About Reports in SAS Visual Analytics

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 controls to reports. A report can have one or more pages. Each page can have a different layout and contain different report objects.

When you design a report, keep in mind that it might look slightly different on a mobile device or in the SAS Report Viewer (the report viewer). For example, the layout of the tiles in the treemap is dependent on the size of the display area. This means that the same treemap might appear slightly different in SAS Visual Analytics than it does in the report viewer or on a mobile device.

Understanding the SAS Visual Analytics Interface

Your First Look at the Interface

Starting in the 8.1 release, there is one interface in which you design reports or explore data in SAS Visual Analytics. In general, data-related tasks are initiated from the leftmost pane, and presentation-related tasks are initiated from the rightmost pane. Here are the features of the interface:
1 The application bar at the top enables you to access other SAS applications. The name of your report is displayed in the application bar. You can search for items, access help, update your settings, and sign out of SAS Visual Analytics. For more information about search and global settings, see General Usage Help for SAS Viya Web Applications. For more information about application-specific settings, see Modify SAS Visual Analytics Settings on page 11.

2 The menu bar enables you to create pages, show or hide report and prompt areas, undo, redo, and access other menu options.

3 The left pane enables you to work with data, report objects, and the report outline.

4 The canvas is the workspace for building a report. The appearance of the canvas is affected by the report theme.

5 The right pane enables you to work with details about the report and report objects.

**About the Canvas**

The canvas is the workspace for building a report.

Above the canvas, there are tabs for pages. For more information, see Adding Pages on page 8.

The following icons are available to help you manage your report content:
<table>
<thead>
<tr>
<th>Name</th>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
</table>
| Data   | 🕵️  | enables you to select a data source (or data sources) and the data items for your report. You can add, refresh, import, or remove a data source using the icons above the list of data items. Using the menu, you can change the data source, define a hierarchy, define a calculated item, define an aggregated measure, and filter on a data item. You can check the details for the measures in the data set. You can use this pane to add parameters to a filter, a calculated item, a display rule, or a rank.  

The Data pane provides information about a selected item, including the name, classification, format, aggregation, sort options, and parameters. These data item properties can be modified, which impacts all of the report objects that use the data item.  

When a report has multiple data sources, the Data pane provides information about the data source and data items for the selected report object. When you select a report object that has a different data source, the Data pane updates automatically to provide information about the selected data source.  

For more information, see SAS Visual Analytics: Working with Report Data. |

<p>| Objects | 🕳️  | provides a list of the tables, graphs, gauges, controls, containers, and other objects that can be used in a report or dashboard. For more information, see “About Report Objects” in SAS Visual Analytics: Working with Report Content. |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
</table>
| Outline | ![Outline Icon](https://example.com/outline-icon.png) | enables you to work with pages and objects in your report. You can add a page, access explore mode, delete report objects, and move report objects from one page to another.  
Here are some key points about the **Outline** pane:  
- Starting in the 8.1 release, the ![Explore Mode Icon](https://example.com/explore-mode-icon.png) enables you to switch to explore mode for the selected object, and is available only if a table or graph is selected. If pages, controls, containers, or other content types are selected, then ![Explore Mode Icon](https://example.com/explore-mode-icon.png) is disabled. For more information, see “Viewing Report Objects in Explore Mode” in SAS Visual Analytics: Working with Report Content.  
- For pages, the ![Visibility Icon](https://example.com/visibility-icon.png) or ![Visibility Icon](https://example.com/visibility-icon.png) specifies that the selected page is either visible or hidden in the report. For more information, see Adding Pages on page 8.  
**Tip:**  
The ![Drag Icon](https://example.com/drag-icon.png) enables you to click and drag the selected page or report object to a new location in the report.  
**Tip:**  
You can double-click a page name or report object name in the **Outline** pane to rename it. |
| Options | ![Options Icon](https://example.com/options-icon.png) | lists the options for the currently selected report, page, or report object. This pane enables you to specify the data styling, frame styling, text styling, and data colors for a selected report object. The report theme for the report is displayed.  
- If a report object is not selected on the canvas, then the properties are for the page or report.  
- When a page is selected, the page's name is listed, as well as any page prompts.  
- When a report object is selected, the object's name, title, and description are listed. Information that is specific to the report object type, such as the axes and legend, is listed. For more information, see “Using the Options Pane for Report Objects” in SAS Visual Analytics: Working with Report Content. |
| Roles | ![Roles Icon](https://example.com/roles-icon.png) | enables you to add or update data role assignments in a selected report object that has a data source. For more information, see “Working with Data Role Assignments” in SAS Visual Analytics: Working with Report Data. |
| Actions | ![Actions Icon](https://example.com/actions-icon.png) | enables you to create links and filters. For more information, see “Working with Report Actions and Links” in SAS Visual Analytics: Working with Report Data. |
| Rules | ![Rules Icon](https://example.com/rules-icon.png) | enables you to populate intervals, add intervals, or add color-mapped values to an object that is currently selected on the canvas. You can edit or delete an existing display rule for the selected table, graph, gauge, or control. For more information, see “Working with Display Rules” in SAS Visual Analytics: Working with Report Data. |
| Filters | ![Filters Icon](https://example.com/filters-icon.png) | enables you to add a filter (or filters) to the selected report object. For more information, see “Working with Report Filters” in SAS Visual Analytics: Working with Report Data. |
### About the Report Layout

