



SAS® Studio - overview and usage in clinical development

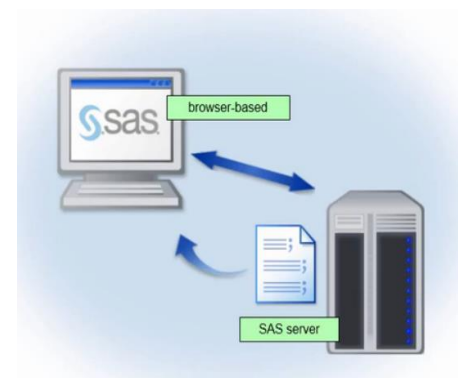
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SAS® Studio

What is SAS Studio

- SAS Studio is a SAS developer environment that runs in a Web Browser
- Enabling developers to program SAS wherever and whenever they want.
- Writing and running SAS code has never been faster or easier.
- No client installation. Zero client footprint.
- SAS Studio interface comes with BASE SAS 9.4
- SAS Studio 3.6 on SAS 9.4 M4 is the latest Release
- SAS Studio supports: Microsoft Internet Explorer, Apple Safari, Mozilla Firefox, and Google Chrome.



- **Programming interface**

- Ability to easily access programs, data files and libraries from your desktop or Mac through your web browser.
- When a SAS program or task is submitted to run, SAS Studio connects to a SAS server to process the submitted SAS code.
- The SAS server can be a hosted server in a cloud, local environment or on your laptop.
- After the SAS code is processed, the results are returned to SAS Studio – in your browser.
- Backward compatible with the Display Manager System.
- Point-and-click interface guides you through\ analytical or data manipulation processes.
- Auto-complete feature displays a list of SAS procedures when you begin typing a procedure name. When a procedure is selected, it then displays the parameter list and pop-up syntax.

SAS® Studio

Program 1 x

SDTM.AE x

Filter: (AESEV="LIFE THREATENING" OR AESEV="SEVERE")

Files and Folders

Tasks

Snippets

Libraries

SDTM

AB

AE

AEACN

AEADDDTRT

AEADDYN

AEBOBDSYS

AECAT

AECONTRT

AEDECOD

AEENDTC

AEENDY

AEENRF

AEHAYN

AEOCCUR

AEOUT

AEREL

AESEV

File Shortcuts

View: Column names

Columns

Select all

STUDYID

DOMAIN

USUBJID

AESEQ

AESPID

AESER

Property

Value

Label

Serious Event

Name

AESER

Length

1

Type

Char

Format

\$1.

Informat

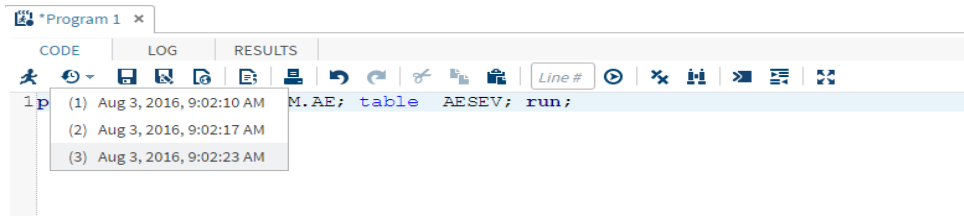
Total rows: 101

Total columns: 26

Filtered rows: 13

Rows 1-13

	USUBJID	AESEQ	AESPID	AEOCCUR	AETERM
1	XMB111-521-8058	14	2	Y	ANEMIA
2	XMB111-521-8057	14	1	Y	ANEMIA
3	XMB111-521-8049	14	3	Y	GRAFT LOSS
4	XMB111-521-8049	14	2	Y	GRAFT INFECTION; MSSA.
5	XMB111-521-8049	14	1	Y	ANEMIA
6	XMB111-521-8012	14	6	Y	CANDIDEMIA
7	XMB111-521-8012	14	5	Y	ANEMIA
8	XMB111-521-8012	14	1	Y	BACTEREMIA
9	XMB111-521-8012	14	8	Y	PURULENT DRAINAGE OF LEFT THU
10	XMB111-521-8005	14	1	Y	ANEMIA
11	XMB111-521-8005	14	4	Y	BACTEREMIA
12	XMB111-521-8004	14	1	Y	ANEMIA
13	XMB111-511-8052	14	1	Y	PAIN RELATED TO BURN INJURY



- **Table viewer**

- Automatically generate SQL queries.
- Ability to open a table and explore its properties, columns and subsets, sort the data and more.
- Code is generated behind the scenes, and can be viewed by clicking on an icon in the toolbar.

