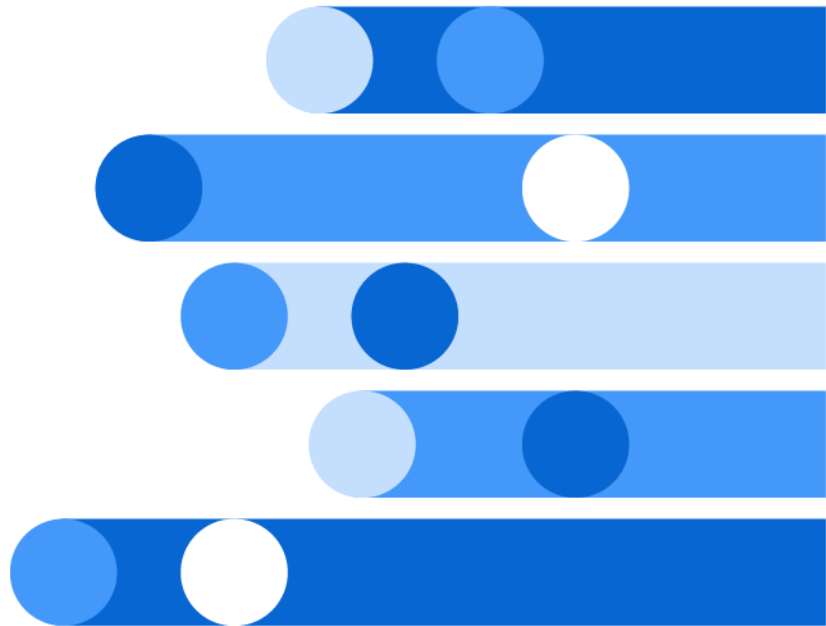




SAS[®] Graphics Accelerator: Supported Types of Data Visualizations



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Overview of Data Visualizations Supported by the SAS Graphics Accelerator

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About the SAS Graphics Accelerator

SAS Graphics Accelerator (accelerator) is a Google Chrome extension that enables users with visual impairments or blindness to explore data visualizations. The accelerator 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.

For more information about the accelerator, along with sample data visualizations and installation instructions, see the [Support page](#).

See Also

- [SAS Graphics Accelerator: User's Guide](#)
- [Creating Accessible SAS Viya Platform Output Using ODS and ODS Graphics](#)

About the Supported Types of Data Visualizations

All data visualizations created in the accelerator support a range of alternative presentations to convey important information about the data. These presentations, or [modes of accessing](#) the visualization, include non-speech audio.

In addition, many data visualizations from other SAS products and components support some or all of these modes of access. The modes of access help make data visualization accessible to a wide range of people, including those with visual impairments or blindness.

Note: The data visualizations that are described in this document include graphs, such as bar charts, scatter plots, and other types. This document does not cover geographic maps.

This document describes the accelerator's support for data visualizations that are created using the following SAS technologies:

- [SAS Graphics Accelerator](#)
- [SAS Visual Analytics](#)
- [SGPLOT procedure](#)
- [SGPIE procedure](#)

SAS Data and AI Studio (formerly known as SAS Studio) is not included here. SAS Data and AI Studio uses [ODS Graphics](#) as the underlying technology for its graphs. Graphs created in SAS Data and AI Studio support the same access modes as their ODS Graphics counterparts, such as graphs created with the SGPLOT procedure or the Graph Template Language.

Modes of Access to Data Visualizations

The accelerator supports different modes of access to data visualizations. These access modes correspond to alternative presentations of data visualizations that include the following:

description

contains a textual description of the data visualization.

sonification

uses non-speech audio to convey important information about the graph. You can interact with the sonification view to obtain the graph's overall shape. You can also focus on particular features of the graph.

visualization

provides a visualization view of the data visualization. The visualization has been optimized for users with low vision.

tabular data

provides the data in tabular format.

Not all data visualizations support all of these modes. The following topics describe the levels of support for different data visualizations.

SAS Graphics Accelerator

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About Data Visualizations Created in the Accelerator

The accelerator provides a laboratory in which you can create accessible visualizations of your own data. The data visualizations can be sonified, visualized, and downloaded. In the laboratory, you can explore table variables and access automatically generated sample graphs.

For information about using the accelerator, see [SAS Graphics Accelerator: User's Guide](#).

Supported Data Visualizations

You can create the following data visualizations in the accelerator. These data visualizations are supported for all [modes of access](#):

- bar chart
- box plot
- bubble plot
- heat map
- histogram
- line chart

- pie chart
- scatter plot
- series plot

SAS Visual Analytics

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About SAS Visual Analytics

SAS Visual Analytics enables you to explore, discover, and predict using your data. You can create reports in SAS Visual Analytics. In addition to text and tables, you can add data visualizations to reports that you create. Data visualizations are called objects in SAS Visual Analytics.

For information about creating accessible reports, see [Creating Accessible Reports Using SAS Visual Analytics](#).

For more information about creating SAS Visual Analytics reports, see the following documents:

- [SAS Visual Analytics: Designing Reports](#)
- [SAS Visual Analytics: Working with Report Data](#)
- [SAS Visual Analytics: Working with Report Content](#)

For more information about SAS Visual Analytics, see the [Support page](#).

Supported Data Visualizations

The following data visualizations are supported for all [modes of access](#) by the accelerator:

- bar chart

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

Unsupported Data Visualizations

The following data visualizations are not supported by the accelerator:

- multi-layered plots and charts
- data visualizations created by the SAS Graph Builder
- any data visualization that is not listed in [“Supported Data Visualizations”](#)

ODS Graphics

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About ODS Graphics

SAS ODS Graphics, sometimes called SAS ODS Statistical Graphics, is an extension of the SAS Output Delivery System (ODS). ODS manages all output created by procedures and enables you to display the output in a variety of forms, such as HTML, PDF, and others. ODS uses a template-based system, providing a variety of templates such as table templates that define the structure of tabular output. For data visualizations, ODS Graphics uses the Graph Template Language (GTL) syntax.

