Hands-on Workshop: SAS® Visual Analytics Report Design Challenge

Course Notes
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Lesson 1    Hands-on Workshop: SAS Visual Analytics Report Design Challenge

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1.1 Introduction

Scenario

You are a report designer for Orion Star Sports and Outdoors. Another designer on your team has built a report (Ugly Report) for the Insight Toy Division that has not been received well by users. Because there is so much confusion about how to use the report, nobody is using it, even though it is desperately needed. You have been asked to improve the report to reduce confusion and complaints and to improve the user experience. The hope is that this will improve adoption of the report in the organization.

Data

The INSIGHT_TOY_COMPANY_2017 table contains transactional data for all products sold in 2017. Data builders have already cleaned the data, created several new variables, and modified some properties so that it is ready for analysis and reporting. Each row in the table represents a single product ordered in 2017.

The Insight Toy Division has 127 facilities all over the world. Each facility contains units that produce all the products from various product lines. Each facility also has several sales reps that sell the products to the customers.

The table contains information about the facilities (location, opening date, age, efficiency, number of employees), the sales reps (rating, customer base, number of customers), and the customers (distance from facility, satisfaction). In addition, the table has information about the products (brand, line, make, style, quality), the orders (costs, sale price, target price), and the units (capacity, discard rate, target, yield rate).

You need to use only a subset of the data items for this report. A data dictionary is included, and it provides more information about the data items in INSIGHT_TOY_COMPANY_2017.

Resources

The Ugly Report is located in the SAS Content/Shared Data/Basics folder in SAS Visual Analytics. Sign in as Eric (with the password Student1) to access Visual Analytics and modify the report. You need to open the report in Visual Analytics to make any changes.

If you are stuck or need some additional guidance, you can refer to the Challenge Hints section of the document for assistance.

If you are having trouble getting started, open Beautiful Report (start) in the SAS Content/Shared Data/Basics folder.

If this is your first time using Visual Analytics, consider following the steps in the Proposed Solution section of the document.
1.2 Challenge Details

Audience

The European product management team would like to use this report to determine where products are ordered and to see whether there is any relationship between order location and product quality. They would also like to see how product quality impacts customer experience (based on number of orders and satisfaction) and would like to trace low-quality products back to specific units.

Here are some of the questions that they would like to answer with this report:

- Are there certain locations that order higher-quality products?
- How does product quality affect customer experience? Does ordering lower-quality products result in lower customer satisfaction or smaller numbers of orders?
- Are there specific units that consistently produce lower-quality products? Does this have any relationship with unit production or the number of discarded items?

Problem

The company has invested a lot of time and money in using SAS Visual Analytics and would like for these reports to be adopted across the organization. However, due to the poor design of the report, product managers are not using it. We have received the following list of common complaints from report viewers:

Navigation

- It’s too hard to navigate the report. I don’t know where to start and I don’t really understand how the report is supposed to flow.
- What does First, Second, and Third even mean? Is that the order in which I should be looking at the pages?
- There’s no data listed for my country. I can’t use this report.
- I can’t figure out how to look at specific areas? How do I find details about Germany?

Design

- The report looks too cluttered.
- The colors are not appealing at all. Shouldn’t they be more consistent? I can’t even look at this report; it hurts my eyes.
- I can’t read any information in the map. There are too many points, too close together. Can you make it easier for me to view customers in a specific area?

Accuracy

- I think this report has incorrect numbers; they don’t add up. I see customer satisfaction numbers of 29,687%. What does that even mean?

Comprehension

- What is the purpose of this report?
- I don’t even understand some of these objects? What are they trying to show?
Assignment

Your task is to make the report more user friendly by addressing each of the complaints listed above. You can redesign the report in any way that you choose (add pages, move or delete objects, modify roles for objects) as long as you make sure that product managers can get the information that they need.

Note: Some changes will be very apparent, and some require you to dig into the data a bit more.

Resources

Below is a list of resources that might help you when redesigning the report:

*Report Design Best Practices*
- Understand the audience.
- Tell a single data story.
- Use visually appealing, easy to understand objects.
- Use the simplest graph.
- Use consistent fonts.
- Limit the number of objects.
- Limit the number of pages.
- Make accessible to all.

