About SAS Report Viewer

Introduction to SAS Report Viewer

SAS Report Viewer (the report viewer) enables users who are not report designers to view a report using a web browser. To open a report in the report viewer from SAS Drive, double-click the report.

Viewing Reports on Mobile Devices

Because the report viewer is not supported on mobile devices, mobile users are redirected to the SAS Visual Analytics App when opening a report. The SAS Visual Analytics Apps (formerly called SAS Mobile BI) are free mobile apps. You can download the apps from the following locations:

- Apple App Store (supported on iPhones and iPads)
- Google Play (supported on Android devices)
- Microsoft Store (supported on PCs and tablets running Windows 10)

Using these apps, you can view and interact with SAS Visual Analytics reports, as well as share comments and observations with others. The apps support all charts and graphs that are available in SAS Visual Analytics.

You can customize the apps by using the SAS SDK.

Navigate the Report Viewer

- To refresh a report, click ⏪, and then select Refresh report.
- Use the tabs at the top of a report to view the pages of the report.
- To view another report that has already been opened, click ⏪, and then select the report that you want to view. The icon displays the number of open reports. For example: 3
- If you are viewing a report and you want to view another report that is not already open, click ⏪, and then select Open. You can also click  to see a tiled list of reports.
To restore your report to its initial view state, click \( \text{Restore default report state} \), and then select Restore default report state. This removes any changes that you have made to controls, navigation, drill states, and so on.

**TIP** To conserve resources, close a report when you are finished viewing it.

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### Using Report Playback

#### Play a Report

You can play a report as a slideshow, which is useful for kiosk displays and other scenarios where the audience cannot navigate the report interactively.

To play the current report, select *Play report* from the main menu.

To stop playback, press the Esc key.

#### Edit the Playback Settings

To modify the playback settings for the current report, select *Edit playback* from the main menu.

You can modify the following options:

- **Transition unit**
  - specifies whether the playback displays one page at a time (*Page*) or one object at a time (*Object*).

- **Seconds per unit**
  - specifies how long each page or object is displayed.

- **Show maximized objects**
  - displays each object in maximized mode (and shows the details table where available).
  - **Note:** This option is available only if you select *Object* for the Transition unit.

- **Show canvas only**
  - hides the report control area, page tabs, and the page control area.

- **Show timer**
  - displays a countdown for each page or object transition.

- **Show navigation controls upon click or touch**
  - enables navigation controls for the report playback.

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### Interacting with Objects

#### Sort an Object

For list tables, crosstabs, and graphs that support sorting, you can sort the data by right-clicking the object, and selecting *Sort*. For each of the data items that can be used to sort the data, you can select either *data-item: Ascending* or *data-item: Descending*.

For list tables and crosstabs, you can also sort by clicking the column headings. To add a secondary sort, press Ctrl, and then click a column heading. Alternatively, you can add a secondary sort by right-clicking a column heading, and selecting *Sort \( \Rightarrow \) data-item: Add Ascending* or *Sort \( \Rightarrow \) data-item: Add Descending*.  

Maximize an Object

Maximizing an object expands it to the full size of the canvas and displays the details table for the object.

To maximize an object, right-click the object, and select Maximize view. You can also click in the object toolbar.

Note: If the Enable selection in the viewers option was disabled (not selected) for this object by the report author, the details table is not displayed when you maximize the object.

Hide Object Overlays

You can hide all of the overlays (for example, toolbars and information messages) for your objects by selecting Disable object overlays from the main menu. Select Enable object overlays to restore the overlays.

Interacting with Geo Maps

Zoom a Geo Map

You can zoom the map by using any of the following controls:

- scroll the mouse wheel to zoom in or zoom out at the location of the cursor
- enable the zoom control by selecting Zoom Æ Zoom Controls from the object toolbar. Click to zoom in and to zoom out.
- use the cursor tool to click and drag to create a rectangular zoom selection.

To reset the zoom state for the geo map, select Zoom Æ Reset zoom from the object toolbar.

Use Cursor Tools to Pan a Map, Create Shape-Based Selections, and Zoom

In a geo map, the cursor can perform different tasks when you click and drag the map. The default cursor action is to pan (scroll) the map.

To change the selected cursor tool, select the icon from the object toolbar that matches the current cursor tool, and then select one of the following icons:

- pans (scrolls) the map.
- creates a rectangular selection.
- creates a circular selection.
- creates a free-form selection.
- zooms the map to the rectangle that you create.
Working with Location Pins in a Geo Map

About Location Pins
A location pin enables you to mark a location on the map and to perform actions based on that location.

Note: Location pins are not saved as part of your report.

