Visualizing Reports with SAS® Theme Designer in SAS® Visual Analytics 8.1

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ABSTRACT

SAS® Theme Designer provides a rich set of colors and graphs that enables customers to create a custom application and report themes. Users can also preview their work within SAS® Visual Analytics. The features of SAS Theme Designer enable the user to bring a new look and feel to their entire application and to their reports. Users can customize their reports to use a unique theme across the organization, yet they can customize these reports based on their individual business requirements. Providing this customization involves meeting the customers' demands from the theming perspectives of customization, branding, and logo, and making them seamless within their application. The paper walks the user through the process of using SAS Theme Designer and SAS Visual Analytics. It further highlights the following features of SAS Theme Designer: creating and modifying application and report themes, previewing output in SAS Visual Analytics, and importing and exporting themes for reuse.

INTRODUCTION

SAS Theme Designer 3.0 enables you to easily customize the appearance of SAS® Viya™ applications. SAS Theme Designer is a web application developed using HTML 5 that you can use to tailor reports in SAS Visual Analytics. SAS Theme Designer creates and deploys simple, visually appealing, customized themes. A theme defines the overall look and feel of an application, using colors and graphics that are applied to common user interface components and layout containers. A well-designed theme can create a strong visual identity across a product or set of products. You might not want to view your SAS® reports in the default report theme. You might instead want to apply your own branding and customization to help the reports fit in with the rest of your software environment. SAS provides a default report theme, but you can create your own customized theme by using SAS Theme Designer.

WHAT IS SAS VISUAL ANALYTICS?

SAS Visual Analytics 8.1 is the first release of this offering to run on the SAS® Viya™ platform. SAS Visual Analytics is an easy-to-use, web-based product that leverages SAS high-performance analytics technologies and empowers organizations to explore huge volumes of data quickly to identify patterns, trends, and opportunities for further analysis. The highly visual, drag-and-drop interface of SAS Visual Analytics, combined with the speed of the SAS® Cloud Analytic Services (CAS) server, accelerate analytic computations and enable organizations to derive value from massive amounts of data. This creates an unprecedented ability to solve difficult problems, improve business performance, predict future performance, and mitigate risk rapidly and confidently. Users can quickly create reports or dashboards, which can be viewed on a mobile device or on the web. SAS Visual Analytics enables you to explore, discover, and predict using your data.

Business users, business analysts, IT administrators, and others can access tasks from SAS Home. The central entry point for SAS Visual Analytics enables users to perform tasks such as exploring data and designing reports, as well as analyzing and interpreting data. Most importantly, reports can be displayed on a mobile device or on the web.

SAS Visual Analytics 8.1 is a single application for BI, data exploration, and analytics, enhanced with advanced visualization techniques. Collaboration and storytelling, autocharting, text sentiment analysis, robust report design, and mobile BI are also available.

You can access the items and applications that you work with in SAS Home, shown in Figure 1. The availability of the features on this page depends on the permissions that have been assigned to you by your administrator and on which products are licensed at your site. Figure 2 shows the initial SAS Visual Analytics window.
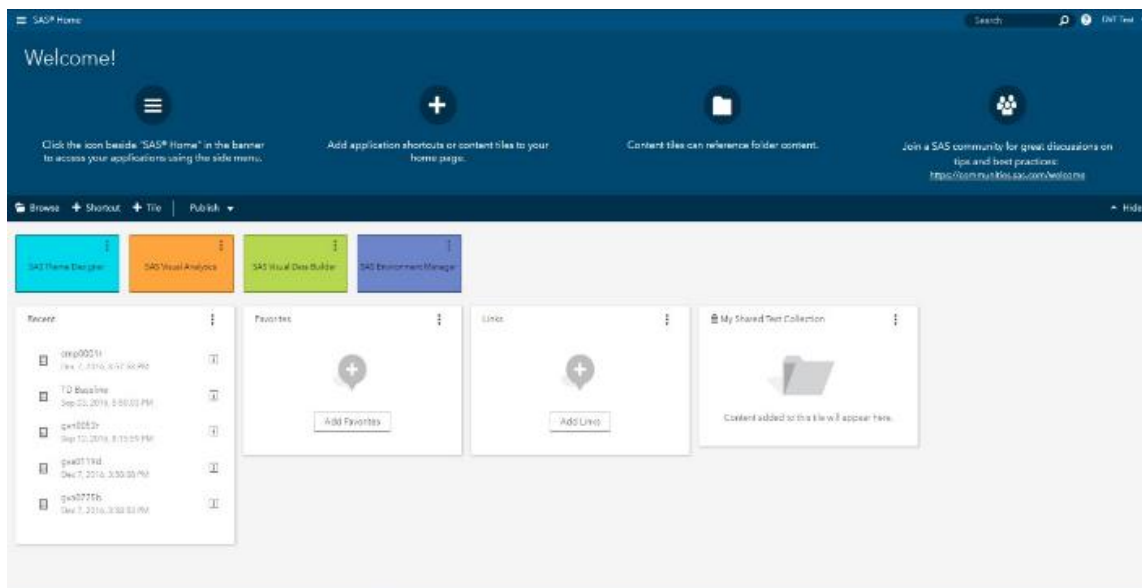
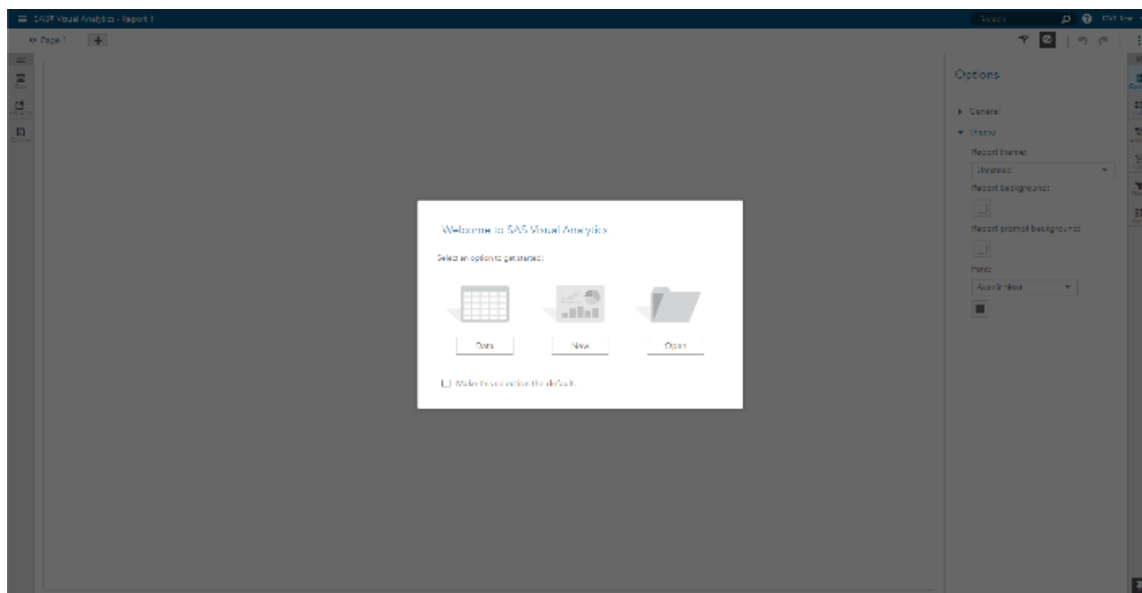**Figure 1. Accessing SAS Visual Analytics from SAS Home**

Figure 2. SAS Visual Analytics UI

CREATING REPORTS IN SAS VISUAL ANALYTICS

You can create a well-designed report in SAS Visual Analytics. You can edit the report and view your changes on the fly for the report. You can drag and drop tables, graphs, gauges, and controls to create a well-designed report in SAS Visual Analytics. You can add text, images, and other controls to reports. Each page of a report can use a different layout and contain different report objects.