*Page Design Best Practices*
- Limit the number of objects.
- Focus on a single idea.
- Each page should stand on its own.
- Communicate one point that advances the data story.

Beautiful Reports (sas.com/beautifulreports)
1.3 Data Dictionary

This data dictionary provides more-detailed information about the data items in the INSIGHT_TOY_COMPANY_2017 table.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer ID</td>
<td>The ID for each unique customer. Customers who have placed multiple orders or ordered more than one product appear multiple times in the table. This data item has been mapped to a geographical location.</td>
</tr>
<tr>
<td>Facility</td>
<td>The ID for each unique facility.</td>
</tr>
<tr>
<td></td>
<td>This data item has been mapped to a geographical location.</td>
</tr>
<tr>
<td>Facility City</td>
<td>The city where the facility is located.</td>
</tr>
<tr>
<td></td>
<td>This data item has been mapped to a geographical location.</td>
</tr>
<tr>
<td>Facility Continent</td>
<td>The continent where the facility is located.</td>
</tr>
<tr>
<td></td>
<td>This data item has been mapped to a geographical location.</td>
</tr>
<tr>
<td>Facility Country</td>
<td>The country where the facility is located.</td>
</tr>
<tr>
<td></td>
<td>This data item has been mapped to a geographical location.</td>
</tr>
<tr>
<td>Facility Region</td>
<td>The region where the facility is located.</td>
</tr>
<tr>
<td></td>
<td>This data item has been mapped to a geographical location.</td>
</tr>
<tr>
<td>Order ID</td>
<td>The ID for each unique order. Orders that contain more than one product appear multiple times in the table.</td>
</tr>
<tr>
<td>Product Brand</td>
<td>The brand for each product. This is the most general grouping of different products.</td>
</tr>
<tr>
<td>Product ID</td>
<td>The unique ID for every product ordered, per order, per customer.</td>
</tr>
<tr>
<td>Product Line</td>
<td>The product line within each product brand.</td>
</tr>
<tr>
<td>Product Make</td>
<td>The product make within each product line.</td>
</tr>
<tr>
<td>Product Style</td>
<td>The product style within each product make.</td>
</tr>
<tr>
<td>Transaction Date</td>
<td>The day that the transaction was placed.</td>
</tr>
<tr>
<td>Unit ID</td>
<td>The ID for each unique unit. Multiple facilities can have the same unit, and each unit produces multiple products.</td>
</tr>
</tbody>
</table>
### Measure Data Items

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Satisfaction</td>
<td>A percentage representing the satisfaction of the customer. Valid values are 0% through 100%.</td>
</tr>
<tr>
<td>Product Cost of Sale</td>
<td>The per unit cost of selling each product. This does not include any material cost.</td>
</tr>
<tr>
<td>Product Material Cost</td>
<td>The per unit cost of materials for each product.</td>
</tr>
<tr>
<td>Product Profit</td>
<td>Total profit (loss) for each product ordered. This is calculated by subtracting total expenses (material cost and cost of sale) from revenue.</td>
</tr>
<tr>
<td>Product Quality</td>
<td>A percentage representing the quality of the product. Valid values are 0% through 100%.</td>
</tr>
<tr>
<td>Product Sale</td>
<td>The per-unit revenue for each product ordered.</td>
</tr>
<tr>
<td>Unit Age</td>
<td>The age of each unit (in months).</td>
</tr>
<tr>
<td>Unit Capacity</td>
<td>The maximum number of products that can be created on a specific unit.</td>
</tr>
<tr>
<td>Unit Discards</td>
<td>The number of products that failed inspection and were not sold to customers for a specific unit.</td>
</tr>
<tr>
<td>Unit Production</td>
<td>The actual number of products created on a specific unit.</td>
</tr>
<tr>
<td>Unit Target</td>
<td>The target number of products that can be created on a specific unit.</td>
</tr>
<tr>
<td>Unit Yield Rate</td>
<td>The percentage of actual production divided by targeted production.</td>
</tr>
</tbody>
</table>

### Aggregated Measures

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Orders</td>
<td>The number of orders for each category group. This number changes depending on other category items used in the chart or table.</td>
</tr>
<tr>
<td>Number of Products</td>
<td>The number of products sold for each category group. This number changes depending on other category items used in the chart or table.</td>
</tr>
</tbody>
</table>
1.4 Challenge Hints

Here are some hints to help you complete the challenge:

Pages
- Consider creating a separate page for each of the questions that the product team would like the report to answer: location, product, and unit.
- Ensure that each page contains objects that answer one question.
  Note: You might need to move objects between pages.
- Give each page descriptive names.
- Consider adding an overview page that describes the purpose of the report and each page.
- In general, pages should contain four to six objects.