Create a New Location Pin
To create a new location pin, you can perform either of the following:
- Search for a location, select the location, and then select **New pin at this location**.
- Click ✉️, select **New location pin**, and then click the spot on the map where you would like to create a new location pin.

You can enter a name for the pin and select a color for the pin.

Delete a Location Pin
To delete a pin, click it to select it, and then click ✎️. Select **Delete pin**.

Create a Radius-Based Selection in a Geo Map
For the **Bubbles**, **Coordinates**, and **Contour** map types, you can create a radius-based selection to determine distances from a location pin.

To create a radius-based selection:
1. Click a location pin or select a location from search results, and then select **Geographic selection**.
2. Select the type:
   - **Distance** creates a circular selection based on the distance in miles or kilometers.
   - **Travel-distance** creates an irregular selection based on the travel distance using roads.
   - **Travel-time** creates an irregular selection based on the distance that can be traveled in the specified amount of time.

   Note: The **Travel-distance** and **Travel-time** selections are available only if you have enabled Esri premium services in your SAS Report Viewer settings. For more information, see “Modify SAS Report Viewer Settings” on page 11.

3. For the **Travel-distance** and **Travel-time** selections, select the **Travel mode** that is used to calculate distances. Select one of the following:
   - **Driving** calculates distance by using roads.
   - **Trucking** calculates distance by using roads that allow trucks.
   - **Walking** calculates distance by using walking trails and sidewalks where available. For travel time, an average walking speed is used.
Specify the radius for the selection. For the **Travel-distance** and **Travel-time** selections, the radius must be less than or equal to 30 miles or 50 kilometers.

(Optional) For the **Travel-distance** and **Travel-time** selections, add additional radii to the selection. Each radius has a different background color on the map.

To create a new radius, click **Add**, and then specify the distance or duration value.

For **Travel-time**, specify whether to include traffic and what type of traffic should be used to determine travel time.

Click **Draw Selection** to create the selection.

Note: To recall a selection that you displayed previously, click \[\]
and then select the check box beside each location pin whose selection you want to display.

Note: Selections are not saved as part of your report.

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**Display Demographic Statistics for a Radius-Based Selection**

If you have created a radius-based selection (see “Create a Radius-Based Selection in a Geo Map” on page 4) and you have enabled Esri premium services, then you can display demographic data for your selection. For example, you can display the total population and average income for the area that is within a 10-minute drive from your place of business.

To display demographic data:

1. Create a radius-based selection.
2. Click **Show demographics**. The Demographics window appears.
3. Select one or more demographic statistics to retrieve for the current selection, and then click **OK**.

An information window displays the selected demographic statistics for the current selection. If you selected more than one statistic, then you can scroll through the statistics by clicking the left arrow and right arrow buttons.

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**Search a Geo Map**

Note: The search feature does not search the values in your data. Instead, it searches a database that is part of Esri ArcGIS Online Services.

To search the map, click \[\], and then enter your search term in the **Search** field. The search returns businesses and locations that are located within your current map view. The search can return up to 20 results.

Note: Some results are displayed only at closer zoom levels. For example, if your map displays an entire country, then results for small businesses might not be displayed.

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**Draw Routes on a Geo Map**

You can draw routes on a geo map. To draw a route on a geo map:

1. Create a location pin or select an existing location pin.
2. Select **Route from here** to draw a route originating from the location pin, or select **Route to here** to draw a route ending at the location pin.
Select the **Travel mode** for the route. Select one of the following:

- **Direct**
  - displays a straight line between the two points.

- **Trucking**
  - calculates a route by using roads that allow trucks.

- **Driving**
  - calculates a route by using roads.

- **Walking**
  - calculates a route by using walking trails and sidewalks where available.

**Note:** **Trucking**, **Driving**, and **Walking** routes are available only if you have enabled Esri premium services in your SAS Report Viewer settings. For more information, see “Modify SAS Report Viewer Settings” on page 11.

Select the origin or destination of the route by doing one of the following:

- select a location pin
- search for a location and select it
- click a point on the map

**Identify a Point on a Geo Map**

You can identify points on a geo map. To identify a point on a geo map, right-click the map, and select **Identify geographic point**. The best match for the selected point is displayed.

**Use Linking and Drilling**

Objects can link to other reports or report pages. And, they can link to external resources via URLs. To follow a link from an object, double-click a data element in the object. If an object has multiple links or actions, a list appears that enables you to select a specific link or action.

If an object that you are linking to shares a data source with the current object, then the target object is filtered based on the data value that you selected. If the data source is not shared between the two objects, then no additional filtering occurs in the target object.

If the data value that you selected conflicts with a report-level filter in the target object, then there are no observations in the target object.

To return to the report or report page where you clicked the link, click 🔍 or close the pop-up window.