Figure 3 shows a report created with the default report theme Umstead. To customize the appearance of the Umstead report theme, use the **Options** pane to change the default background color, prompt background color, font, and font color.
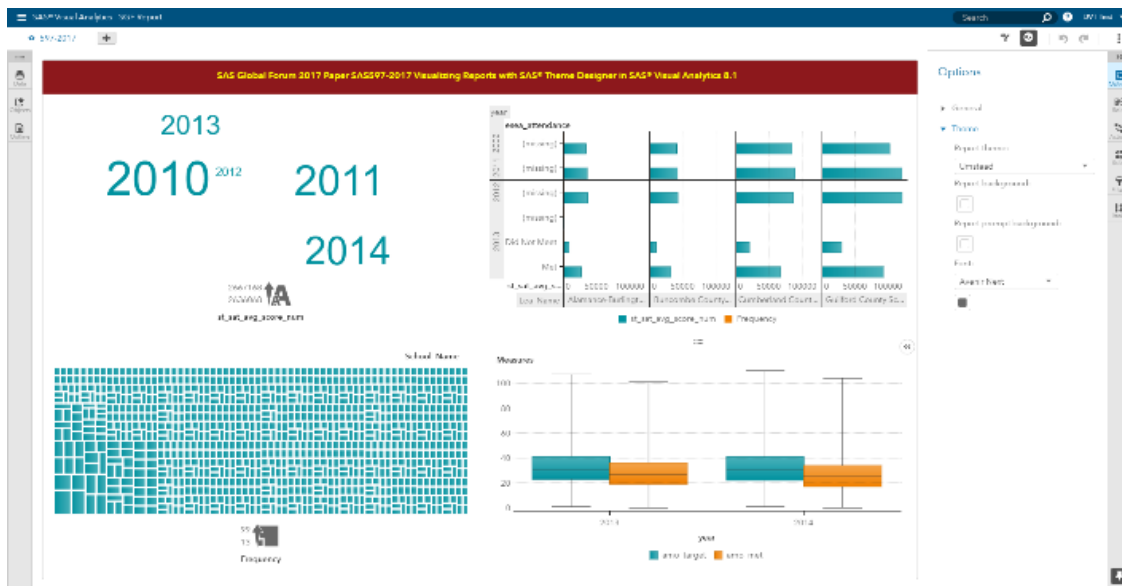
Figure 3. Default Report Theme: Umstead in SAS Visual Analytics

You can replace the default report theme with a custom report theme if one is available. Custom report themes are automatically created when a custom application theme is created in SAS Theme Designer.

Figure 4 shows the branding that the Chelsea football club has added to their reports, and Figure 5 shows the branding for the Liverpool football club.
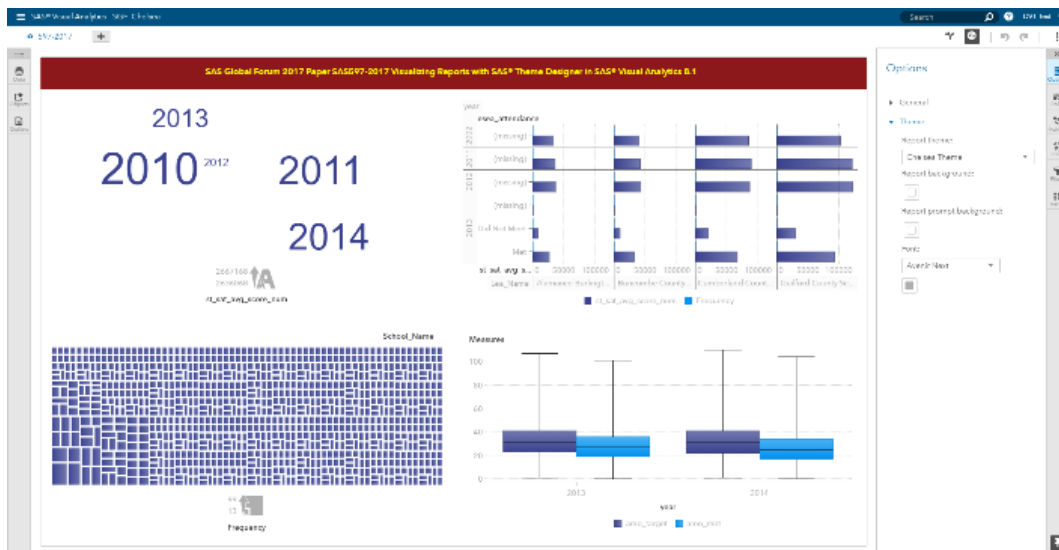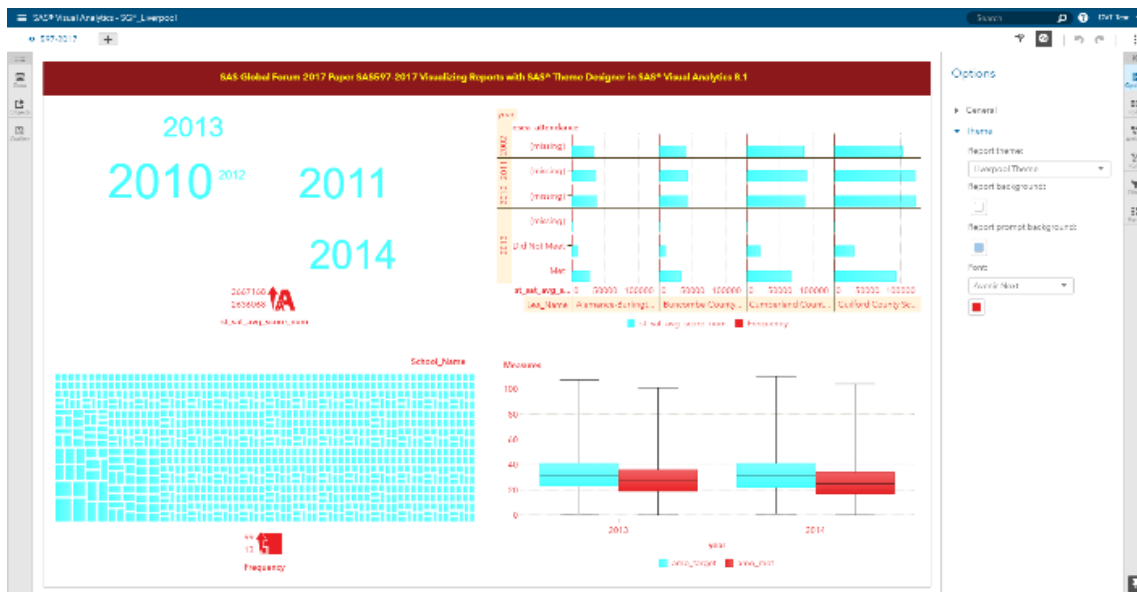

Figure 4. Custom Report Theme: Chelsea Theme

Figure 5. Customer Report Theme: Liverpool Theme

VIEWING REPORTS IN SAS® REPORT VIEWER

If you have permission, you can view (but not edit) report content in SAS Report Viewer (the viewer).

To open a report in the viewer:

From SAS Home, click [i] (the object inspector icon) next to a report, and then click **View**.

Figure 6 shows a report in the report viewer:

Figure 6. Report with Default Report Theme in SAS Report Viewer

Figure 7 shows the branding that the Chelsea football club has added to their reports, and Figure 8 shows the report branding for the Liverpool football club.
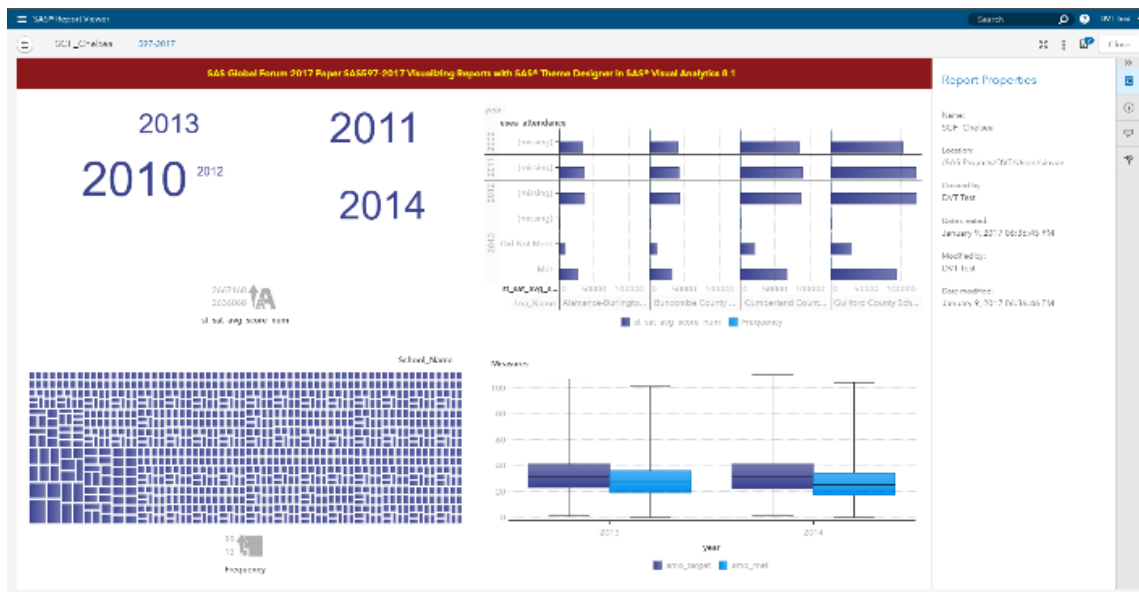
Figure 7. Custom Report Theme: Chelsea Theme in SAS Report Viewer
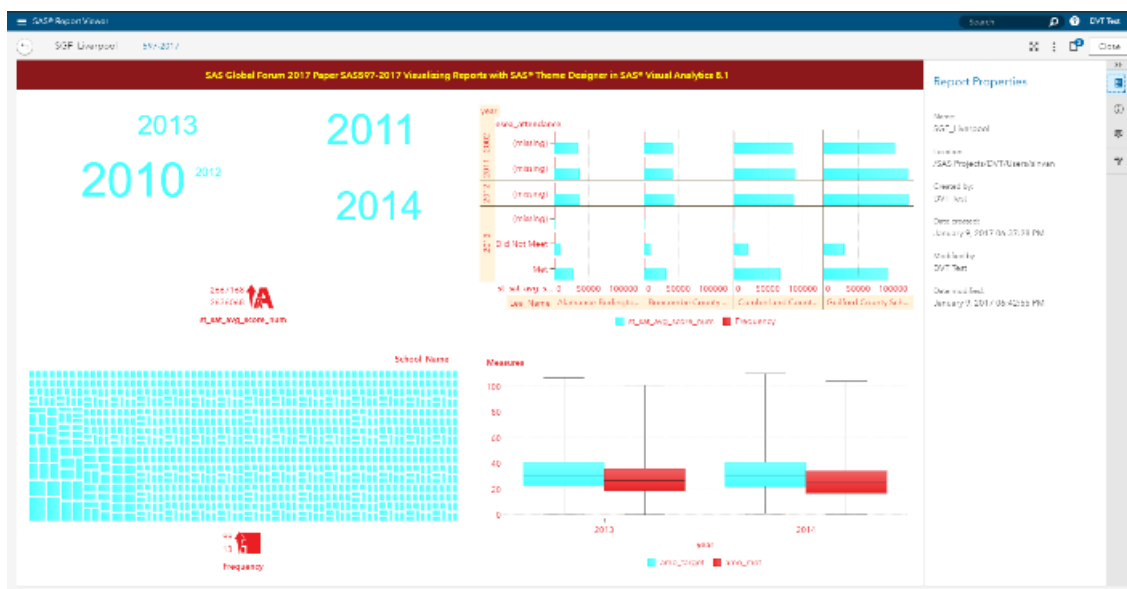

