



PHUSE: Coding Tips and Techniques

Tips and Trick for being more productive with SAS Studio

This session will provide overview of the latest version of SAS Studio and the new features available to make life as a SAS Programmer in Life Sciences easier and more efficient. It will also show how users can easily migrate from Enterprise Guide create reusable “snippets” and “customer tasks” and integrate with GitHub for version control and governance. The session will finish by showing the integration of SAS Studio with SAS Visual Analytics as part of an end-to-end data preparation and visualization capability for enhance reporting and visualization of STDM and ADaM data

Andy Bayliss - Technical Director

andy.bayliss@sas.com

SAS®STUDIO

WHAT IS SAS STUDIO?

SAS Studio is the webbased interface for SAS Programmers.

With SAS Studio, you can access your data files, libraries, and existing programs and write new programs.

You can also use the predefined tasks in SAS Studio to generate SAS code..

Available with SAS 9.4 since May 2014

WHO IS IT FOR?



PROGRAMMERS



DATA ANALYST



CITIZEN ANALYTICS



DATA SCIENTIST



CODING

SAS Studio includes a color-coded, syntax-checking editor for editing new or existing SAS programs. It includes code snippets, commonly used code or text that you can save and reuse.

TASKS

Tasks provide a way for you to run some of the most commonly used analyses on your data without requiring you to write any SAS code yourself. Tasks generate SAS code and results based on the options that you select in the user interface.

QUERIES

You can build queries to join multiple datasets, create simple and complex expressions, filter and sort data. When you create a query, SAS Studio generates Structured Query Language (SQL) or FedSQL code, which you can view and edit.

GIT INTEGRATION

SAS Studio includes integration with Git, a system for tracking changes and managing version control among multiple users. Git can be used with many different repository hosting services such as GitHub and Bitbucket.

DATA ACCESS

With SAS Studio, you can access your data files, libraries, and existing programs. You can import a range of data sources including CSV and Excel.



SAS® Enterprise Guide and SAS® STUDIO

MOVING FROM SAS ENTERPRISE GUIDE TO SAS STUDIO

If you're moving from SAS Display Manager or SAS Enterprise Guide your code will work in the same way as before. If you prefer using tasks then most SAS Enterprise Guide tasks have a SAS Studio equivalent. There are, however, some changes



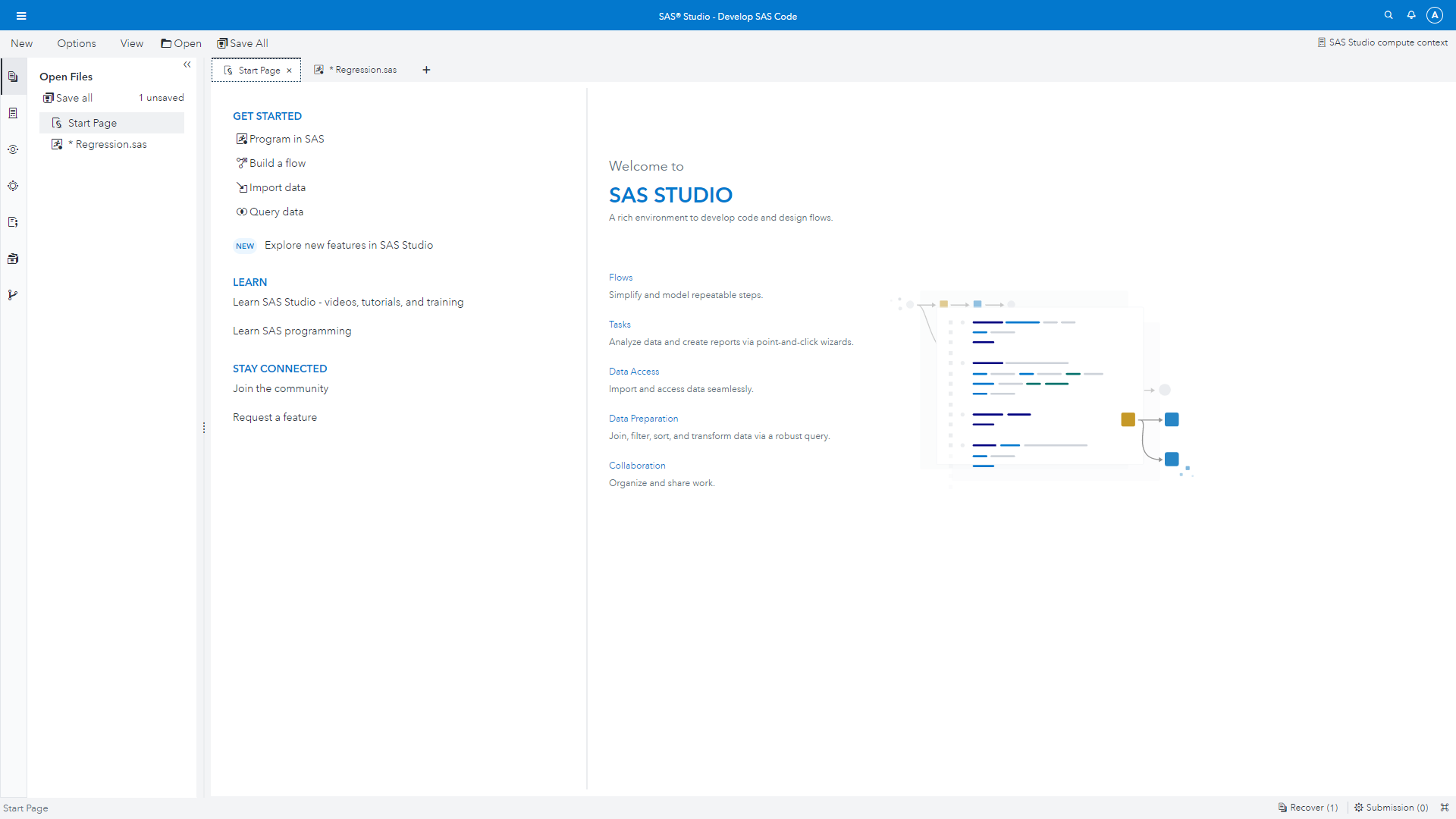
[Click here](#) for a comprehensive list of the differences between SAS Enterprise Guide vs SAS Studio