- **Customizable interface**

- The SAS Studio interface layout can be customized, and it will be remembered the next time a user logs in.
- As you move from one physical setting to another, you can seamlessly move from one device to another and maintain the same interactive SAS Studio experience.
- Create and add code snippets to the snippet library so you can insert frequently used code into your programs to speed development.

Files and Folders

Tasks and Utilities

Snippets

- My Snippets
 - Cleanup
 - EDA
 - Header
 - Library Contents
- Snippets
 - Catalogs
 - Data
 - DS2 Code
 - DS2 Package
 - DS2 Thread
 - Generate CSV File
 - Generate PowerPoint Slide
 - Generate XML File
 - Import CSV File**
 - Import XLSX File
 - Simulate Linear Regression Data
 - Simulate One-Way ANOVA Data
 - Descriptive

Libraries

File Shortcuts

*Program 1 *

CODE LOG RESULTS

Line #

```

1
2
3 /** FOR CSV Files uploaded from Windows */
4 FILENAME CSV "<Your CSV File>" TERMSTR=CRLF;
5
6
7 /** FOR CSV Files uploaded from Unix/MacOS */
8 FILENAME CSV "<Your CSV File>" TERMSTR=LF;
9
10
11 /** Import the CSV file. */
12
13 PROC IMPORT DATAFILE=CSV
14             OUT=WORK.MYCSV
15             DBMS=CSV
16             REPLACE;
17 RUN;
18
19 /** Print the results. */
20
21 PROC PRINT DATA=WORK.MYCSV; RUN;
22
23 /** Unassign the file reference. */
24
25 FILENAME CSV;
26

```

Line 26, Column 1

DRAG AND
DROP TO
PROGRAM



- **Flexible task framework**
 - Framework enables both internal and external customers to create tasks.
 - Tasks can easily be created without requiring coding in Java, JavaScript or ActionScript.\
 - SAS programmers and consultants can copy delivered tasks and modify them.