Figure 8. Custom Report Theme: Liverpool Theme in SAS Report Viewer

By using themes, every report that you or other users create has a similar look and feel. For example, if you create one report to show product sales and another report to show actual sale verses predicted sale, both the reports have the same look.

VIEWING THE REPORTS USING CUSTOM THEMES

You can see how a custom theme changes an existing report in two ways:

- In SAS Theme Designer:

    1. Create an existing report in SAS Theme Designer.
    2. Apply the custom report theme using the **Page Styles** and **Graph Styles**.

- In SAS Visual Analytics:

    1. Open an existing report in SAS Visual Analytics.

2. Using the **Options** pane, select a custom theme from the **Report** theme drop-down list. The theme change is applied to the report.

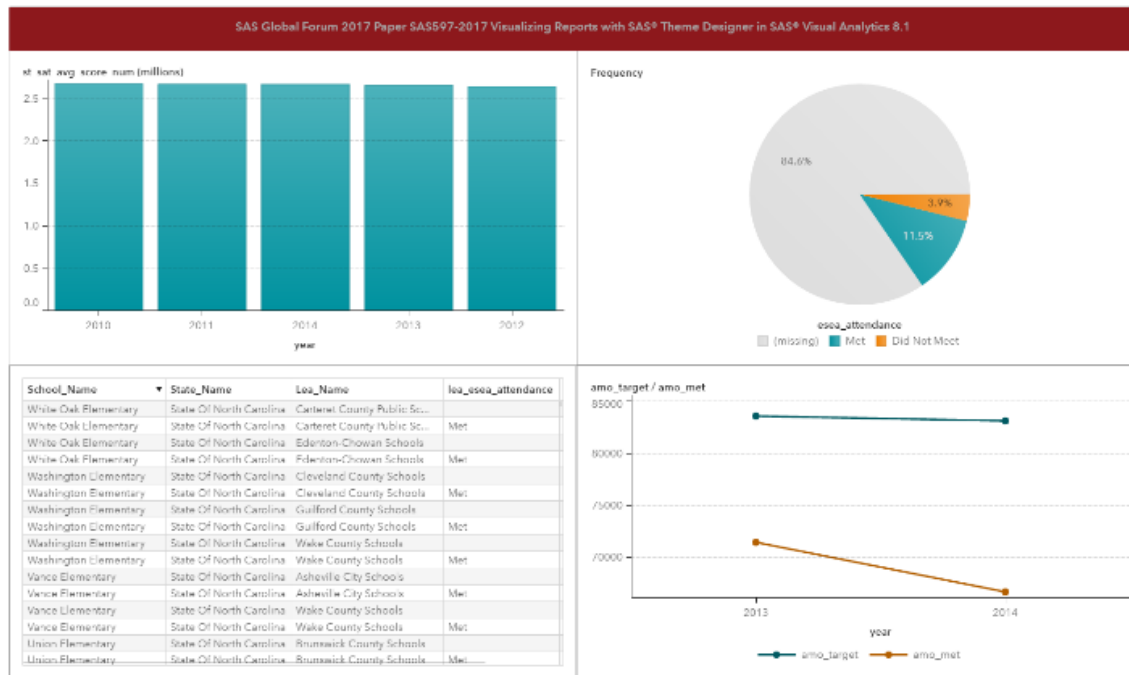Figure 9 displays the report with the default report theme, Umstead.

Figure 9. Default Report Theme: Umstead

You can customize this default look using your own custom report theme. Figure 10 shows branding that Duke University uses on their reports that uses a particular shade of blue. Figure 11 shows Howard University branding, which uses maroon.
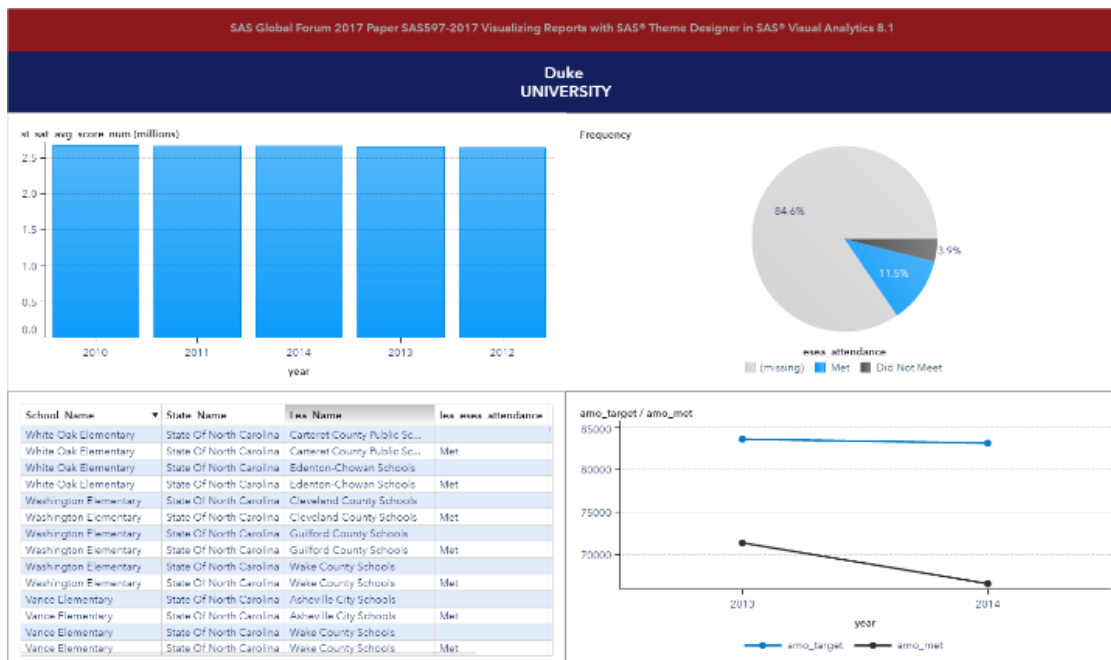