FEATURE	SAS EG	SAS STUDIO
Advanced Programming Editor	✓	✓✓
Tab Layout	✗	✓
SAS defined code snippet	✗	✓
SAS defined tasks	✓	✓
Data step debugger	✓	✓
Git Integration	✓	✓
Process Flows	✓	✓
Direct connection to SAS Viya	✗	✓



Benefits of SAS Studio

- Accessed via a web browser via SAS drive
- Your SAS code will work in much the same way.
- Access to other tools
 - eg SAS Visual Analytics for adhoc data discovery and interactive analysis.
- Background / Scheduled Submit
- Code Snippet and Task
- Git integration



New Options View Open Save All

Open Files

Programs

Explore

Snippets

Tasks

Libraries

GIT

Sep 3, 2020, 11:31:04 AM

Interactive Code Editor

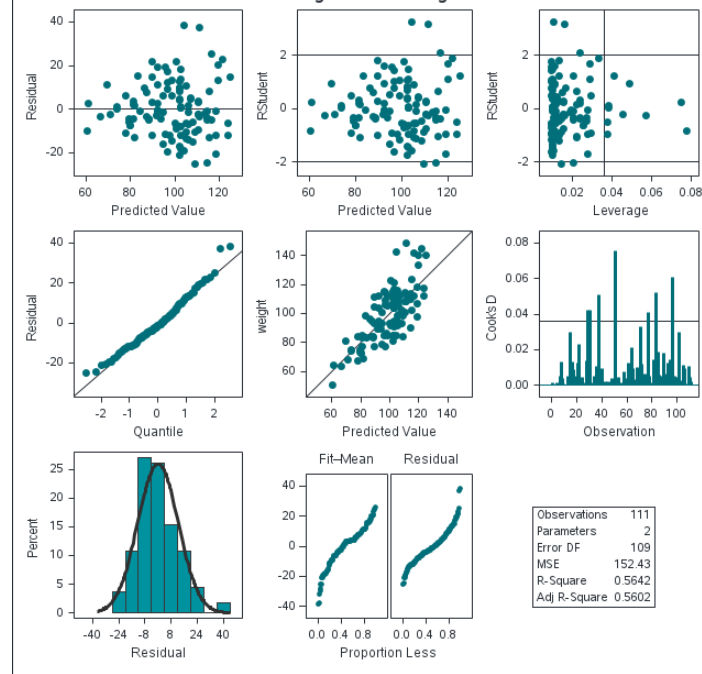
Log / Results / Output

Log Results Output Data

```

The Reg Procedure
├─ sex=f
│   └─ eq1
│       └─ Fit
│           └─ weight
│               └─ Number of Observati...
│               └─ Analysis of Variance
│               └─ Fit Statistics
│               └─ Parameter Estimates
├─ Observation-wise Statistics
│   └─ weight
│       └─ Diagnostic Plots
│       └─ Residual Plots
│       └─ Fit Plot
├─ eq2
│   └─ Fit
│       └─ weight
│           └─ Number of Observati...
│           └─ Analysis of Variance
│           └─ Fit Statistics
│           └─ Parameter Estimates
├─ Observation-wise Statistics
│   └─ weight
│       └─ Diagnostic Plots
│       └─ Residual Plots
│       └─ Panel 1
└─ sex=m

```



Residuals for weight

New Options View Open Save All

Start Page *Regression.sas x +

Run Cancel

```
3  
4 TITLE: PROC REG  
5     Age, Weight, and Height of Children  
6 DATA: htw  
7 PRODUCT: STAT  
8 SYSTEM: ALL  
9 KEYS: Output data sets, BY processing  
10 PROCS: REG  
11  
12 -----*/  
13 proc reg outest=est1 outsscp=sscp1 rsquare;  
14     by sex;  
15     eq1: model weight=height;  
16     eq2: model weight=height age;  
17     run;  
18  
19 proc print data=sscp1;  
20     title2 'SSCP type data set';  
21     run;  
22  
23 proc print data=est1;  
24     title2 'EST type data set';  
25     run;
```

Log

Results x

Log / Results / Output

The Reg Procedure

sex=f

eq1

Fit

weight

Number of Observations

Analysis of Variance

Fit Statistics

Parameter Estimates

Observation-wise Statistics

weight

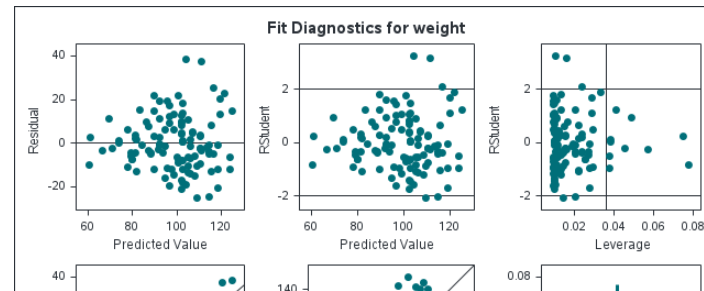
Diagnostic Plots

Fit Diagnostics

Residual Plots

Dependent Variable: weight

sex=f



New Options View Open Save All

Start Page *Regression.sas x +

Run Cancel Copy to My Snippets Debug

Sep 3, 2020, 11:31:04 AM

Code

```

1  /*-----
2      SAS SAMPLE LIBRARY
3  */
4  TITLE: PROC REG
5      Age, Weight, and Height of Children
6  DATA: htwt
7  PRODUCT: STAT
8  SYSTEM: ALL
9  KEYS: Output data sets, BY processing
10 PROC: REG

```

```

14 proc reg data=htwt outest=est1 outsscp=sscp1 rsquare;
15
16
17
18
19
20
21
22 run;
23
24
25
26