Actions and Links
- Control objects that filter all objects on a page should be placed in the page prompt area. Control objects that filter all objects in the report should be placed in the report prompt area.
- Actions can be added between control objects (in page and report prompt areas) to create cascading prompts.
  Note: Cascading prompts typically start with a control object that contains the most general information and then continue with control objects that contain more detailed information.
- Not all control objects added to a page are needed for that page.
  Note: You might need to delete some control objects.
- Ensure that actions between objects work as expected.
- Typically, actions flow through objects from top to bottom and left to right.
- You can use links between pages to provide additional details. For example, a viewer can select a product and see which units produce that product.

Data
- Verify that the correct aggregation is used for percentage items (like customer satisfaction). It does not make sense to take a sum (or total) of percentages.

Objects
- Categories with few distinct values should be used with button bar controls. Categories with a moderate number of distinct values should be used with drop-down list controls. Categories with lots of distinct values should be used with text input controls.
  Hint: Visual Analytics recommends the most-appropriate control object based on the distinct values for a category data item.
- Some objects have titles that do not match the type of object. Modify titles to describe the data displayed.
- Add titles and descriptions to provide context and instructions for report objects.
- Make sure that you use the simplest object to show data.
Design

- Use appealing colors and styles for each object.
- In general, colors should be used to direct a report viewer’s attention to things that are unusual or out of the ordinary.
- Ensure that the colors, styles, text, and fonts are consistent throughout the report.
- You can modify layout options (height and width) to ensure objects use a specific percentage of the screen.
1.5 Proposed Solution

1. Open the browser and sign in to SAS Visual Analytics using Eric’s credentials.
   a. From the browser window, select SAS Drive from the bookmarks bar.
   b. Enter Eric in the User ID field.
   c. Enter Student1 in the Password field.
   d. Click Sign In.

2. Open Beautiful Report (start) in the SAS Content/Shared Data/Basics folder.
   a. In the upper left corner, click (Show applications menu) and select Explore and Visualize Data to open Visual Analytics.
   b. In the Welcome to SAS Visual Analytics window, click Open.
   c. Navigate to the SAS Content/Shared Data/Basics folder.

3. Save the report with a new name.
   a. In the upper right corner of Visual Analytics, click (More) and select Save as.
   b. Navigate to the SAS Content/Shared Data/Basics folder, if necessary.
   c. Enter Beautiful Report in the Name field.
   d. Click Save.

4. Modify the page prompts on the Location Analysis page.
   a. Click the Location Analysis tab at the top of the canvas.
   b. In the page prompt area, in the upper right corner of the button bar, click (More) and select Change Button Bar to Drop-Down List (recommended).
      Note: You need to scroll to the right in the page prompt area to locate More on the button bar.
   c. In the page prompt area, in the upper right corner of the drop-down list (with Facility Continent), click (More) and select Change Drop-Down List to Button Bar.
   d. In the page prompt area, select the button bar.
   e. At the top of the button bar, click and drag the button bar to the left side of the drop-down list control.
   f. In the page prompt area, select the button bar, if necessary.
   g. In the right pane, click the Options icon.
      1) In the Object group, for the Name field, enter Continent Selector.
      2) For the Title field, select Custom title.
      3) Replace Untitled with Select a continent:
The Options pane should resemble the following:

![Options Pane Diagram]

h. In the right pane, click the Actions icon.
   1) In the Object Links group, select Drop-Down List – Facility Continent 1.
   2) Verify that (Filter) is selected.

   When a viewer selects a continent in the button bar, the drop-down list is filtered to show only countries in that continent.