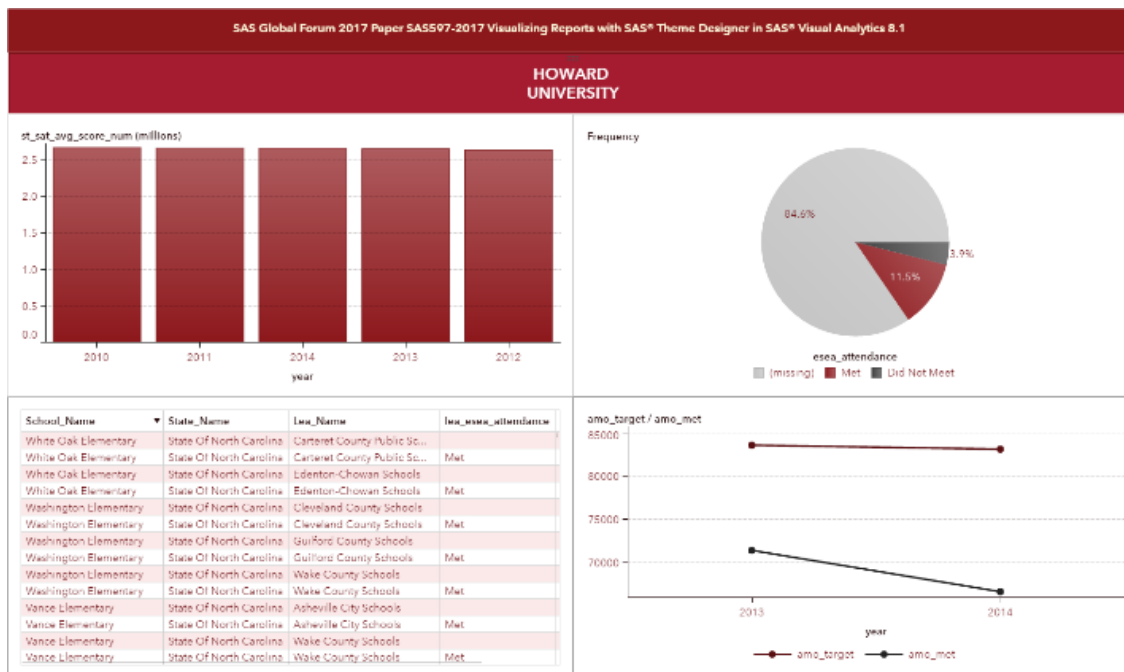**Figure 10. Custom Report Theme: Duke University**

Figure 11. Custom Report Theme: Howard University

Custom branding for Ferrari and Mercedes is shown in Figure 12 and Figure 13.
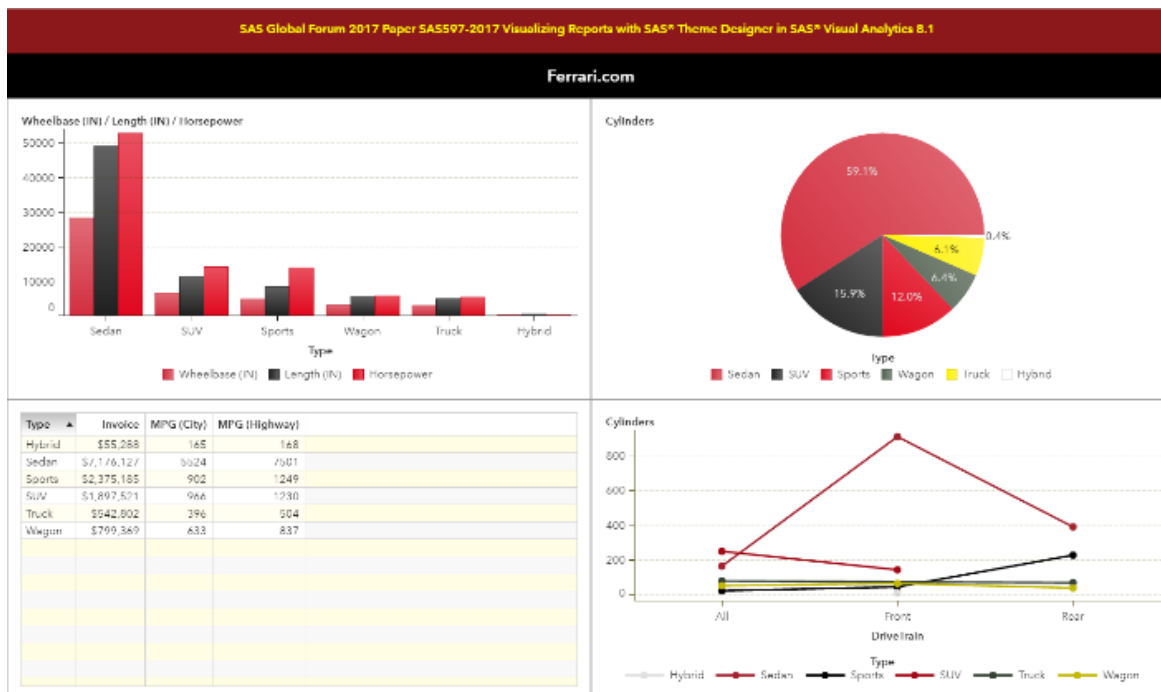

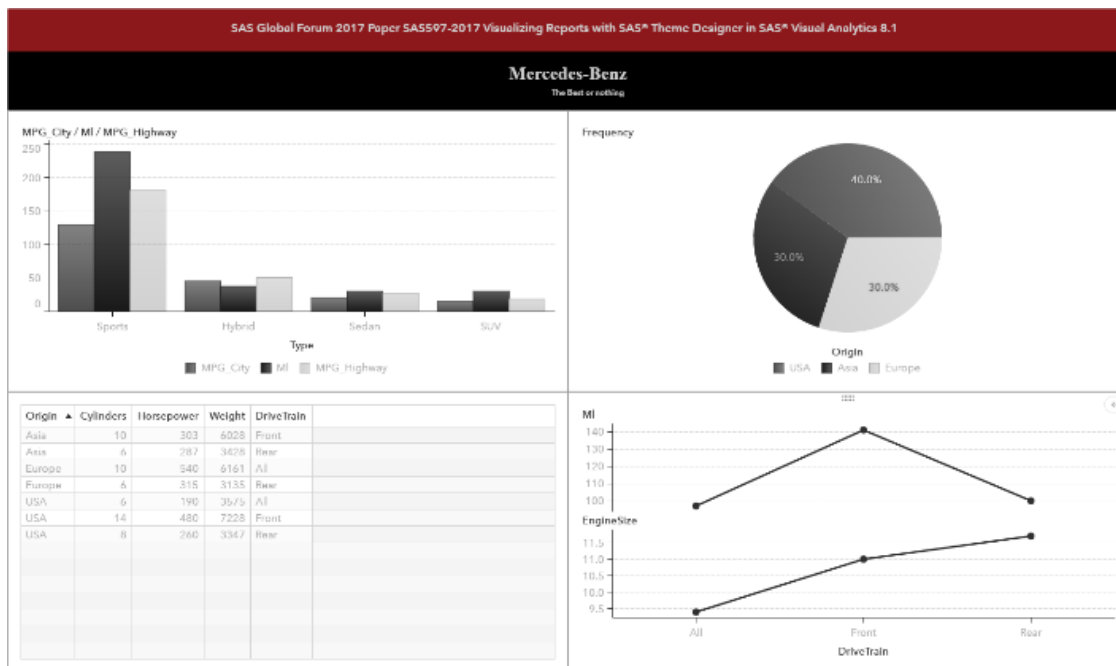**Figure 12. Custom Report Theme: Ferrari**

Figure 13. Custom Report Theme: Mercedes

You can use SAS Theme Designer to create all these different themes

WHAT IS SAS THEME DESIGNER?

SAS Theme Designer enables you to easily customize the appearance of SAS Viya applications. A theme defines the overall look and feel of an application or a report. It is designed using colors and graphics that are applied to common user interface components and layout containers. A well-designed theme can create a strong visual identity across a product or set of products. You can use SAS Theme Designer to create and deploy simple, visually appealing, customized themes.

SAS Theme Designer includes the following key features:

- A complete graphical user interface (GUI). All tasks can be done with simple point-and-click actions.

- The implementation and deployment of custom themes are entirely within the designer's control. You do not need to redeploy applications or restart web application servers. With a single click, you can make a new or updated custom theme available to all users in all eligible applications.

- A site can implement multiple custom themes. All deployed themes are available to all end users in all eligible applications.

- You can change the default theme. This is a single setting that applies to all eligible applications and affects all users (except those users who have specified a personal default theme).

- Custom themes that you create in the SAS Theme Designer are retained and available after deployment-related activities such as software upgrades.

- Custom themes that are designed with current versions of the application can be easily migrated to future versions.

- Custom themes can be easily exported or imported between environments of the same company.

ACCESSING SAS THEME DESIGNER

For an initial installation, the user must be a member of the Application Administrators custom group in order to access SAS Theme Designer. Access is based on authorization rules. An administrator can choose to change, add, or remove authorization rules via SAS® Environment Manager.