```

Keyword: REG
Context: [PROCEDURE DEFINITION] PROC REG

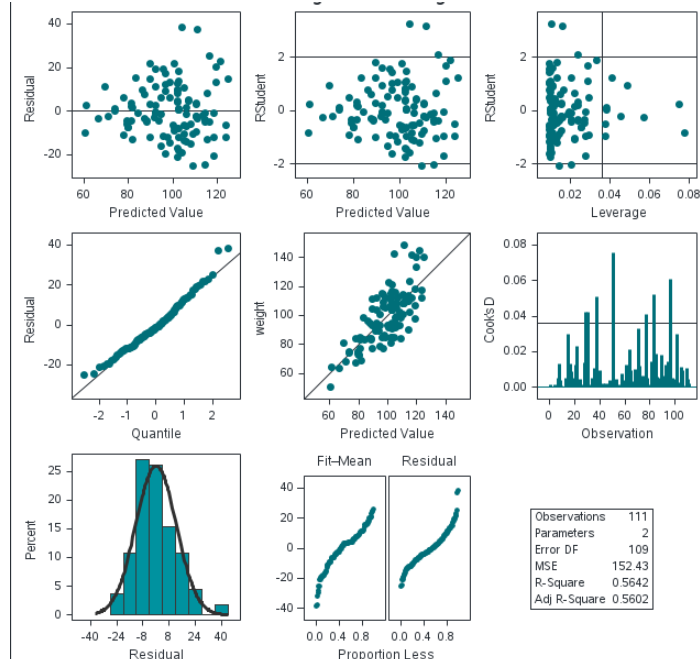
Syntax: PROC REG <options>;
<label>:MODEL dependents=<regressors> </ options>;
BY variables;
FREQ variable;
ID variables;
VAR variables;
WEIGHT variable;
ADD variables;
DELETE variables;
<label>:MTEST <equation,...equation> </ options>;
OUTPUT <OUT=SAS-data-set> < keyword=names> <...keyword=names>;
PAINT <condition | ALLOBS> </ options> | < STATUS | UNDO>;
RESTRICT equation,...equation;
REWEIGHT <condition | ALLOBS> </ options> | < STATUS | UNDO>;
PRINT <options> <ANOVA> <MODELDATA>;
REFIT;
RESTRICT equation,...equation;
REWEIGHT <condition | ALLOBS> </ options> | < STATUS | UNDO>;
<label>:TEST equation,<...equation> </ options>;

Log Results Output Data

The Reg Procedure

- sex=f
 - eq1
 - Fit
 - weight
 - Number of Observati...
 - Analysis of Variance
 - Fit Statistics
 - Parameter Estimates
 - Observation-wise Statistics
 - Diagnostic Plots
 - Fit Diagnostics
 - Residual Plots
 - height
 - Fit Plot
- eq2
 - Fit
 - weight
 - Number of Observati...
 - Analysis of Variance
 - Fit Statistics
 - Parameter Estimates
 - Observation-wise Statistics
 - Diagnostic Plots
 - Fit Diagnostics
 - Residual Plots
 - Panel 1
- sex=m

Interactive Help



Residuals for weight



File Explorer

My Favorites

Folder Shortcuts

Shortcut to My Fol...

My Snippets

My Tasks

Regression...

sas-launcher-Of...

SAS Content

Open

Insert

Insert as path

Schedule as a job

Background submit

Create job

Copy to My Snippets

Add to My Favorites

Add to flow

Create file reference

Delete

Move to

Copy to

Download file

Properties

Code

```
proc reg data=htwt outest=est1 outsscp=sscp1 rsquare;
by sex;
eq1: model weight=height;
eq2: model weight=height age;
run;

proc print data=sscp1;
title2 'SSCP type data set';
run;

proc print data=est1;
title2 'EST type data set';
run;
```

Log

Results

Output Data

The Reg Procedure

sex=f

eq1

Fit

weight

Number of Obser...

Analysis of Variance

Fit Statistics

Parameter Estimates

Observation-wise Statistics

weight

Diagnostic Plots

Fit Diagnostics

Residual Plots

height

Fit Plot

eq2

Fit

weight

Number of Obser...

Analysis of Variance

Fit Statistics

The REG Procedure

Model: eq1

Dependent Variable: weight

sex=f

Fit Diagnostics for weight

Residual vs Predicted Value

RSStudent vs Predicted Value

RSStudent vs Leverage

Residual vs Quantile

weight vs Predicted Value

CooksD vs Observation

Submission status

Filter

Status (no filter)

Successful

Filter submissions list

Cancel All

Clear All

		Name	Type	Run Time	Submitted	Completed	Server
(1)	✓	Regression.sas	Program	14.693s	8/21/2020, 3:49:48 PM	8/21/2020, 3:50:03 PM	SAS Studio compute context

File: /Users/sukaba/My Folder/Regression.sas

Line 1 Column 1 UTF-8 Recover (1) Submission (0)

File Options View Open Save All

Start Page RegressionJob.sas x +

Run Cancel Copy to My Snippets Debug

Sep 3, 2020, 11:31:04 AM

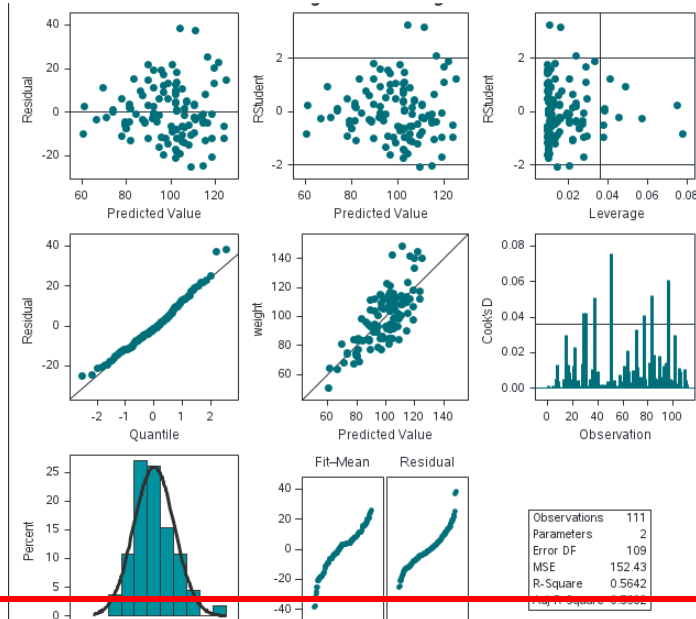
Code

```
1  /*-----  
2      SAS SAMPLE LIBRARY  
3  -----*/  
4  TITLE: PROC REG  
5      Age, Weight, and Height of Children  
6  DATA: htw  
7  PRODUCT: STAT  
8  SYSTEM: ALL  
9  KEYS: Output data sets, BY processing  
10 PROCS: REG  
11  
12  
13  
14 proc reg data=htwt outest=est1 outsscp=sscp1 rsquare;  
15   by sex;  
16   eq1: model weight=height;  
17   eq2: model weight=height age;  
18   run;  
19  
20 proc print data=sscp1;  
21   title2 'SSCP type data set';  
22   run;  
23  
24 proc print data=est1;  
25   title2 'EST type data set';  
26   run;
```