If you have performed multiple linking actions to arrive at the current report or report page, then you can click the report title and select from your linking history to go back to a previous state. When you go back, any filters associated with the links are removed.

If the data contains a hierarchy, double-click on the object to drill down the hierarchy. When you drill down, breadcrumbs at the top of the object enable you to move back up the hierarchy.
Filter or Select Data

Filtering restricts the data that is returned from a data source query. Depending on the actions that were defined by the report designer, you might be able to filter or select data within your report. For example, clicking a bar chart can control the data displayed in a list table.

To filter data in the target object (or objects), click on data in the source object. Clicking on different data applies the filter based on the new data selection. To clear the selection, click in the white space that surrounds the source object.

Linked selections enable you to see the selected data simultaneously in two or more tables, graphs, or both. Click on data in the source object to select data in the target object (or objects). To clear the selection, click in the white space that surrounds the source object.

Display a Report Summary

SAS Visual Analytics reports can include report summaries. A report summary provides a description of the report and can include text and dynamic data element values. Report summaries can include scripted logic such as IF/ELSE statements.

To display the summary for a report that is currently displayed, select **Show summary** from the main menu.

To display the summary for a report in the report browser, click ➤ for the report, and then select **Summary**.

**Note:** Data values in the summary can be affected by your current view state for the report (for example, your selections for controls). The view state can affect the summary text for a report that is currently open and for a report that you have previously opened.

View Filter Information

To display the data source filters for an object, click ☰, and then select the object.

Viewing Objects with SAS Graphics Accelerator

What Is SAS Graphics Accelerator?

SAS Graphics Accelerator is a Google Chrome extension that enables users with visual impairments or blindness to explore data visualizations. It supports alternative presentations of data visualizations that include enhanced visual rendering, text descriptions, tabular data, and interactive sonification. Sonification uses non-speech audio to convey important information about the graph.

Installation

**Supported Object Types**

The following object types support SAS Graphics Accelerator:

- bar chart
- bubble plot
- line chart
- time series plot
- pie chart
- scatter plot

**View an Object with SAS Graphics Accelerator**

To view an object with SAS Graphics Accelerator, select ⬤ for the object, and then select View with SAS Graphics Accelerator.

SAS Graphics Accelerator displays the object in a new Google Chrome tab.


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**Add Comments**

If you have been granted the ability to add and view comments, you can add comments to a report, a page, or an object. Comments are saved with the report.

To add a comment to a report or to an object within a report:

1. Click 📈.
2. Select the object on which you want to comment.
3. Enter a comment.
4. (Optional) Click 📂 to attach a file to your comment.
5. Click Post to add your comment.

To reply to a comment:

1. In the Comments pane, find the comment that you want to reply to.
2. Click Reply below the comment, and then enter your reply.
3. Click Post to add your reply.

To search for a comment:

1. Click 📈.
2. Select the report, page, or object in which you want to search.
3. Enter the word or phrase that you want to search for in the Search field, and then click ⌂.
Print a Report to PDF

You can print to PDF an entire report or pieces of a report.

To print a report to PDF directly from the tiles view and bypass the Print to PDF window, click ⌘ and select Print.

To print an open report to PDF, click ⌘, and then select Print. You can print specific pages or objects using the Select Objects tab.

To print an object to a PDF directly from the object, select it, click ⌘ on the object, and select Print object.

Printing option details:

- **Show empty rows and columns in table** applies to both list tables and crosstabs.
- **Include appendix information** is selected by default if the report, page, or object has parameters, descriptions, filters, warnings, errors, or display rule legends.
- **Include supplemental tables** adds a section at the end of the PDF that includes the details tables for all of the objects in the report.
- **Expand clipped and non-visible content** prints, to separate pages at the end of the report, the entire content of tables, crosstabs, gauges, and containers.
- **Include cover page** prints the name of the report, the PDF creation date and time, the author name, the number of pages, and any text entered in Cover page text.

Considerations for printing to PDF:

- Not included in the PDF: hidden pages, report prompts, page prompts, and prompt containers. Filters that are applied to objects are listed in the appendix.
  
  You can print a hidden page separately if it is linked from another object in the report. Click 📋 in the page window.

- By default, containers and crosstabs print only what you see on the screen. Select the Expand clipped and non-visible content option to print all content.

- A crosstab with more than 5,000 selected cells cannot be printed.

- By default, an appendix is included in the PDF if the report, page, or object has descriptions, filters, warnings, errors, or display rule legends.

- If an object has a high-cardinality filter, and the Include appendix information option is selected, the filter description might be truncated in the printed appendix.

- There can be differences in the fonts in a printed report if the fonts that are used to create a report do not match the fonts that are available on the server that generates the PDF.