You can access SAS Theme Designer from the following locations:

- SAS Home

- the side menu in the SAS Viya application window

- a web browser

Access from SAS Home

You can easily access different SAS Viya applications and content, including SAS Theme Designer, from SAS Home 8.1. Within SAS Home, you can see the SAS Theme Designer in multiple ways including as a shortcut, as a tile, or as a link, as shown in Figure 14.
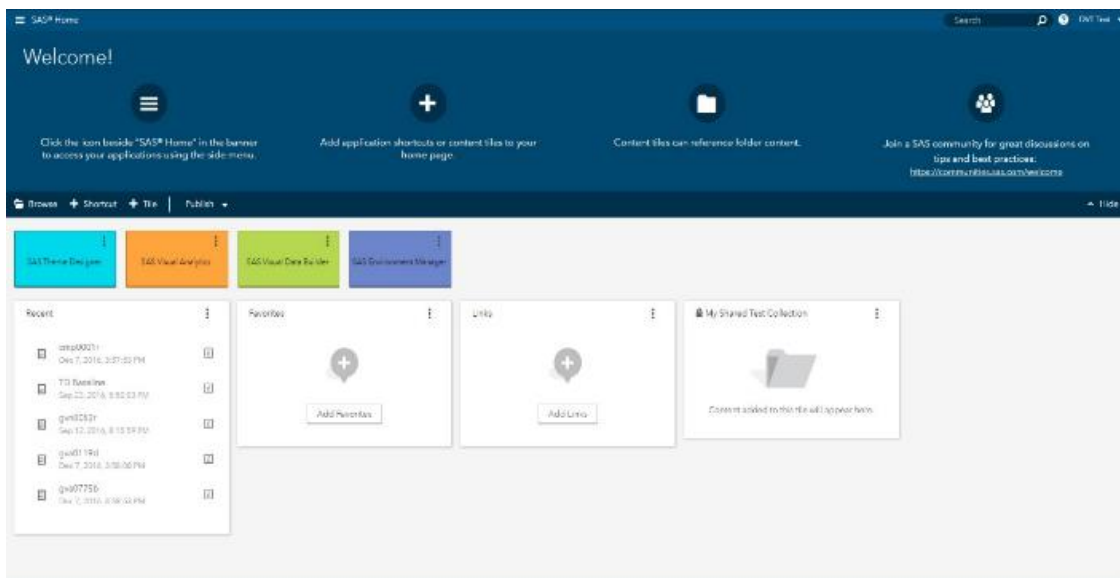

Figure 14. SAS Theme Designer Option in SAS Home

Access from the Side Menu

The side menu enables you to easily select SAS Viya applications that you have access to. The side menu, shown in Figure 15, is available in the upper left corner of your SAS Viya application window. Expand the listing of available SAS Viya applications, and select **SAS Theme Designer**.
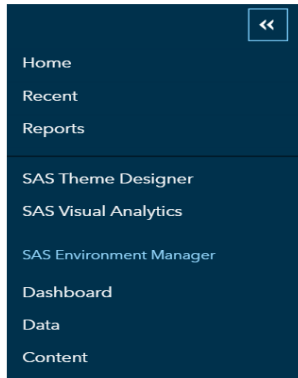
Figure 15. Side Menu Expanded

Access from a Web Browser

SAS Theme Designer is a web application that you can access from within a web browser. The URL for SAS Theme Designer is http://machine:port/SASThemeDesigner.

USING SAS APPLICATION THEMES

SAS Theme Designer enables you to apply your own branding and customization to make SAS Viya applications mesh with the rest of your software environment. Users often use more than one SAS application in their daily work. Having a consistent look and feel across all the SAS applications ensures that a user's transition from one application to the next is as seamless as possible.

SAS Theme Designer also provides the predefined, default application theme called Illuminate that you can use as the basis for creating new, customized application themes.

Create a New Application Theme

To create a new application theme in SAS Theme Designer:

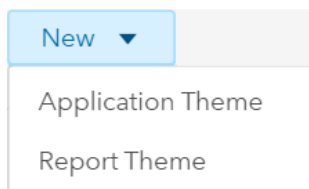1. In the Theme Designer window, select **New>Application Theme**.

Figure 16. Option to Select Theme

Alternatively, select **Starter Palettes>New Application Theme**. In the **Starter Palettes** pane you can create a new theme that is based on a preselected set of theme colors.
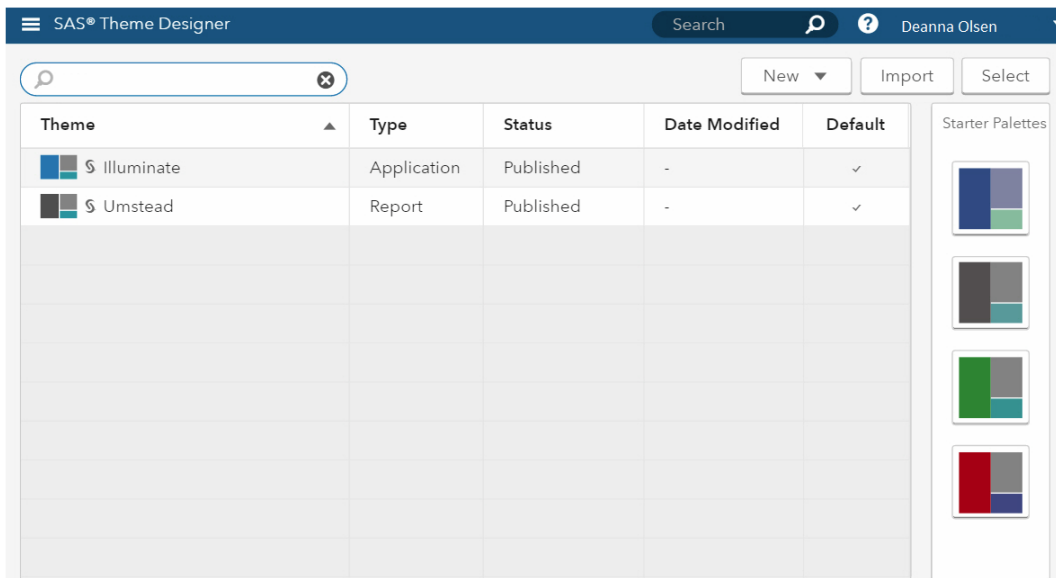
Figure 17. Selecting Starter Palettes

In the New Application Theme window you can begin making changes to the new theme. The **Preview** pane contains sample items that display changes that you make to the theme.
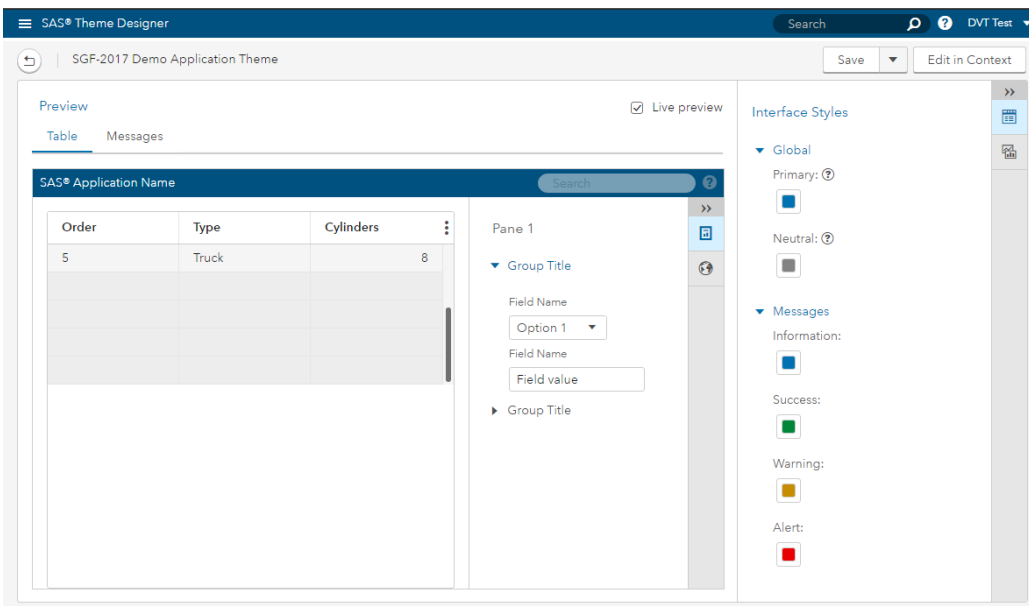