Log Results Output Data

The Reg Procedure

- sex=f
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 - Number of Observations
 - Analysis of Variance
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- Observation-wise Statistics
 - weight
 - Diagnostic Plots
 - Fit Diagnostics
 - Residual Plots
 - height
 - Fit Plot
- eq2
 - Fit
 - weight
 - Number of Observations
 - Analysis of Variance
 - Fit Statistics
 - Parameter Estimates
- Observation-wise Statistics



Console x

All Errors Warnings Info Logs Debug Clear All

① Regression.sas submitted
① Regression.sas completed successfully
① Regression.sas elapsed time 3.61 seconds

Console

Snippets

Filter snippets

SAS Snippets : My Snippets

- 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
- Data Quality
- Descriptive
- Graph
- IML
- Macro
- SAS Viya Cloud Analytic Services
- SAS Viya Image Processing
- SAS Viya Machine Learning

Start Page Import CSV File.sas x +

Run Cancel Copy to My Snippets + Code to Flow Debug

Code

```
1 /* Import a csv file from the location specified on the filename statement */
2 /* The SAS data set created is named by substituting a name for work.mycsv */
3
4 filename csv "<location on file system of the CSV file>";
5
6 /* Import the CSV file */
7 proc import datafile=csv out=work.mycsv dbms=csv;
8     getnames=yes;
9     run;
10
11 /* Print the first 10 observations */
12 proc print data=work.mycsv(obs=10);
13     run;
14
15 filename csv;
16
```

Log

Example of code template 'snippet'

🔍 Filter tasks

SAS Tasks : My Tasks

- ▶ Econometrics
- ▶ Forecasting
- ▶ Optimization and Network Analysis
- ▶ Prepare Data
 - ▶ Examine Data
 - Characterize Data
 - Describe Missing Data
 - List Data
 - List Table Attributes
 - ▶ Transform Data
- ▶ SAS Viya Cloud Analytic Services
- ▶ SAS Viya Econometrics
- ▶ SAS Viya Evaluate and Implement M...
- ▶ SAS Viya Forecasting
- ▶ SAS Viya Machine Learning
- ▶ SAS Viya Optimization and Network ...
- ▶ SAS Viya Prepare and Explore Data
- ▶ SAS Viya Statistics
- ▶ SAS Viya Text Analytics
- ▶ Statistical Process Control
- ▶ Statistics
- ▶ Visualize Data

Start Page Import CSV File.sas * Characterize Data.ctl x

Run Cancel ↕ 📄 📁 ⚙️ Copy to My Tasks + Code to Flow

Data Options Information

Categorical Variables

- ☒ Frequency table
- ☒ Frequency chart
- ☐ Treat missing values as valid level
- ☐ Limit categorical values

- ✓ Numeric Variables

- ✓ Descriptive statistics
- ✓ Histogram

> Date Variables

Task Console (0)

No items

Task Options

Code Log

```
1  /*
2  *
```

Options generated by SAS® Studio 6.0

```
5 * Generated on '8/21/20, 3:02 PM'
6 * Generated on server 'sas-launcher-328af5fc-47b5-440f-bbda-968495fefda7-tvbws'
7 * Generated on SAS platform 'Linux LIN X64 3.10.0-957.1.3.el7.x86_64'
8 * Generated on SAS version 'V.04.00M0P082020'
9 * Generated on browser 'Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko)
10 * Generated on web client 'http://d2mwf.ingress-nginx.d2mwf-m1.quest.sashq-d.openstack.sas.com/SASstudio.
```

```
ods noproctitle;
```

```
/** Analyze categorical variables */  
title "Frequencies for Categorical Variables";
```

```
18 proc freq data=SASHELP.HEART;  
19     tables Sex / plots=(freqplot);  
20 run;
```

```
22  /*** Analyze numeric variables ***/
23  title "Descriptive Statistics for Numeric Variables";
```

```
25 proc means data=SASHELP.HEART n nmiss min mean median max std;
26     var AgeAtStart Height Weight;
27 run;
```

```
29 title;
```

```
31 proc univariate data=SASHELP.HEART noprint;  
32     histogram AgeAtStart Height Weight;  
33 run;
```

Tasks

Filter tasks

SAS Tasks : My Tasks

- Econometrics
- Forecasting
- Optimization and Network Analysis
- Prepare Data
 - Examine Data
 - Characterize Data
 - Describe Missing Data
 - List Data
 - List Table Attributes
 - Transform Data
- SAS Viya Cloud Analytic Services
- SAS Viya Econometrics
- SAS Viya Evaluate and Implement M...
- SAS Viya Forecasting
- SAS Viya Machine Learning
- SAS Viya Optimization and Network ...
- SAS Viya Prepare and Explore Data
- SAS Viya Statistics
- SAS Viya Text Analytics
- Statistical Process Control
- Statistics
- Visualize Data

Start Page Import CSV File.sas Characterize Data.ctl

Run Cancel Copy to My Tasks Code to Flow

Code Log Results

- The Freq Procedure
 - Tables
 - Distribution Plots
 - Frequency Plot
- The Means Procedure
 - Summary statistics
- The Univariate Procedure
 - AgeAtStart
 - Histogram 1
 - Panel 1
 - Height
 - Histogram 1
 - Panel 1
 - Weight
 - Histogram 1
 - Panel 1

Task Results





Git Repositories

Clone Add

Current Repository

- Local
- ✓ master (1)

Start Page Local x +

Git Integration

Local
Current repository

master
Current branch

Pull master
Last pulled: Nov 13, 2019,...

Push master
Last pushed: Nov 13, 2019,...

Commit History

Unstaged Changes (0)

No items

Staged Changes (0)

No items

Enter a commit comment

Commit



WORKING WITH GIT.