Starting in the 8.1 release, there is a single report layout. The default layout enables you to place report objects directly next to other report objects. The report objects cannot overlap. All report objects in the section are sized to fit in one screen. If you adjust the size of an object, then the other objects automatically resize to ensure that all objects continue to fill the entire screen.

If you use container objects in your report, you have additional options for layout. The container object supports **Default**, **Stacking**, and **Precision** layout types. For more information, see “Use a Container Object” in SAS Visual Analytics: Working with Report Content.

### About SAS Report Themes

A **report theme** applies a consistent look and feel to SAS reports.

Starting in the 8.1 release, all new reports use a report theme named **Umstead**. To customize the appearance of the Umstead report theme, you use the **Options** pane to change the default background color, prompt background color, font, and font color.

In addition, 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. For more information, see [SAS Theme Designer: User’s Guide](#).

To change the report theme:

1. Make sure that no report objects are selected in the canvas, and then click 📋 to open the **Options** pane.
2. Use the **Report theme** drop-down list to select a new report theme.

**TIP** You can add a new page to a report to make sure that no report objects are selected in the canvas before you open the **Options** pane.

### About SAS Application Themes

An **application theme** defines the overall look and feel of SAS applications. It is the collection of colors, graphics, and fonts that appear in the application. An application theme is different from a report theme, which contains settings that control the color selections for different elements of a SAS report. You can use an application theme to customize SAS Visual Analytics so that it conforms with the rest of your company’s software environment.
SAS provides the default application theme, *Illuminate*, which can be used as a basis to create additional customized application themes using SAS Theme Designer.

**Note**: If you have special requirements for your application theme, then contact your system administrator about using SAS Theme Designer to build custom themes. For more information, see *SAS Theme Designer: User’s Guide*.

---

### Create a New Report

There is no single process for creating a new report in SAS Visual Analytics. For example, some users select their data source (or data sources) before they add the report objects, while other users add report objects to the canvas and then select their data source (or data sources). Some users choose to update the options for their reports. And, some users choose to view the detail data for their report objects using explore mode. The following list of steps is one way that you can create a new report.

**Note**: These steps assume that data has been brought into the SAS Cloud Analytic Services (CAS) environment and is available. For information about importing your own data, see *SAS Viya: Self-Service Import*. For more information about data preparation, see *SAS Viya: Data Preparation*.

1. In the Welcome to SAS Visual Analytics window, click **Data**.

   ![Welcome to SAS Visual Analytics](image)

   Using the Open Data Source window, select a data source. You can select additional data sources using the **Data** pane.

   For more information about data and reports, see *SAS Visual Analytics: Working with Report Data*.

2. Select ![Open](image) to open the **Objects** pane. Add report objects by dragging and dropping them onto the canvas. Alternatively, you can create an autochart by selecting data items in the **Data** pane, and dragging and dropping them onto the canvas. (An autochart can be modified.)

   For a definition and picture of each report object, see “Gallery of Report Objects” in *SAS Visual Analytics: Reference*.

3. Add data items to report objects by dragging and dropping one or more data items onto the report object.

4. (Optional) Modify the report.
Modify data role assignments.
For more information, see "Add Data Role Assignments to a Report Object" in SAS Visual Analytics: Working with Report Data.

Update the options for the report and the report objects.
For more information about options, see SAS Visual Analytics: Working with Report Content.

Update the styles for the report objects.

Create or modify advanced data items (for example, hierarchies or geographic data items).

Create or modify display rules for report objects.

Add filters to the report.

Add actions between the report objects on a page.

Switch to explore mode to view detail data or compare report objects by selecting ☐ to display the toolbar, and then select ☐. For more information, see “Viewing Report Objects in Explore Mode” in SAS Visual Analytics: Working with Report Content.

Add a rank to a report object.
For more information, see “Ranking Values in Reports” in SAS Visual Analytics: Working with Report Data.

Note: If you add a graph to your report, and there is not enough space for both the graph and the legend to display, then the legend will be dropped.

(Optional) Add a new page (or pages) to the report.
For more information, see Adding Pages on page 8.

(Optional) View or change the report options by selecting ☐ to display the Options pane.