GTL is the foundation of ODS Graphics. GTL is a comprehensive language for defining statistical graphics. GTL supports many different statements to define a wide variety of simple or complex data visualizations.

For information about using GTL to create graphs, see [SAS Graph Template Language: User's Guide](#) and [SAS Graph Template Language: Reference](#).

The SAS ODS Graphics procedures are built on top of GTL. The procedures provide a concise syntax to create most of the commonly used graphs. This document describes support for the [SGPLOT](#) and [SGPIE](#) procedures.

For information about using SAS ODS Graphics procedures to create graphs, see [SAS ODS Graphics: Procedures Guide](#).

See also [Creating Accessible SAS Viya Platform Output Using ODS and ODS Graphics](#).

SGPLOT Procedure

The SGPLOT procedure enables you to create a wide variety of single-cell graphs.

The following table shows the [modes of access](#) that the accelerator supports for data visualizations that you create using the SGPLOT procedure. For descriptions of these plots and charts, see [“Gallery of Plots and Charts” in SAS ODS Graphics: Procedures Guide](#).

For more information, see [SAS ODS Graphics: Procedures Guide](#).

Table 4.1 Supported Access Modes for PROC SGPLOT Output

Data Visualization Type	Describe	Sonify	Visualize	Access Table
Multi-layered plots and charts	Yes	No	No	Yes
Band	Yes	No	No	Yes
Bar, horizontal and vertical ¹	Yes	Yes	Yes	Yes
Block	Yes	No	No	Yes
Box, horizontal and vertical	Yes	Yes	Yes	Yes
Bubble	Yes	Yes	Yes	Yes
Density	No	No	No	No
Dot	Yes	No	Yes	Yes
Drop line	Yes	No	No	Yes
Ellipse	Yes	No	No	Yes
Fringe	Yes	No	No	Yes
Heat map	Yes	Yes	Yes	Yes
High low	No	No	No	No
Histogram	Yes	Yes	Yes	Yes
Line chart, horizontal and vertical	Yes	Yes	Yes	Yes
Line, parameterized	Yes	Yes	Yes	Yes

Data Visualization Type	Describe	Sonify	Visualize	Access Table
Line, reference	Yes	No	No	Yes
Loess	Yes	No	No	Yes
Needle	Yes	No	No	Yes
Pbspline	Yes	No	No	Yes
Polygon	Yes	No	No	Yes
Regression	Yes	No	No	Yes
Scatter	Yes	Yes	Yes	Yes
Series	Yes	Yes	Yes	Yes
Spline	Yes	Yes	Yes	Yes
Step	Yes	No	No	Yes
Text	Yes	No	No	Yes
Vector	Yes	No	No	Yes
Waterfall	Yes	No	No	Yes

¹ includes basic-compatible and parameterized bar charts

SGPIE Procedure

The SGPIE procedure enables you to create pie charts and donut charts.

The DONUT and the PIE statements generate graphs that support all [modes of access](#) in the accelerator.

For descriptions of these pie charts, see [“Gallery of Plots and Charts” in SAS ODS Graphics: Procedures Guide](#).

Graph Template Language (GTL)

GTL provides a comprehensive language for creating complex, customized graphs. You write templates that specify the layout and details of a graph. You can then apply the template to your data and render the graph using the SGRENDER procedure.

The following table shows the [modes of access](#) that the accelerator supports for data visualizations that you create using GTL. For descriptions of these plots and charts, see [“Gallery of the GTL Plots” in SAS Graph Template Language: User’s Guide](#).

For more information, see [SAS Graph Template Language: User’s Guide](#) and [SAS Graph Template Language: Reference](#).

Table 4.2 Supported Access Modes for GTL Output

Data Visualization Type	Describe	Sonify	Visualize	Access Table
Multi-layered plots and charts	Yes	No	No	Yes
Band	Yes	No	No	Yes
Bar, including parameterized	Yes	Yes	Yes	Yes
Bivariate histogram	Yes	No	No	Yes
Block	Yes	No	No	Yes
Box, including parameterized	Yes	Yes	Yes	Yes
Bubble	Yes	Yes	Yes	Yes
Contour	Yes	No	No	Yes
Dendrogram	Yes	Yes	No	Yes
Density	No	No	No	No
Drop line	Yes	No	No	Yes
Ellipse, including parameterized	Yes	No	No	Yes
Fringe	Yes	No	No	Yes
Heat map, including parameterized	Yes	Yes	Yes	Yes

Data Visualization Type	Describe	Sonify	Visualize	Access Table
High low	Yes	No	No	Yes
Histogram, including parameterized	Yes	Yes	Yes	Yes
Line chart	Yes	Yes	Yes	Yes
Line, parameterized	Yes	Yes	Yes	Yes
Line, reference	Yes	No	No	Yes
Loess	Yes	No	No	Yes
Model band	Yes	No	No	Yes
Mosaic	Yes	No	No	Yes
Needle	Yes	No	No	Yes
Pbspline	Yes	No	No	Yes
Pie	Yes	Yes	Yes	Yes
Polygon	Yes	No	No	Yes
Regression	Yes	No	No	Yes
Scatter	Yes	Yes	Yes	Yes
Scatter plot matrix	Yes	No	No	Yes
Series	Yes	Yes	Yes	Yes
Step	Yes	No	No	Yes
Surface	Yes	No	No	Yes
Text	Yes	No	No	Yes
Vector	Yes	No	No	Yes
Waterfall	Yes	No	No	Yes