Edit

Edit files in your working directory. As you work, the files you change and save are added to the Unstaged Changes area of the Commit tab.

Stage

Move the changed files that you want to keep together to the Staged Changes area. It is good practice to group related changes together in the same commit.

Commit

Enter a short description of your changes and commit the files to your local repository. Each commit represents a snapshot of the changes since your last commit.

Push

Share your committed changes with others by pushing them to the remote repository.

Tasks



Filter tasks

SAS Tasks My Tasks

Flow Tasks

- File
- Import
- Query
- SAS Program
- Table
- Prepare Data
- SAS Viya Cloud Analytic S...
- SAS Viya Econometrics
- SAS Viya Evaluate and Im...
- SAS Viya Forecasting
- SAS Viya Machine Learning
- SAS Viya Optimization an...
- SAS Viya Prepare and Expl...
- SAS Viya Statistics
- SAS Viya Text Analytics
- Statistical Process Control
- Statistics
- Visualize Data

Start Page

* Flow.flw x



Run



Add

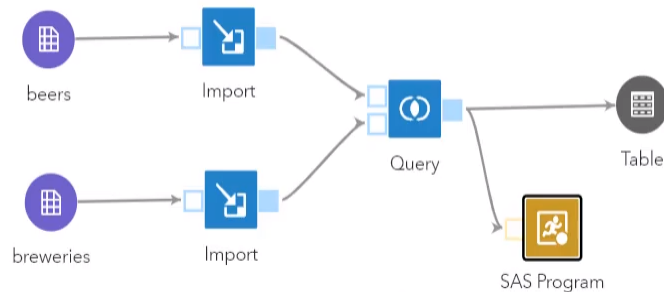
View

Flow

Generated Code

Submission

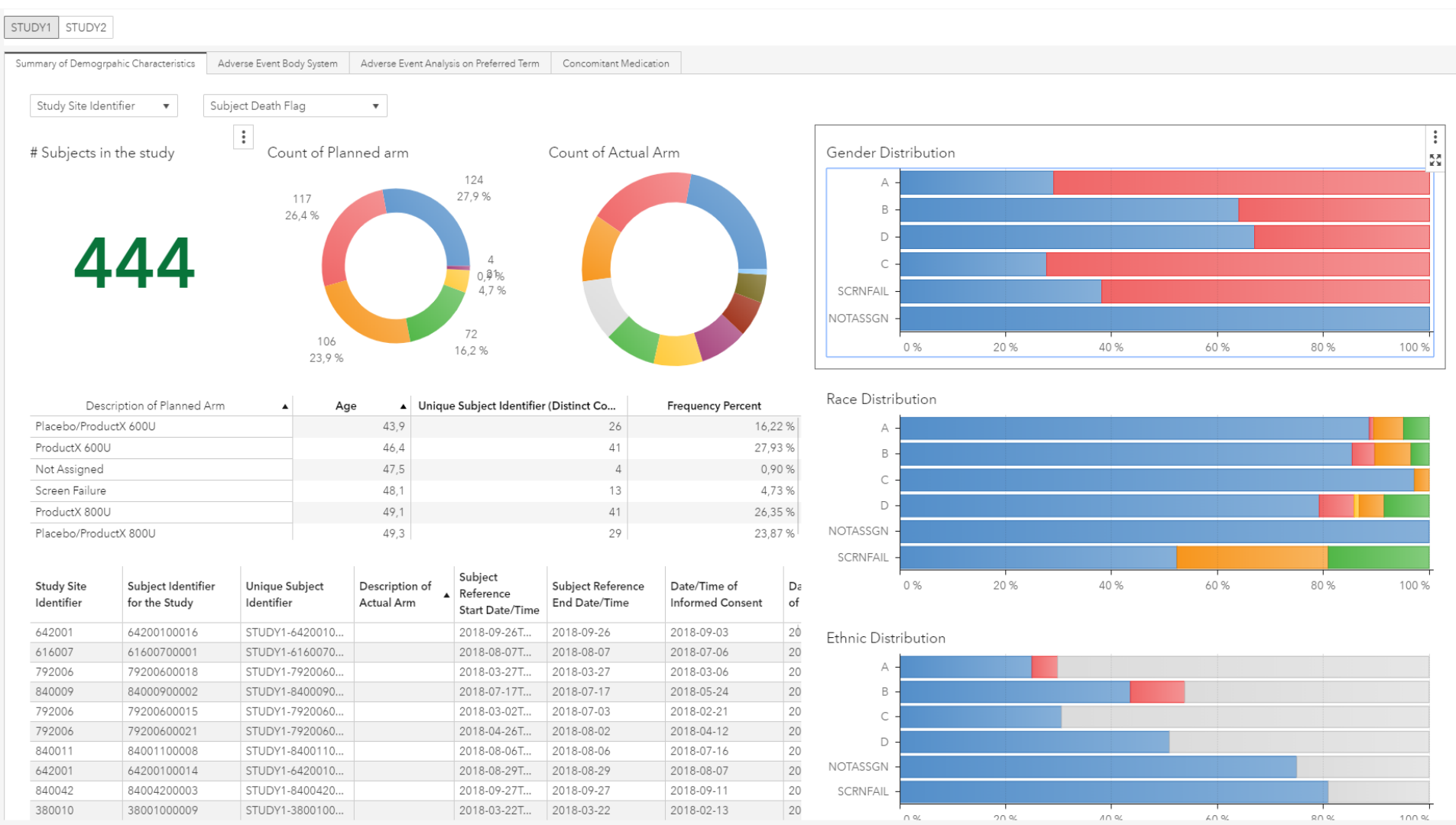
Program Flows



SAS Program

Code Node

```
1 proc freq data=&input1;  
2 tables beer_name;  
3 where state = "ND";  
4 run;
```



SAS Studio – Additional Material

Main references



SAS Studio website

<https://support.sas.com/en/software/studio-support.html>



Tutorial Video: Getting Started with SAS Studio

<https://video.sas.com/detail/video/4573016757001/getting-started-with-sas-studio?autoStart=true&q=getting%20started%20with%20sas%20studio>