Save the report by clicking ☐, and then selecting Save. The default location for the first save is My Folder. After that, the default save location is the last accessed folder.

**TIP** Report names are limited to 100 characters and cannot include these characters: / \n
(Optional) View, email, or print your report in the SAS Report Viewer (the report viewer) by clicking ☐, and then selecting View report.

**TIP** To return to designing your report, click ☐ in the report viewer, and then select Edit report.
Adding Pages

Overview of Pages

Any report in SAS Visual Analytics can have multiple pages. Multiple pages can be used to present different views of the data. Each page can have one or more data sources. You can have one or more report objects on a page. There is no limit to the number of pages in a report.

You can add a link from a report object to a specific page in the current report. For more information, see “Create a Link” in SAS Visual Analytics: Working with Report Data.

Page prompts are controls that are placed in the special row area above the report objects on the canvas. A page prompt enables the user to select a value to filter data. For more information, see “Use a Control to Create a Page Prompt” in SAS Visual Analytics: Working with Report Content.

When a report has a hidden page, you can provide additional information to the user who is viewing the report. For example, you might want a list table to provide additional information for a bar chart, or you might want to provide additional text about what is displayed in the data for a particular report object. In the SAS Report Viewer (the report viewer), a user double-clicks the data (for example, a bar, a bubble, a pie slice, a table row, and so on) in a report object that has an info window, and then the additional information is displayed in a new window in the report viewer.

A report can have one or more hidden pages, which are displayed as private pages. Hidden pages are identified by the ☐ icon beside the page name, above the canvas. Hidden pages can have one or more report objects. You must provide a link to a hidden page from an existing report object to display a hidden page in a new window in the report viewer.

Note: Page prompts are not allowed on hidden pages.

Add a Page to a Report

To add a new page to a report, click + to the right of the first page tab (or the last page tab that was added) in the report. The new page appears to the right of the existing page (or pages).

Alternatively, you can click Add Page in the Outline pane to add a new page to your report.

Add a Hidden Page to a Report

1 Click + to the right of the first page tab (or the last page that was added) in the report. The new page appears to the right of the existing page (or pages).

Alternatively, you can change an existing page to a hidden page.

Note: If you change an existing page with outgoing page links or report links to a hidden page, then those links are removed.

2 Click the ☐ beside the page name. The icon changes to ☐ to indicate that the page is hidden.

Alternatively, you can select Hide page in the Options pane.

Alternatively, you can use the Outline pane to change an existing page to a hidden page in your report.

Reorder Pages

To change the order in which pages are displayed, you can drag the page tab to a new position in the list of tabs.
Alternatively, you can use the **Outline** pane to change the order.

**Rename a Page**

To rename a page, double-click the page name on the tab. Edit the name when the field is displayed. Alternatively, you can edit the name using the **Name** field in the **Options** pane.

**Duplicate a Page**

To duplicate a page, click ![duplicate](https://example.com/duplicate.png), and then select **Duplicate page**. All of the report objects on the page are also duplicated.

**Move a Report Object to Another Page**

To move a report object from one page in a report to another page, use the **Outline** pane. Select the report object that you want to move, and then click and drag the ![move](https://example.com/move.png) indicator to move the report object to a different page in the outline.

**Delete a Page**

To delete a page from a report, click ![delete](https://example.com/delete.png) on the page tab that you want to remove. Alternatively, you can delete a page using the **Outline** pane. Select the page that you want to delete in the outline, and then click ![delete](https://example.com/delete.png).

**Open a Report**

Reports in SAS Visual Analytics are saved when you use either the Save window or the Save As window. A saved report contains at least one page. Typically, a page uses data items from a data source to perform queries. The page displays the results with one or more report objects (for example, a table, a graph, a gauge, a control, and so on). For more information about pages, see **Adding Pages on page 8**.

A page is not required to contain any report objects. For example, you might have a report that you use only as a template to create other reports if you want all reports to have a similar appearance. A template-like report might contain data sources, calculated items, global data filters, and shared display rules, but it might not contain report objects.

To open a report:

1. Choose one of the following:
   - In the Welcome to SAS Visual Analytics window, click **Open**. The Open window is displayed.
   - If the SAS Visual Analytics canvas is displayed, click ![select](https://example.com/select.png), and then select **Open**. The Open window is displayed.

2. Select a report name, and then click **Open**. The report is displayed in the canvas.

   **Note:** When you open a saved report that has multiple data sources, SAS Visual Analytics displays the same data source that was displayed in the **Data** pane when the report was saved.

Alternatively, you can open a report using the object inspector that is available for SAS Home.
**View a Report**

To view a report that you are currently editing, click ☐, and then select View report. Your report is displayed in the SAS Report Viewer (the viewer). For more information about the viewer, see SAS Report Viewer Documentation.