Figure 18. New Application Theme Window

2. You can change the color selections using the **Interface Styles** and **Graph Styles**. The SAS Theme Designer **Preview** pane displays the theme as you modify it. It enables you to easily see the changes that take place when theme properties are modified.
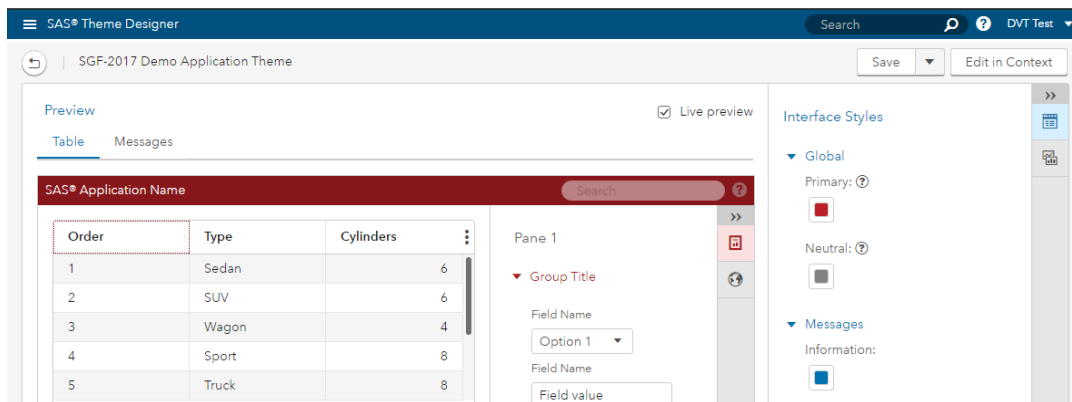
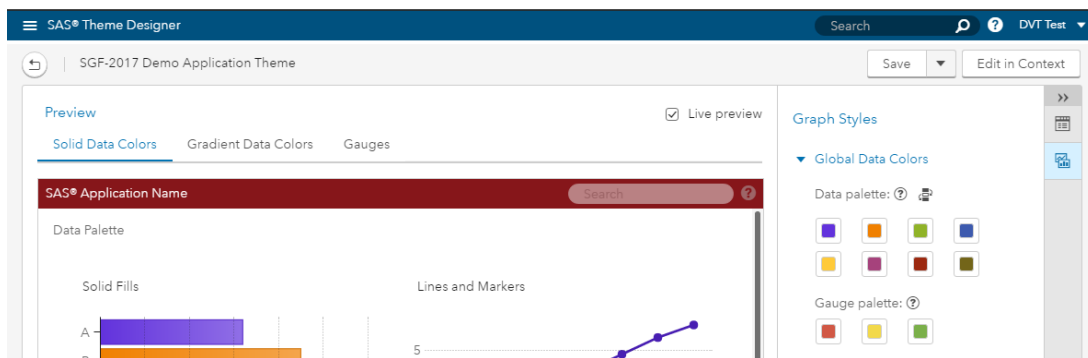**Figure 19. Interface Styles Applied and Live Preview**

Figure 20. Graph Styles Applied and Live Preview

View Theme Changes in a Different Application

You can also see the changes that you are making to a theme while in a different SAS Viya application by using the Edit in Context function. When you are in the New Application Theme window, you can temporarily move to another application. Your changes are applied directly to the application. Thus, you can see what a SAS application will look like when your theme is used.

1. In the **Edit in Context** pane, select the SAS Viya application that you want to go to. In the following example, **Home** is selected. Now, click **Edit in Context**. SAS Home opens.
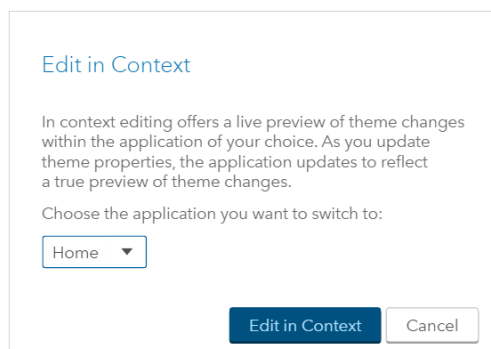

Figure 21. Edit in Context Option

2. The **Edit Theme** pane is now available from within SAS Home. Make changes to **Interface Styles** and **Graph Styles** for the theme, as shown in Figure 22 and Figure 23, and view the changes as you make them.
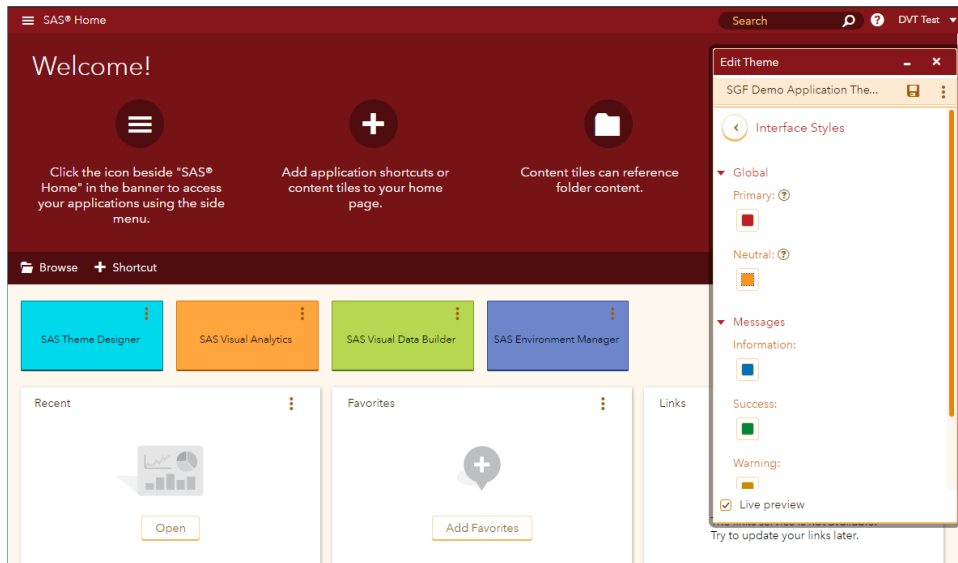
12

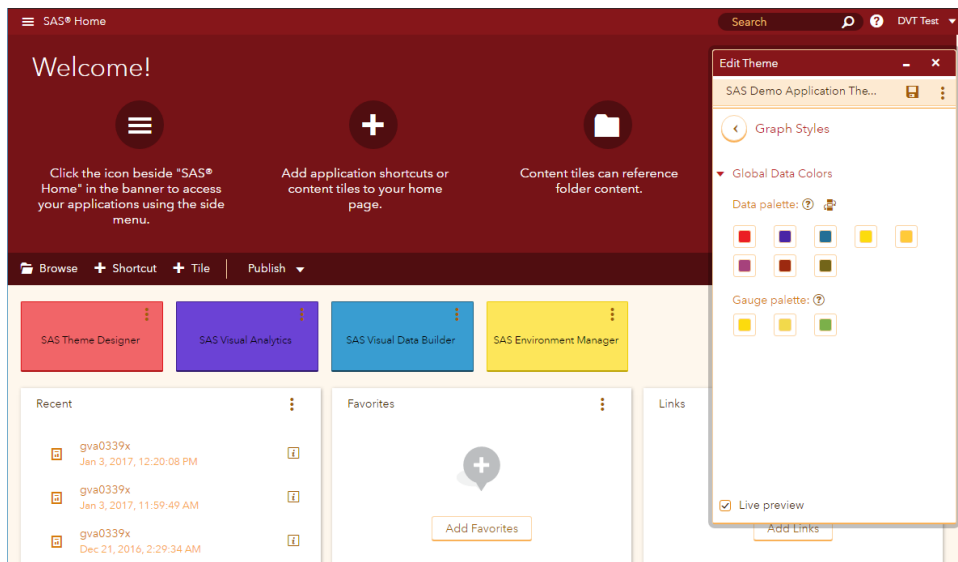**Figure 22. Interface Styles Applied in the Edit Theme Pane**

Figure 23. Graph Styles Applied in the Edit Theme Pane

3. To apply or view changes in SAS Visual Analytics: In the **Edit in Context** pane, select the SAS Visual Analytics application, and then click **Edit in Context**. SAS Visual Analytics opens to the **Edit** pane. Changes that you make in the **Edit** pane are visible in SAS Visual Analytics.
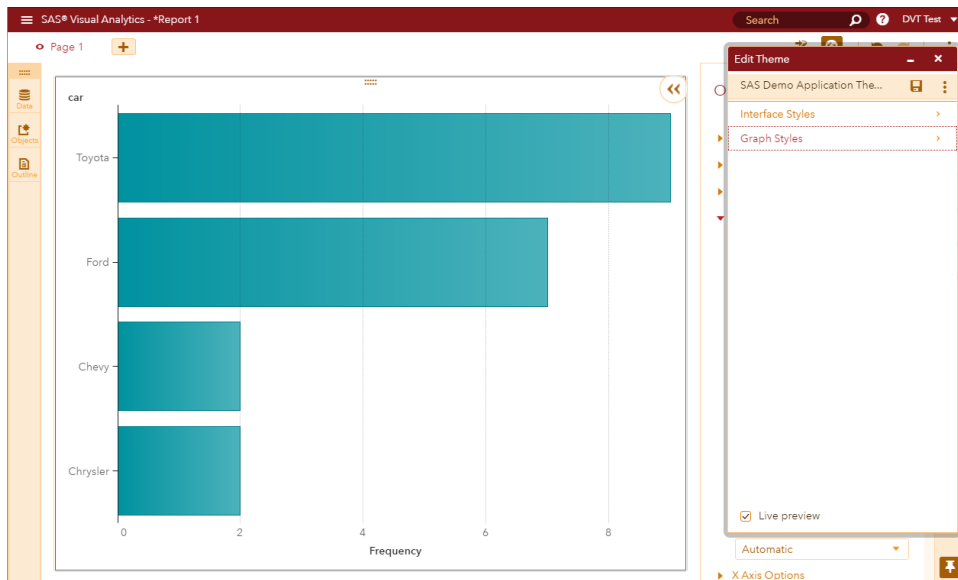
Figure 24. Interface Styles and Graph Styles Applied in SAS Visual Analytics