SAS Studio Fact Sheet

https://www.sas.com/content/dam/SAS/en_us/doc/factsheet/sas-studio-107188.pdf



SAS Studio FAQ

<https://support.sas.com/software/products/sas-studio/faq/index.html>



SAS Studio Community

https://communities.sas.com/t5/SAS-Studio/bd-p/sas_studio

SAS Studio – Additional Material

Main references



SAS Studio documentation

[SAS Help Center: Introduction to SAS Studio](#)



SAS Studio Programming Guide

[SAS Help Center: Working with Programs](#)



SAS Studio Tips for Transitioning from SAS Enterprise Guide

[SAS Help Center: Transitioning to SAS Studio](#)



SAS Studio Tasks

[SAS Help Center: Understanding Tasks in SAS Studio](#)



SAS Studio Flows

[SAS Help Center: Working with Flows](#)



SAS Studio Integration with Git

[SAS Help Center: Understanding Git Integration in SAS Studio](#)



PHUSE: Coding Tips and Techniques

Tips and Trick for being more productive with SAS Studio

This session will provide overview of the latest version of SAS Studio and the new features available to make life as a SAS Programmer in Life Sciences easier and more efficient. It will also show how users can easily migrate from Enterprise Guide create reusable “snippets” and “customer tasks” and integrate with GitHub for version control and governance. The session will finish by showing the integration of SAS Studio with SAS Visual Analytics as part of an end-to-end data preparation and visualization capability for enhance reporting and visualization of STDM and ADaM data

Andy Bayliss - Technical Director

andy.bayliss@sas.com



Additional Slides

SAS Delivering Actionable Insights from Analytics

SAS® STUDIO

If you are a SAS Enterprise Guide or Base SAS user, this is the new interface for you. Like all the other tools, it is accessed via the homepage, SAS Drive. This is the tool for you to access data, perform data manipulation and analysis. SAS Studio is where you would go to write SAS code. It also has the point and click task and query you are familiar with in SAS Enterprise Guide. There are additional capabilities such as code snippets which contains pre-written code and the ability to background submit.

For more information:

support.sas.com/en/software/sstudio-support.html

2 SAS® VISUAL ANALYTICS

SAS Visual Analytics is the point-and-click, user-friendly visualization tool. Here, you can build reports or dashboards using different graphs available to you. SAS Visual Analytics can also be leveraged as a starting place for analytics. It lets you explore your data sets and find patterns you didn't know were there.

For more information:

support.sas.com/en/software/visual-analytics-support.html



SAS® DRIVE

SAS Drive is a hub for the SAS Viya applications, and enables you to easily view, organize, and share your content from one place. You can think of SAS Drive as your homepage. The availability of the features in SAS Drive depends on the applications that have been installed, and the features and permissions that have been specified by your administrator.

For more information: support.sas.com/en/software/sas-viya.html

3 SAS® VISUAL STATISTICS

SAS Visual Statistics enables you to use powerful statistical modelling techniques like clustering or regression within SAS Viya. Data scientists, statisticians and analysts can collaborate and iteratively refine models for each segment or group to make decisions based on accurate insights. SAS Visual Statistics also provides summary statistics so that you can compare models and see which one best suits your data.

For more information:

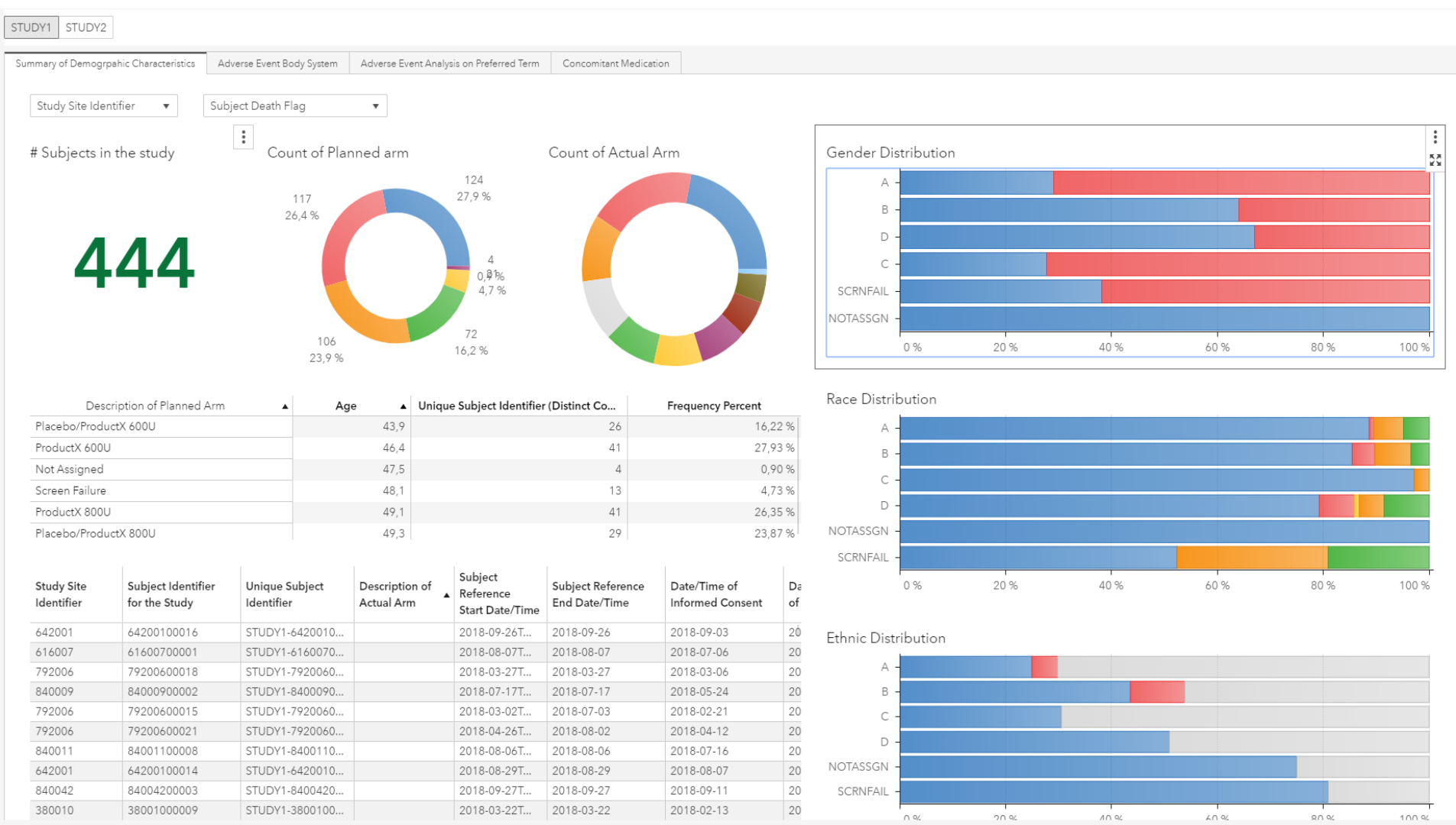
support.sas.com/en/software/visual-statistics-support.html