SAS® Studio

Program 1 x | *Bar Chart x

Settings | Code/Results | Split

Log | Code

CODE | LOG | RESULTS

Frequency

40

40

10

3

LIFE THREATENING MILD MODERATE SEVERE

AE Severity

SEND OUTPUT TO HTML, PDF OR RTF

Characterize Data

Describe Missing Data

List Data

Transpose Data

Stack/Split Columns

Filter Data

Select Random Sample

Partition Data

Sort Data

Rank Data

Transform Data

Standardize Data

Graph

Bar Chart

Bar-Line Chart

Box Plot

Bubble Plot

Histogram

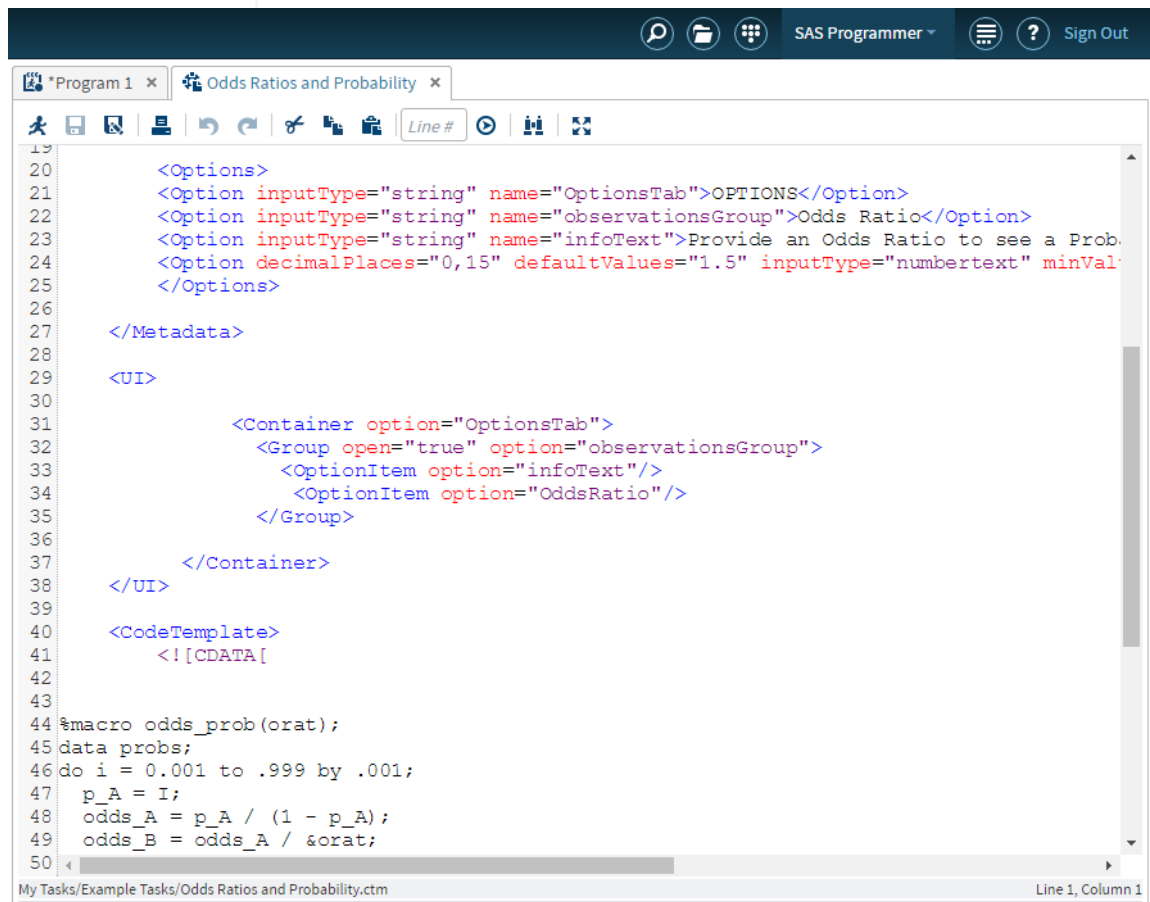
Line Chart

Snippets

Libraries

File Shortcuts

AE Severity	Frequency
LIFE THREATENING	3
MILD	40
MODERATE	40
SEVERE	10



The screenshot shows the SAS Studio interface. The top navigation bar includes a search icon, a file icon, a grid icon, the text "SAS Programmer", a menu icon, a help icon, and a "Sign Out" link. Below the navigation bar, there are two tabs: "Program 1" and "Odds Ratios and Probability". The "Odds Ratios and Probability" tab is active, showing a code editor with the following content:

```
19
20     <Options>
21     <Option inputType="string" name="OptionsTab">OPTIONS</Option>
22     <Option inputType="string" name="observationsGroup">Odds Ratio</Option>
23     <Option inputType="string" name="infoText">Provide an Odds Ratio to see a Prob.
24     <Option decimalPlaces="0,15" defaultValues="1.5" inputType="numbertext" minVal:
25     </Options>
26
27 </Metadata>
28
29 <UI>
30
31     <Container option="OptionsTab">
32     <Group open="true" option="observationsGroup">
33     <OptionItem option="infoText"/>
34     <OptionItem option="OddsRatio"/>
35     </Group>
36
37     </Container>
38 </UI>
39
40 <CodeTemplate>
41     <![CDATA[
42
43
44 %macro odds_prob(orat);
45 data probs;
46 do i = 0.001 to .999 by .001;
47     p_A = I;
48     odds_A = p_A / (1 - p_A);
49     odds_B = odds_A / &orat;
50
```

The status bar at the bottom indicates "My Tasks/Example Tasks/Odds Ratios and Probability.ctm" on the left and "Line 1, Column 1" on the right.

SAS® Studio Useful Links



SAS® Studio

Product overview:

http://www.sas.com/en_us/software/foundation/studio.html

SAS® Studio

Create and interact with SAS® code easily – anytime, anywhere



Writing and running SAS code has never been easier. This web browser interface lets you access your data and create SAS programs wherever – and whenever – you need them. Once you're familiar with SAS Studio, you can use it throughout your career.

Consider it a solid investment for your future.