Save the Application Theme

When you are finished editing a theme, you can save the theme by selecting **Save** or **Save and Publish** from the drop-down menu.
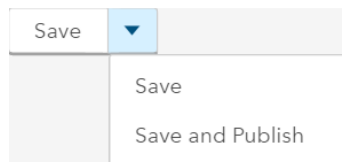

Figure 25. Save and Save and Publish Options Drop-Down List

When a theme has not been published, both options are available. If you select **Save and Publish**, the theme is published for use in SAS Viya applications. When a theme has been published and is being edited, only **Save and Publish** is available.

Import a Theme

To import a theme, select **Import** in the SAS Theme Designer window. A web browser file selection window appears. Select the exported theme file that you want to import, and select **Open**. Any themes that are defined in the exported theme file are imported and listed in the Theme table.

WORKING WITH SAS REPORT THEMES

The second type of theme that you can create in SAS Theme Designer is a report theme. You can create report themes that can be used in SAS Visual Analytics 8.1 reports. A report theme contains settings that control the color selections for different elements of a report, such as tables, graphs, and controls. SAS Theme Designer provides a predefined, default report theme that enables you to create new report themes based on that theme's settings. The Umstead theme is the default report theme. You can use the Umstead report theme to create additional customized report themes.

Create a New Report Theme

To create a new report theme in SAS Theme Designer 3.0:

1. In the Theme Designer window, select **New>Report Theme**. Alternatively, select **Starter Palettes>New Report Theme**. In the **Starter Palettes** pane, create a new theme that is based on a preselected set of theme colors.
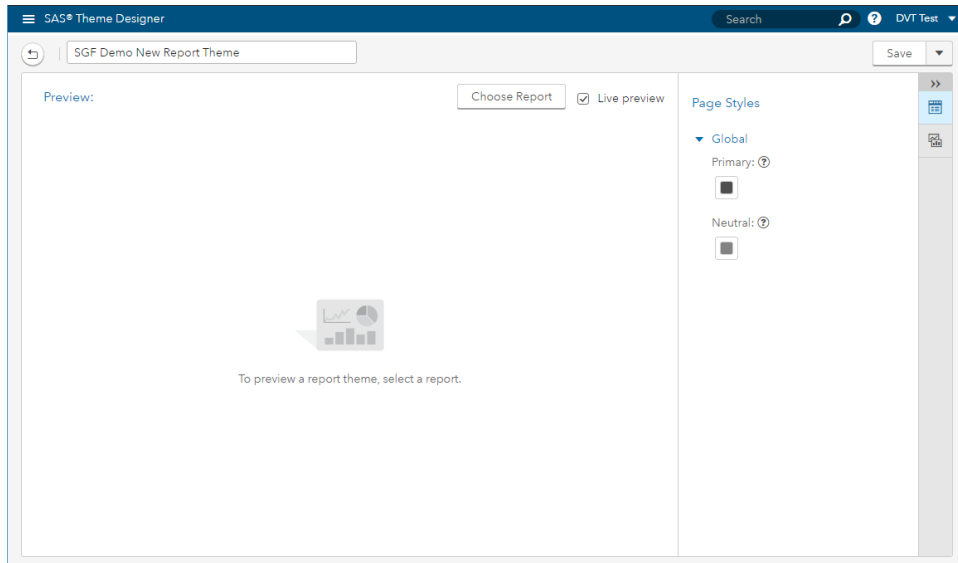
Figure 26. New Report Theme Window

2. In the **Preview pane**, you can select the **Choose Report** function. A file selection window appears, and you can select a report.
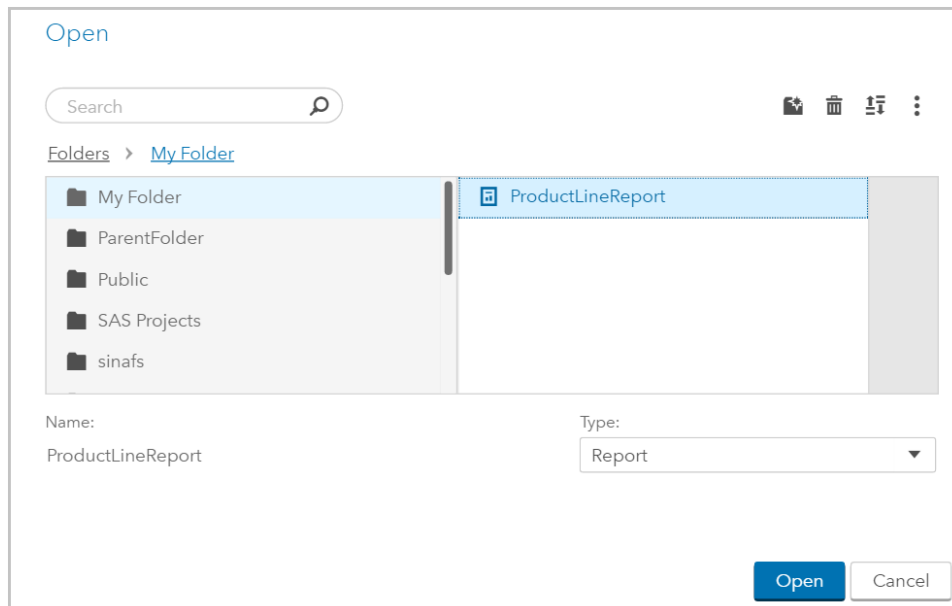

Figure 27. Selecting the Report ProductLineReport

3. The **SAS Theme Designer Preview** pane displays the report theme as you modify it. It enables you to easily see changes that take place when theme properties are modified. In Figure 28, a toy company has a report for different product lines.
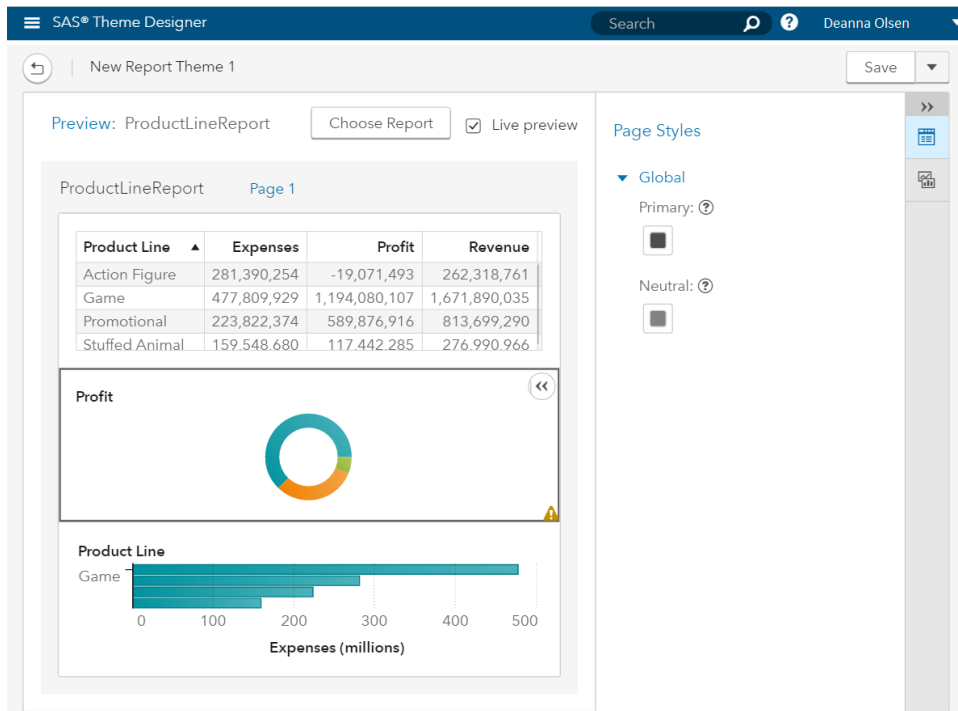
Figure 28. Report Containing a Table, Pie Chart, and a Bar Chart