4 SAS® VISUAL DATA MINING & MACHINE LEARNING

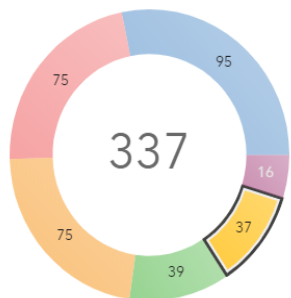
SAS Visual Data Mining and Machine Learning (also referred to as SAS VDMML) gives you the ability to solve complex analytical problems with a comprehensive visual interface. It encompasses all the tasks in the analytics life cycle from data wrangling, exploration, feature engineering, and modern statistical, data mining, and machine learning techniques. You can compare multiple models to see the best performing model on your data.

For more information:

support.sas.com/en/software/visual-data-mining-and-machine-learning-support.html

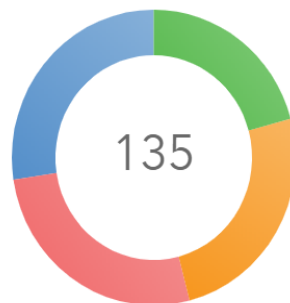


Pt receiving at least one
Concomitant meds

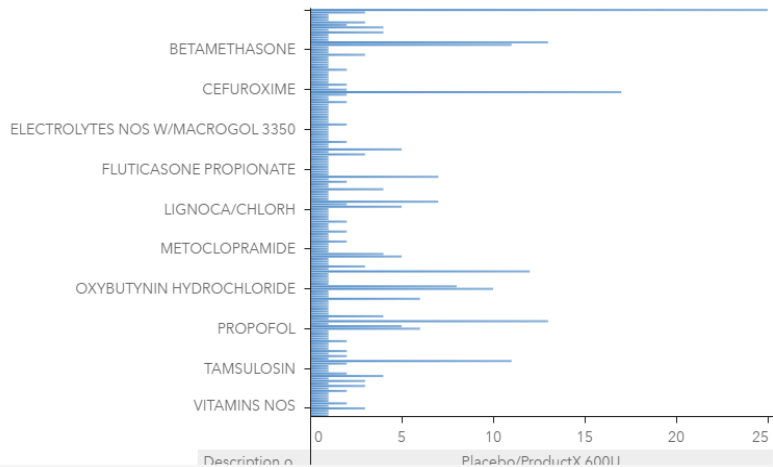


Category for Medication

Subcategory of Medication



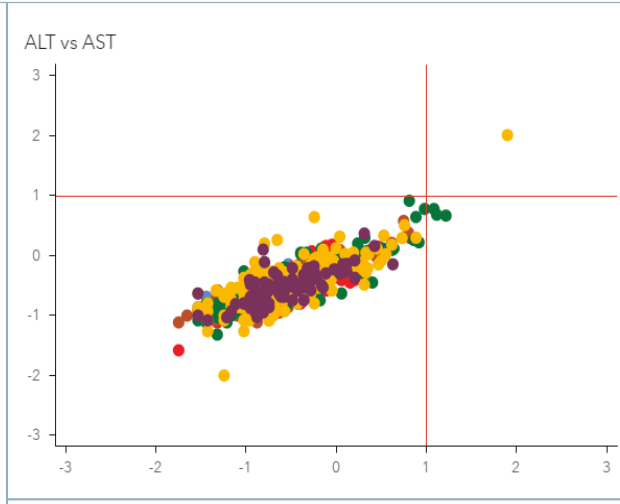
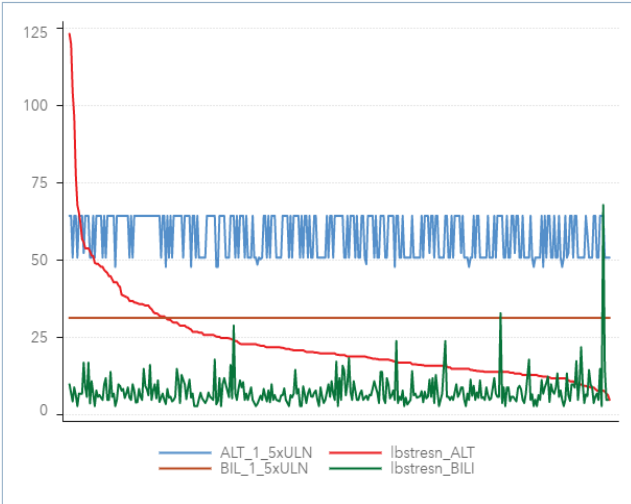
Number of Subjects



Medication Name Listing

Unique Subject Identifier	Age	Sex	Race	Route of Administration	Dose Units	Dosing Frequency per Interval	Dose per Administration
STUDY1-840039000...	72	F	WHITE	ORAL	mg	BID	100
STUDY1-840039000...	72	F	WHITE	ORAL	mg	QD	139,28571429
STUDY1-840039000...	72	F	WHITE	INTRAMUSCULAR	U	ONCE	200
STUDY1-380004000...	68	M	WHITE	INTRAVENOUS	g	BID	1
STUDY1-380004000...	68	M	WHITE	TRANSDERMAL	ug	ONCE	50
STUDY1-840001000...	68	F	WHITE	ORAL	mg	PRN	825
STUDY1-380004000...	68	M	WHITE	INTRAVENOUS DRIP	IU	QD	60000
STUDY1-380004000...	68	M	WHITE	INTRAMUSCULAR	g	BID	1
STUDY1-380004000...	68	M	WHITE	ORAL	mg	TID	149,375
STUDY1-840001000...	68	F	WHITE	ORAL	IU	QD	1000
STUDY1-840001000...	68	F	WHITE	ORAL	mg	BID	343
STUDY1-840001000...	68	F	WHITE	ORAL	mg	QD	346,5
STUDY1-380004000...	68	M	WHITE	INTRAVENOUS	g	TID	2
STUDY1-840001000...	68	F	WHITE	ORAL	TABLET	QD	1
STUDY1-380004000...	68	M	WHITE	ORAL	mg	UNKNOWN	0,4
STUDY1-840001000...	68	F	WHITE	SUBLINGUAL	mg	QD	2000