SAS® Studio

On-line tutorial:

<https://support.sas.com/training/tutorial/studio/get-started.html>

SAS YouTube Channel

https://www.youtube.com/playlist?list=PLVBcK_IpFVi8NP3eH1DqxSPFBw5TcPdAK

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- Certification
- SAS Global Academic Program
- SAS OnDemand

Getting Started with SAS Studio

In this video, you get started with programming in SAS Studio. You view a data table, write and submit SAS code, view the log and results, and use interactive features to quickly generate graphs and statistical analyses.



SAS® Studio

On-line training:

<https://support.sas.com/edu/schedules.html?id=3136&ctry=US&view=country>

The screenshot displays the SAS Training & Books website. At the top, the SAS logo is accompanied by the tagline 'THE POWER TO KNOW.' and the text 'Providing software solutions since 1976'. Navigation links include 'support.sas.com', 'Knowledge Base', 'Support', 'Training & Books', 'Store', and 'Support Comm'. The main header reads 'TRAINING & BOOKS / TRAINING'. Below this is a 'Training Console' section with a search bar labeled 'Find a course by' and a 'Search Courses' button. A 'My Training' link is also present. The left sidebar, titled 'TRAINING & BOOKS', lists categories: 'Books', 'Training' (selected), 'Certification', 'SAS Global Academic Program', and 'SAS OnDemand'. Under 'Training', sub-links include 'My Training', 'Find a Course', 'e-Learning', 'Live Web Classes', 'Locations', 'Training Formats', 'Discounts', 'Free Tutorials', and 'Academy for Data Science'. The main content area features the course title 'Exploring SAS Studio for SAS Programmers' with tabs for 'Overview', 'Prerequisites', and 'Course Outline'. The 'Overview' tab is active, showing a description: 'This course provides an introduction to SAS Studio for experienced SAS programmers. SAS Studio is an interface that enables users to write and submit SAS programs and use snippets and tasks to generate SAS code.' Below this, a 'Learn how to' section lists six bullet points: navigate and customize SAS Studio, write and execute SAS programs, explore and filter your data, use predefined tasks to generate SAS code, and customize code snippets and create your own snippets. A 'Who should attend' section states: 'Experienced SAS programmers who want to use SAS Studio as a programming interface'.

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 - Academy for Data Science
- Certification
- SAS Global Academic Program
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Exploring SAS Studio for SAS Programmers

Overview Prerequisites Course Outline

This course provides an introduction to SAS Studio for experienced SAS programmers. SAS Studio is an interface that enables users to write and submit SAS programs and use snippets and tasks to generate SAS code.

Learn how to

- navigate and customize SAS Studio
- write and execute SAS programs
- explore and filter your data
- use predefined tasks to generate SAS code
- customize code snippets and create your own snippets.

Who should attend
Experienced SAS programmers who want to use SAS Studio as a programming interface

SAS Community Library:
<https://communities.sas.com/t5/SAS-Communities-Library/Tips-for-Programming-Efficiently-in-SAS-Studio/ta-p/239367>

The screenshot shows a web browser window displaying a post from the SAS Communities Library. The post is titled 'New in SAS Studio 3.6: Select and Edit Columns in the Editor' and is authored by 'samdupont'. The post content describes a feature in SAS Studio 3.6 that allows users to select columns of data by dragging the mouse over the column headers, rather than selecting rows. The post includes a code snippet for a SAS data step that reads a table named 'data' and outputs the results to a dataset named 'datalogs'. The code snippet is as follows:

```
data table;
infile datalines pad truncate;
input column row number $ 10-12 abbreviation $ 14
datalines;
1 10 1 H Hydrogen Nonmetals, Prim
1 9 3 Li Lithium Alkali metals,
1 8 11 Na Sodium Alkali metals,
1 7 19 K Potassium Alkali metals,
1 6 37 Rb Rubidium Alkali metals,
1 5 55 Cs Caesium Alkali metals,
1 4 87 Fr Francium Alkali metals,
2 9 4 Be Beryllium Alkaline earth
2 8 12 Mg Magnesium Alkaline earth
2 7 20 Ca Calcium Alkaline earth
2 6 38 Sr Strontium Alkaline earth
2 5 56 Ba Barium Alkaline earth
2 4 88 Ra Radium Alkaline earth
```

The screenshot also shows the SAS Communities Library interface, including the 'Communities' tab, the 'SAS Communities Library' title, and a sidebar with a 'Sign In' button and a 'Your turn' section.



Questions ?