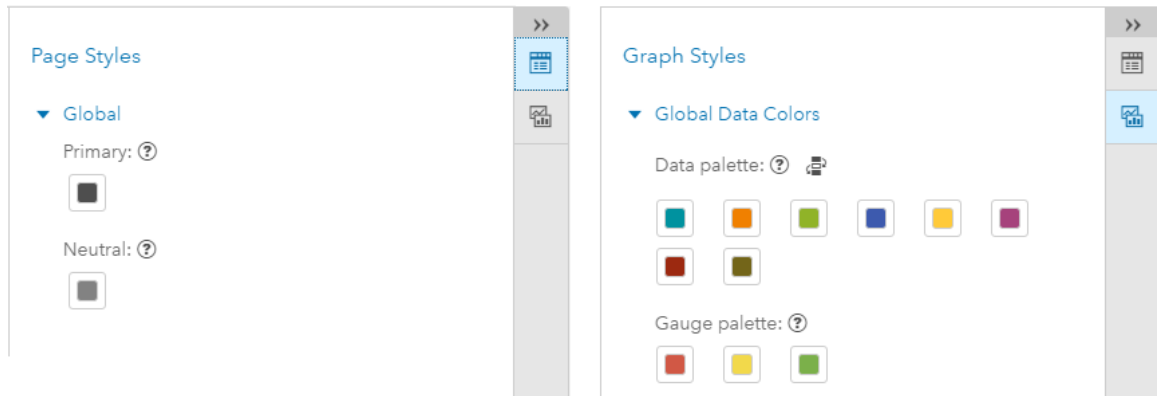4. Once a report is loaded, you can make changes using the **Page Styles** and **Graph Styles**.

Figure 29. Page Styles and Graph Styles

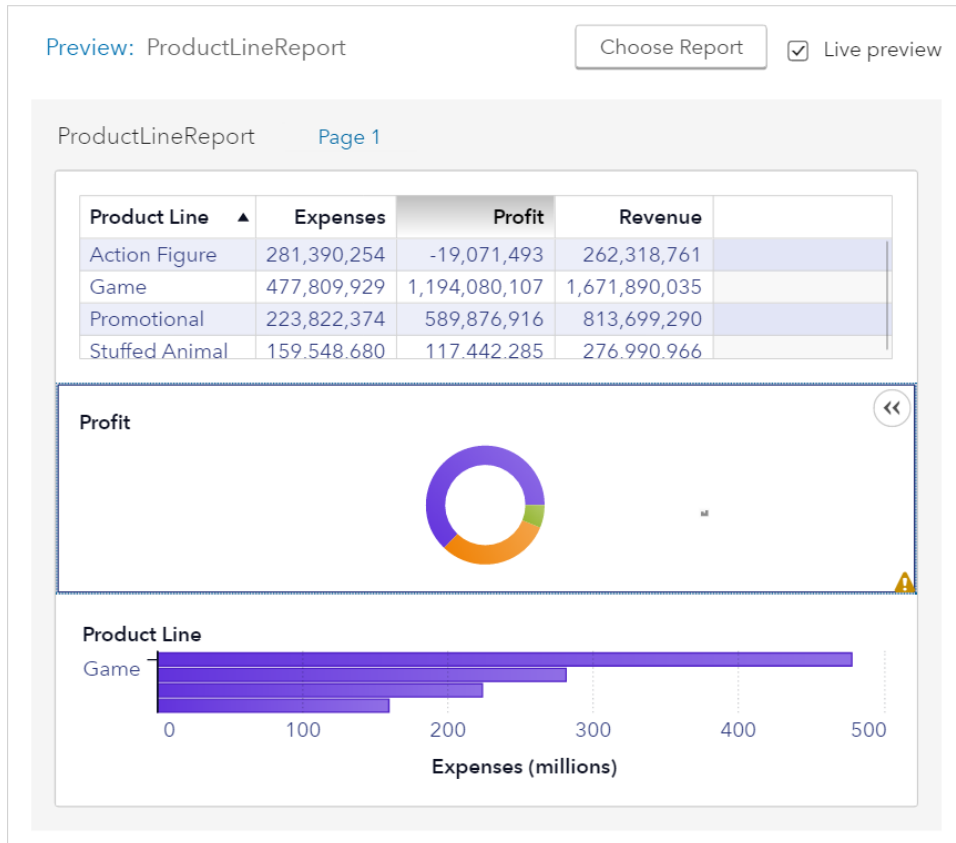5. View the same changes in the **Preview** pane.

Figure 30. Report ProductLineReport after Changes Are Complete
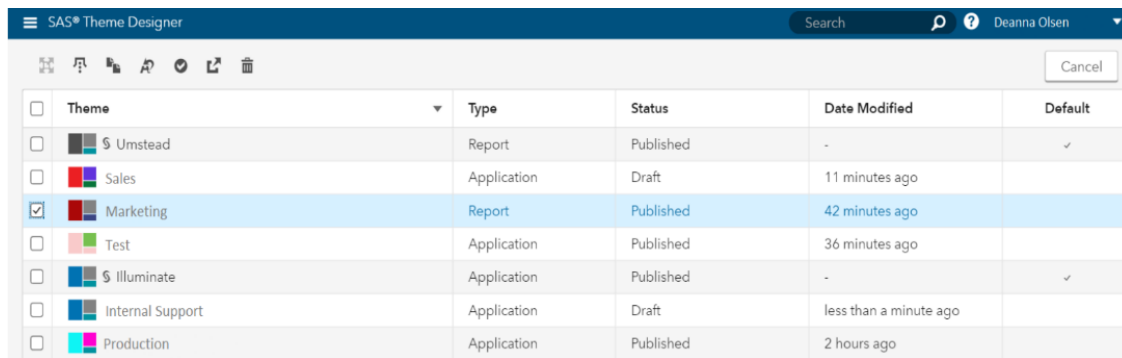
Save the Report Theme

After you have finished editing a theme, save the theme by clicking **Save** or **Save and Publish** from the drop-down menu. When a theme has not been published, both options are available. If you select **Save and Publish**, the report theme is published for use in SAS reports. When a theme has been published and is being edited, only **Save and Publish** is available.

WORKING WITH THE THEME TABLE

After you have created and published a SAS theme, it is available for use in various SAS Viya applications or reports. Available SAS themes are listed in the Theme table.

In the Theme table, you can select a theme to open and edit it. You can make changes to a theme including publishing, unpublishing, duplicating, renaming, exporting, and deleting a theme.

Click **Select** in the SAS Theme Designer window. The Theme table, shown in Figure 31, is now in select mode.

Figure 31. Theme Table in Select Mode

The Theme Table contains the following columns:

- **Theme:** Displays the name of a theme. You can also sort the list of themes.

- **Type:** Displays the name of a theme. You can also sort the list of themes.

- **Status:** Lists the publish status of a theme. The status is either Draft or Published.

- **Date Modified:** Displays a relative time at which a theme was last edited.

- **Default:** Indicates which themes are default themes. SAS Theme Designer provides a default application theme called Illuminate and a default report theme called Umstead.

- **Filter:** Enables you to search and filter the list of available themes.

FUNCTIONS IN THE THEME DESIGNER

The Theme table also contains buttons for the functions that you can use with a theme. These buttons are located in the upper left corner of the SAS Theme Designer window. The Theme table must be in Select mode in order for these functions to be available. An example is shown in Figure 32.

Figure 32. Theme Functions

The available functions depend on the status of the theme. The action icons are not enabled until one or more relevant themes are selected. The following functions are shown in Figure 32, from left to right:

- **Publish:** This function enables you to publish a theme so that other SAS Viya users can access the theme. The Publish function is applicable only to themes that are in Draft mode. Select the check box next to a theme and click the Publish button.

- **Unpublish:** This function enables you to unpublish a theme. When you unpublish a theme, it is no longer available to SAS Viya applications.

  Note: The default system themes Illuminate and Umstead cannot be unpublished.

- **Duplicate:** This function enables you to make a duplicate copy of a theme.

- **Rename:** This function enables you to rename a theme.

- **Set Default:** This function enables you to select a published theme as the default theme. Illuminate is the default application theme, and Umstead is the default report theme.

- **Export:** This function enables you to export themes from SAS Theme Designer to a file on the browser file system. The themes are automatically exported to a file in a specified folder on your file system. The theme is saved in the export file labeled **ThemeDesignerExport.td**.

- **Delete:** This function enables you to delete a theme.

    Note: You cannot delete the default system themes Illuminate and Umstead.

CONCLUSION

You can use SAS Theme Designer to create and publish simple, visually appealing, customized report themes. Your reports and applications will have a unique look.

REFERENCES

SAS support site (http://support.sas.com/documentation/)

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