To open a report from SAS Home, click the report name in the Recent tile or in the Favorites tile. Your report is displayed in the viewer.

To open a report in a native mobile app, launch the SAS Mobile BI app, connect to a server, navigate to the report, and open it. Instructions vary by device. See the SAS Mobile BI documentation and videos on the SAS support site.

Note: The SAS Mobile BI app is available from Apple iTunes store, Google Play, and Microsoft Windows store.

**Email a Report**

You can email a link to a report to someone using SAS Report Viewer (the report viewer). To email a report:

1. Save the report by clicking ☐, and then selecting Save.
2. Click ☐, and then select View report.
3. In the report viewer, click ☐, and then select Email.
4. To return to SAS Visual Analytics, click ☐, and then select Edit report.

For more information about emailing, see SAS Report Viewer Documentation.

**Print a Report**

You can create a PDF for a report, a report page, or a report object using SAS Report Viewer (the report viewer). The PDF can then be printed.

1. Save the report by clicking ☐, and then selecting Save.
2. Click ☐, and then select View report.
3. In the report viewer, click ☐, and then select Print. In the Print to PDF window, specify the options that you want for printing, and then click Print.
4. To return to SAS Visual Analytics, click ☐, and then select Edit report.

For more information about printing, see SAS Report Viewer Documentation.

**Delete a Report**

Note: You cannot delete a report that is open in SAS Visual Analytics.
1 Click \( \text{Click}, \) and then select \text{Open}. The Open window is displayed.

2 Select the report that you want to delete, and then click \( \text{m} \). Click \text{Delete} in the confirmation window.

Modify SAS Visual Analytics Settings

There are settings that are specific to SAS Visual Analytics, and there are global settings that are applied to all SAS web applications. For more information about global settings, see \text{General Usage Help for SAS Viya Web Applications}.

Settings for SAS Visual Analytics are saved on a per-user basis. All of your settings persist between sessions.

1 In the application bar, click your name, and then click \text{Settings}.

2 Click \text{SAS Visual Analytics} in the side menu.

3 Specify your \text{Default start screen}. The available options are \text{Show welcome dialog}, \text{Start with data}, \text{Start with blank document}, or \text{Choose existing report}.

4 Expand the \text{SAS Visual Analytics} item in the side menu. Specify any of the following settings:

   **Geographic Mapping**
   Specify the \text{Default geographic map provider} mode for geographic maps. The map provider creates the background map for geo maps and for network diagrams that display a map. OpenStreetMap is selected by default.

   \text{Note:} You can change the map provider for an individual visualization by editing the \text{Map service} property.

   To enable Esri ArcGIS Online Services as a map service provider, you must accept the end-user license agreement for Esri ArcGIS Online Services.

   If your organization has an ArcGIS Online account, then you can select \text{Enable Esri premium services}. Select this option, and then enter your ArcGIS Online credentials to enable additional drive-time and drive distance calculations for geo maps.

   **Network Analysis**
   Specify the \text{Default node label for hierarchical networks}.

   You can assign internal network metric variables as the default node size or node color data roles by using the \text{Default node size network metric} and \text{Default node color network metric} options.

   You can select any of the following metrics:

   **Community**
   A metric that identifies local groupings of nodes.

   **Graph Centrality**
   A metric that indicates how many links away the farthest connected link is.

   **Stress Centrality**
   A metric that indicates how close a node is to all of its connected nodes. The value for stress centrality is \( N_v / N_{max} \), where \( N_v \) is the number of shortest paths in the network that contain a given node, and where \( N_{max} \) is the greatest value of \( N_v \).

   **Closeness Centrality**
   A metric that indicates how close a node is to all of its connected nodes. The value for closeness centrality is \( S_v / S_{max} \), where \( S_v \) is the sum of the distance between a given node and all of the connected nodes, and where \( S_{max} \) is greatest value of \( S_v \).
**Betweenness Centrality**
A metric that indicates how close a node is to all of its connected nodes. Betweenness quantifies how often a given node is part of a shortest path between two other nodes.

If \( N \) is the fraction of shortest paths between a pair of nodes that pass through a given node, then the betweenness centrality value is \( \frac{B_v}{B_{\text{max}}} \), where \( B_v \) is the sum of \( N \) for all pairs of connected nodes, and where \( B_{\text{max}} \) is the greatest value of \( B_v \).

**Disconnected Network ID**
An ID that identifies each group of connected nodes. All nodes that are connected have the same value for disconnected network ID.

**Visual Statistics**
If SAS Visual Statistics is licensed at your site, then you can change the **Fit summary p-value precision** setting.

5. Click **Close** to apply your changes.

**TIP** When you click **Reset**, the settings revert to their original SAS Visual Analytics configuration.