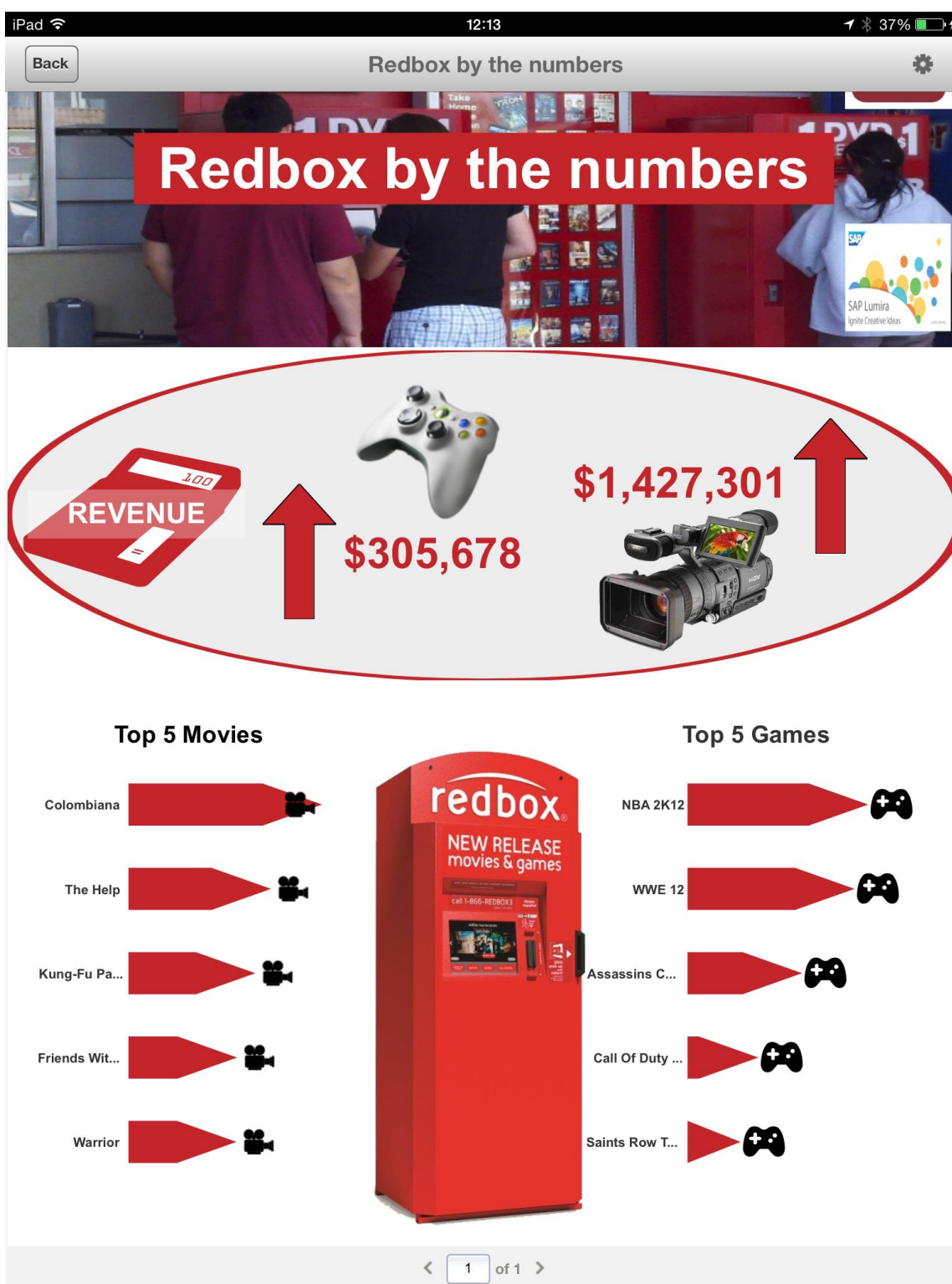|	
Mobilize: Open Mobile BI v5 on your iPad. Create a New Connection, Select Lumira Cloud, type in a new Connection name (i.e. my Lumira Cloud) and type in your username and password.	
Once done, it will ask to connect to your connection. From there, you should see the dataset, any Cloud-developed visuals, and the Story Board from today's lab.	

End of lab