   The Actions pane should resemble the following:

   ![Actions Pane Diagram]

i. In the page prompt area, click North America again to deselect it.

j. In the page prompt area, select the drop-down list control.
k. In the right pane, click the **Options** icon.
   1) In the Object group, for the **Name** field, enter **Country Selector**.
   2) For the **Title** field, select **Custom title**.
   3) Replace **Untitled** with **Select a country**.

l. In the right pane, click the **Actions** icon.
   1) In the Object Links group, select **Text Input – Facility City 1**.
   2) Verify that **(Filter)** is selected.

When a viewer selects a country in the drop-down list control, the text input control shows only cities in that country.

The Actions pane should resemble the following:

```
<table>
<thead>
<tr>
<th>Actions</th>
<th>View Diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country Selector</td>
<td></td>
</tr>
<tr>
<td>Automatic actions on all objects</td>
<td></td>
</tr>
<tr>
<td>Object Links</td>
<td></td>
</tr>
<tr>
<td>Text Input - Facility City 1</td>
<td></td>
</tr>
</tbody>
</table>
```

m. In the page prompt area, select the text input control.

n. In the right pane, click the **Options** icon.
   1) In the Object group, for the **Name** field, enter **City Selector**.
   2) For the **Title** field, select **Custom title**.
   3) Replace **Untitled** with **Enter a city name**.

The page prompt area should resemble the following:

```
<table>
<thead>
<tr>
<th>Select a continent:</th>
<th>Select a country:</th>
<th>Enter a city name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>Facility Country</td>
<td>Enter Facility City</td>
</tr>
<tr>
<td>Asia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North America</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oceania</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South America</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

5. Move the treemap object to the Product Analysis page.
   a. In the canvas, right-click the treemap and select **Move to** ⇒ **Product Analysis**.
   b. Click the **Location Analysis** tab.

6. In the canvas, right-click the list table and select **Delete** to delete the object.

7. Modify the geo map.
   a. In the canvas, click the geo map to select it.
   b. In the right pane, click the **Roles** icon.
      1) For the **Color** role, add **Product Quality**.
The Roles pane should resemble the following:

Data Roles

- Category
  - Customer ID
- Size
  - Add
- Color
  - Product Quality
- Data tip values
  - Customer ID
  - Number of Orders
  - Product Quality

1. In the right pane, click the **Options** icon.
   1) In the Object group, for the **Name** field, enter **Customer Locations**.
   2) For the **Title** field, select **Custom title**.
   3) Enter **Product Quality by Customer Location** as the title.
   4) In the Style group, click **(Select a color)** for the **Gradient** (the first color).
   5) Select **Sail blue**.
   6) Click **(Select a color)** for the **Gradient** (the second color).
   7) Select **Christalle violet**.
The Style group should resemble the following:

- Font: AvenirNext
- Background:
- Border
- Padding: 16
- Line/Marker:
- Gradient:

8) In the Map group, for the Initial marker shape field, select Circle.

The Map group should resemble the following:

- Type: Coordinates
- Cluster adjacent markers
- Transparency: 13%
- Initial marker shape: Circle
9) In the Legend group, for the placement, choose the middle on the right side.