- Depending on your locale, a PDF might not render correctly in Microsoft Edge. Try using Adobe Reader as the PDF viewer.
Sharing Reports or Objects

Email a Link to a Report

To email a link to an interactive report using your default email application, click ➔ Email, and then select Share report ➔ Email.

If the recipient is not signed in to SAS when they click the link to a report, they are prompted for a user ID and password.

If the recipient opens the email message on an iOS or Android mobile device, and then clicks the link, the report is displayed using SAS Visual Analytics App if the recipient has it installed. If the recipient opens the email message on a Windows mobile device, and then clicks the link, the report is displayed in the report viewer.

Generate a Link to a Report or Object

To generate a link to an interactive report, click ➔, and then select Share report ➔ Link. In the Generate Link window, you can specify several options about what features are available to the recipient of the link.

You can generate a link to an individual, interactive object. Select the object in the report, click ➔ in the object, and then select Share object.

Generate a Link to a Static Image of a Report or Object

To generate a link to a static SVG image of a report, click ➔, and then select Share report ➔ Link. Select the Report Image tab.

To generate a link to a static SVG image of an object, select the object in the report, click ➔ in the object, and then select Share object. Select the Report Image tab.

Guest Access

On systems that allow guest login, specify the Guest access option to create a link that automatically logs a user in as a guest, bypassing the sign-in screen. This option can be used for access to interactive reports, interactive objects, or static images. The option does not appear on systems that are not configured for guest login.

By default, guest users have access to fewer features than authenticated users. For example, guest users cannot access SAS Drive.

Exporting Data or Images

Export as Data

Users who have the Export Data capability can export data from objects as a Microsoft Excel workbook, tab-separated values (*.tsv), or comma-separated values (*.csv). This exported output can be saved locally.

To export data:

1. Select the object that contains the data that you want to export.
2. Click ☐, and select Export data.
   The Export Data window is displayed.

3. Specify the rows and columns to export.

4. Choose whether the exported data is formatted.

5. (Optional) If you select Detailed data, then you can select the columns that you want to export.
   
   **Note:** The Detailed data option is not available for imported objects, custom graph objects that have multiple data definitions, or for any graphs in which detail data is not allowed.

6. Select the file type for the exported file. Click OK.

Key points about exporting:
- When you export a graph, you are exporting the data, not the visual graph representation.
- Not all objects support exporting. For example, you cannot export data from gauges.
- Leading blanks are not preserved in displayed data or exported data. However, you can filter for values that contain leading blanks.
- When you export detailed data from a crosstab or a list table to Excel, totals are not exported.

**Export as Image**

You can save an image of an object as a PNG file.

To save an image:
1. Select the object that you want to save.
2. Click ☐, and select Save image.

Key points about saving an image:
- Saved images do not show ranks or filters that are associated with the object.
- The image is saved at the same size it is displayed in the report.
- Images are saved using the object type, object name, and a timestamp. The following characters in an image name are converted to an underscore when the image is saved: / \ : * ? " < > | %.

**Modify SAS Report Viewer Settings**

You can adjust settings related to the High Contrast report theme, the refresh report interval, geographic distance units, and the map services on an Esri server. Settings are saved per user, and they persist between sessions.

To modify your report viewer settings, click on your name in the application bar, select Settings, and then click one of the SAS Report Viewer sections in the side menu.

If your organization has an ArcGIS Online account and you are a member of the Esri Users group, then you can select Enable Esri premium services. Select this option, and then enter and validate your ArcGIS Online credentials to enable additional travel-time and travel-distance calculations for geo maps.
Using URL Parameters to View a Report

Although URL parameters are handled for you when you generate a link to a report or object, you can manually use two parameters to view a report with the standard report viewer URL that requires login credentials. For example:


<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>reportName</td>
<td>The name of the report. Required if you are accessing a specific report through a URL.</td>
</tr>
<tr>
<td>reportPath</td>
<td>The path to the report. Required if you are accessing a specific report through a URL.</td>
</tr>
</tbody>
</table>

Parameters are specified in the URL as a sequence of `name=value` pairs, separated by the ampersand character (`&`).

Special characters (such as spaces and most punctuation) must be URL-encoded using the `%nn` convention, where `nn` is the hexadecimal representation of the character in the ASCII character set. A space can be encoded as a plus sign (+) or %20.

Report parameters can also be passed in the URL, enabling you to specify values for display rules, filters, ranks, calculations, and aggregated measures.

**Note:** For a report parameter that accepts multiple values, you can specify multiple values by using the same report parameter more than once in the URL. For example, if you append `&VehicleType=Cars&VehicleType=Trucks` to your URL, then the report parameter VehicleType has multiple values: cars and trucks.