![Placement Options](image)

The Location Analysis page should resemble the following:

![Location Analysis Page](image)

8. Click the **Product Analysis** tab.

9. Delete the page prompts.
   
   a. In the page prompt area, right-click the button bar and select **Delete** to delete the object.
   
   b. In the page prompt area, right-click the drop-down list control and select **Delete** to delete the object.
   
   c. In the page prompt area, right-click the text input control and select **Delete** to delete the object.
   
   d. On the page tab, click **(Options)** and select **Collapse page controls**.

10. Modify the product style treemap.
   
   a. In the canvas, right-click the product style treemap and select **Change Treemap to List Table**.
   
   b. In the right pane, click the **Options** icon.
      
      1) In the Object group, for the **Name** field, enter **Number of Orders and Product Quality by Product Style**.
      
      2) For the **Title** field, verify that **Custom title** is selected.
      
      3) Enter **Orders and Quality by Product Style** as the title.
c. In the list table, click the **Product Quality** column.

<table>
<thead>
<tr>
<th>Orders and Quality by Product Style</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Style</strong></td>
</tr>
<tr>
<td>Blue Cloth</td>
</tr>
<tr>
<td>Age 08</td>
</tr>
<tr>
<td>Age 05</td>
</tr>
<tr>
<td>Black Ceramic</td>
</tr>
<tr>
<td>Golf - Female</td>
</tr>
</tbody>
</table>

11. Modify the pie chart.
   a. In the canvas, right-click the pie chart and select **Change Pie Chart to Dual Axis Bar Chart**.
   b. In the right pane, click the **Options** icon.
      1) In the Object group, for the **Name** field, enter **Number of Orders and Product Quality by Product Line**.
      2) For the **Title** field, verify that **Custom title** is selected.
      3) Enter **Orders and Quality by Product Line** as the title.
      4) In the **X Axis Options** group, clear **Axis label**.
The dual axis bar chart should resemble the following:

![Orders and Quality by Product Line](chart_image)

12. Modify the word cloud.
   
a. In the canvas, right-click the word cloud and select Change Word Cloud to ⇒ Treemap.
   
b. In the right pane, click the Options icon.
   1) In the Object group, for the Name field, enter **Number of Orders and Product Quality by Product Make**.
   2) For the Title field, verify that **Custom title** is selected.
   3) Enter **Orders and Quality by Product Make** as the title.
   4) In the Treemap group, clear Level indicator.

![Treemap Options](treemap_options)

5) In the Legend group, for the Visibility field, select **Off**.

![Legend Options](legend_options)
The treemap should resemble the following:

![Orders and Quality by Product Make](image)

13. Modify the customer satisfaction treemap.
   a. In the canvas, right-click the customer satisfaction treemap and select Change Treemap to Dual Axis Bar-Line Chart.
   b. In the right pane, click the Roles icon.
      
      For the Category role, select Transaction Date and replace it with Transaction Month.
      
      The Roles pane should resemble the following:

      ![Data Roles](image)

      c. In the left pane, click the Data icon.
         1) In the Category group, right-click Transaction Month and select Format More formats.
         2) In the Format window, select Month.
         3) At the bottom of the window, select Jun.
The Format window should resemble the following:

```
Format
Reset to Default

 MMMYYYY
 MMMYYY
 Month
   Month, Day, Year
   Quarter
   Quarter, Year
   Week
   Year
 Year, Week

Format: Jun
```

4) Click OK.

5) In the Measure group, for Customer Satisfaction, click ↘️ (Edit properties).

6) For the Aggregation field, select Average.

d. At the bottom of the dual axis bar-line chart, right-click Transaction Month and select Sort ➔ Transaction Month: Ascending.

e. In the right pane, click the Options icon.

1) In the Object group, for the Name field, enter Customer Satisfaction and Profit Over Time.

2) For the Title field, verify that Custom title is selected.

3) Enter Customer Satisfaction and Profit as the title.

4) For the Line group, select Markers.

5) For Marker size, select 6.
The Line group should resemble the following:

6) In the X Axis Options group, clear Axis label.

The dual axis bar-line chart should resemble the following:
14. Rearrange objects on the Product Analysis page to resemble the following:

15. Add actions between objects on the Product Analysis page.

   a. In the canvas, click the list table to select it.
      
      1) In the right pane, click the Actions icon.
      
      2) In the Object Links group, select Customer Satisfaction and Profit Over Time (the dual axis bar-line chart).

      3) Verify that (Filter) is selected.

      4) In the Page Links group, clear Location Analysis.

      5) Verify that Unit Analysis is selected.
The Actions pane should resemble the following:

![Actions Pane]

b. In the canvas, click the treemap to select it.

1) In the right pane, click the Actions icon.

2) In the Object Links group, verify that **Number of Orders and Product Quality by Product Style** (the list table) is selected.

3) Verify that **Filter** is selected.

4) In the Page Links group, clear **Location Analysis**.

5) Verify that **Unit Analysis** is selected.
The Actions pane should resemble the following:

![Diagram of Actions pane]

c. In the canvas, click the dual axis bar chart to select it.
   1) In the right pane, click the **Actions** icon.
   2) In the Object Links group, verify that **Number of Orders and Product Quality by Product Make** (the treemap) is selected.
   3) Verify that **(Filter)** is selected.
   4) In the Page Links group, clear **Location Analysis**.
   5) Verify that **Unit Analysis** is selected.
The Actions pane should resemble the following:

16. Click the **Unit Analysis** tab.
17. In the canvas, right-click the button bar and select **Delete** to delete the object.
18. In the canvas, right-click the drop-down list control and select **Delete** to delete the object.
19. In the canvas, right-click the text input control and select **Delete** to delete the object.
20. Modify the bar chart.
   a. In the canvas, click the bar chart to select it.
   b. Right-click the bar chart and select **Change Bar Chart to ➔ List Table (recommended).**
   c. In the right pane, click the **Roles** icon.
      1) For the **Columns** role, drag **Product Line** before **Unit ID**.

![Actions pane diagram]
2) For the **Columns** role, select **Add ⇒ Product Quality**.

3) Click **OK**.

d. In the right pane, click the **Options** icon.
   1) In the Object group, for the **Name** field, enter **Unit Details**.
   2) In the Layout group, for **Width**, click **Specify width**.
   3) Enter **75%**.

   The Layout group should resemble the following:

   ![Layout Group](image)

   e. In the right pane, click the **Actions** icon.
   1) In the Object Links group, verify that all four key value objects are selected.
   2) Verify that (Filter) is selected for each key value object.

   The Actions pane should resemble the following:

   ![Actions Pane](image)

   f. In the right pane, click the **Rules** icon.
   1) Select **New rule ⇒ Unit Discards**.
2) In the New Display Rule window, for the **Rule Type** field, verify that **Expression** is selected.

3) For the **Operator** field, verify that > (more than) is selected.

4) For the **Value** field, select **Unit Production**.

```
Unit Discards

Rule Type:
Expression ▼

Operator:
> ▼

Value:
Unit Production ▼
```

5) In the **Format** area, click **(Select a font color)**.

6) Choose **Alizarin red**.

7) Click **(Select a background color)** for the **Background Color** field.

8) Choose **Zircon gray**.

9) For the **Placement** field, select **Unit ID**.

```
Format:
AvenirNext ▼ B I U □

Background Color:
□

Placement:
Unit ID ▼

☐ Allow alerts for this rule
```

10) Click **OK**.

**g.** In the list table, click the **Product Line** column, hold down the Ctrl key, and click the **Product Quality** column.
The list table is sorted by **Product Line** and **Product Quality**:

<table>
<thead>
<tr>
<th>Product Line</th>
<th>Unit ID</th>
<th>Number of Products</th>
<th>Product Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bead</td>
<td>NBD000020</td>
<td>88</td>
<td>71%</td>
</tr>
<tr>
<td>Bead</td>
<td>NBD000094</td>
<td>102</td>
<td>71%</td>
</tr>
<tr>
<td>Bead</td>
<td>NBD000036</td>
<td>1,612</td>
<td>83%</td>
</tr>
<tr>
<td>Bead</td>
<td>NBD000028</td>
<td>773</td>
<td>83%</td>
</tr>
<tr>
<td>Bead</td>
<td>NBD000163</td>
<td>1,400</td>
<td>86%</td>
</tr>
<tr>
<td>Bead</td>
<td>NBD000111</td>
<td>1,405</td>
<td>86%</td>
</tr>
</tbody>
</table>

21. Modify the unit capacity key value object.
   a. In the canvas, click the unit capacity key value object to select it.
   b. In the right pane, click the **Options** icon.
      1) In the Object group, for the **Name** field, enter **Unit Capacity**.
      2) In the Key Value group, select **Text**.
      3) For **Alignment**, click (Center text).

The Key Value group should resemble the following:
4) For **Measure value**, click (Select a color).

5) Choose **Automatic**.

The key value object should resemble the following:

```
Unit Capacity
7.9M
```

22. Modify the unit discards key value object.

a. In the canvas, click the unit discards key value object to select it.

b. In the right pane, click the **Options** icon.

1) In the Object group, for the **Name** field, enter **Unit Discards**.

2) In the Style group, clear **Padding**.

3) In the Key Value group, for **Alignment**, click (Center text).
4) For the position, click the center.

5) For Measure label, click (Select a color).

6) Choose Automatic.

7) For Measure color, click (Select a color).

8) Choose Automatic.

c. In the right pane, click the Rules icon.

1) Select New rule ⇒ Unit Discards.

2) In the New Display Rule window, for the Operator field, verify that > (more than) is selected.

3) For the Value field, select Unit Production.

4) For Style, click (Select a style).

5) Choose Alizarin red.

The New Display Rule window should resemble the following:

6) Click OK to create the display rule.
The key value object should resemble the following:

```
<table>
<thead>
<tr>
<th>Unit Discards</th>
</tr>
</thead>
<tbody>
<tr>
<td>115K</td>
</tr>
</tbody>
</table>
```

23. Modify the unit production key value object.
   a. In the canvas, click the unit production key value object to select it.
   b. In the right pane, click the Options icon.
      1) In the Object group, for the Name field, enter **Unit Production**.
      2) In the Style group, clear **Padding**.
      3) In the Key Value group, for Alignment, click **Center text**.
      4) For the position, click the center.
      5) Select **Use abbreviated numerical value**.
      6) Clear **Aggregation**.

   The key value object should resemble the following:

```
<table>
<thead>
<tr>
<th>Unit Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>4M</td>
</tr>
</tbody>
</table>
```

24. Modify the unit target key value object.
   a. In the canvas, click the unit target key value object to select it.
   b. In the right pane, click the Options icon.
      1) In the Object group, for the Name field, enter **Unit Target**.
      2) In the Key Value group, select **Text**.
      3) For Alignment, click **Center text**.
      4) For Measure value, click **Select a color**.
      5) Choose **Automatic**.

   The key value object should resemble the following:

```
<table>
<thead>
<tr>
<th>Unit Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3M</td>
</tr>
</tbody>
</table>
```
25. Rearrange objects on the page to resemble the following:

<table>
<thead>
<tr>
<th>Product Line</th>
<th>Unit ID</th>
<th>Number of Products</th>
<th>Product Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bead</td>
<td>NBD000020</td>
<td>88</td>
<td>71%</td>
</tr>
<tr>
<td>Bead</td>
<td>NBD000094</td>
<td>102</td>
<td>71%</td>
</tr>
<tr>
<td>Bead</td>
<td>NBD000036</td>
<td>1,612</td>
<td>83%</td>
</tr>
<tr>
<td>Bead</td>
<td>NBD000028</td>
<td>773</td>
<td>83%</td>
</tr>
<tr>
<td>Bead</td>
<td>NBD000163</td>
<td>1,400</td>
<td>86%</td>
</tr>
<tr>
<td>Bead</td>
<td>NBD000111</td>
<td>1,405</td>
<td>86%</td>
</tr>
<tr>
<td>Bead</td>
<td>NBD000066</td>
<td>1,363</td>
<td>86%</td>
</tr>
<tr>
<td>Bead</td>
<td>NBD000044</td>
<td>1,794</td>
<td>89%</td>
</tr>
<tr>
<td>Bead</td>
<td>NBD000214</td>
<td>1,810</td>
<td>89%</td>
</tr>
<tr>
<td>Bead</td>
<td>NBD000052</td>
<td>2,046</td>
<td>91%</td>
</tr>
<tr>
<td>Bead</td>
<td>NBD000209</td>
<td>978</td>
<td>91%</td>
</tr>
<tr>
<td>Figurine</td>
<td>TAF00122</td>
<td>402</td>
<td>73%</td>
</tr>
<tr>
<td>Figurine</td>
<td>TAF00082</td>
<td>373</td>
<td>73%</td>
</tr>
<tr>
<td>Figurine</td>
<td>TAF00156</td>
<td>406</td>
<td>73%</td>
</tr>
<tr>
<td>Figurine</td>
<td>TAF00013</td>
<td>417</td>
<td>73%</td>
</tr>
</tbody>
</table>

26. In the upper right corner of Visual Analytics, click (More) and select Save.

27. In the upper right corner, select Eric ⇒ Sign Out to sign out of Visual Analytics.