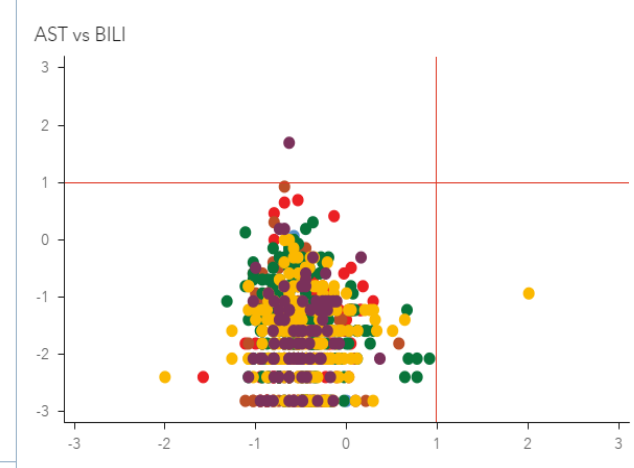
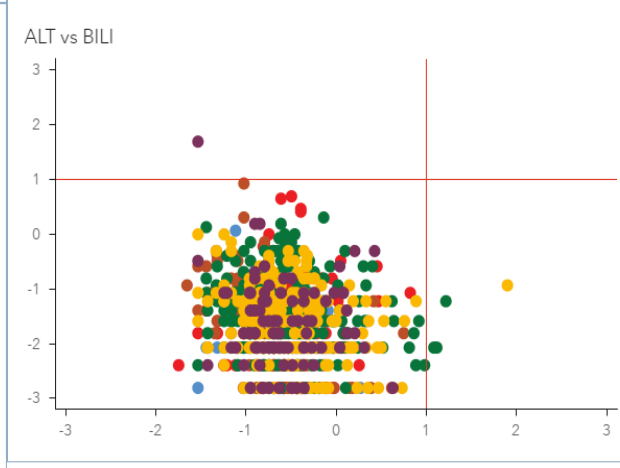
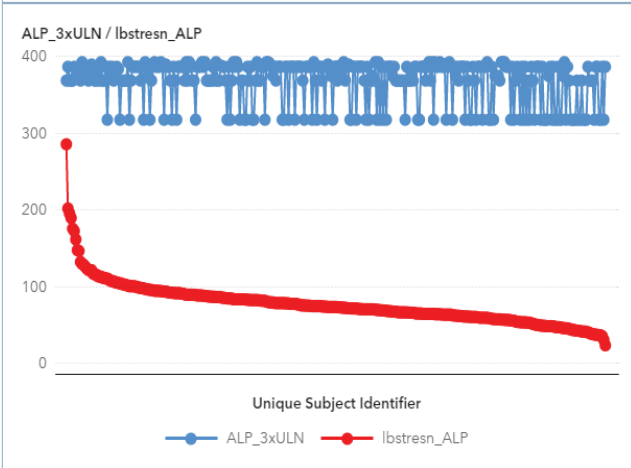
Filtres : Aucune sélection



Hy's Law Criteria

☐ 0,00 100,00 %

Unique Subject Identifier	Description of Planned Arm	Study Sit...	Age	Sex	rfstdt	rfe
STUDY1-12400100001	Screen Fai...	12...	88	F	.	.
STUDY1-12400100002	ProductX...	12...	605	M	22 nov...	23
STUDY1-12400100003	Placebo/P...	12...	450	M	31 janv...	30
STUDY1-12400100004	Screen Fai...	12...	65	F	.	.
STUDY1-12400100005	Screen Fai...	12...	53	M	.	.
STUDY1-12400100006	ProductX...	12...	216	M	13 juin...	13
STUDY1-12400100007	Placebo/P...	12...	252	M	22 août...	11
STUDY1-12400100008	ProductX...	12...	216	M	24 avril...	9
STUDY1-12400100009	Screen Fai...	12...	27	M	.	.



Transforms

Add Transform

Column Transforms

- Change case
- Convert column
- Remove
- Rename
- Split
- Trim whitespace

Custom Transforms

- Calculated column
- Code

Data Quality Transforms

- Casing
- Field extraction
- Gender analysis
- Identification analysis
- Match and cluster
- Matchcodes
- Parsing
- Standardize

Multi-input Transforms

- Append
- Join

Row Transforms

- Analytic partitioning
- Filter
- Transpose
- Unique identifier

Untitled2 DataPrep

1 Join2 Split3 Standardize4 Calculated Column

Source column:Location_Co...

Name of new column:Location_Country_STM

Locale:English (United Kingd...

Definition:Country

Character length:60

Options for new columns

Select an item

Address

ASCII Non-Printable Character Removal

Business Title

Business Title (No Parse)

City

City - State/Province - Postal Code

Country

Country (FIPS)

Country (Internet)

Country (ISO 2 Char)

Country (ISO 3 Char)

Country (ISO Number)

Country (Region)

Country (Sub-Region)

Date (DMY)

Date (MDY)

Date (YMD)

Date/Time (DMY) Basic

Date/Time (DMY) Extended

Date/Time (MDY) Basic

Date/Time (MDY) Extended

Date/Time (YMD) Basic

Date/Time (YMD) Extended

E-mail

Hyphen/Dash Removal

Hyphen/Dash Space Replacement

IBAN (Electronic)

IBAN (Printed)

AZ_DEVIATIONS (session)

Date profiled: 15 Jan 2019 16:21:54

Column	Unique	Null	Blank	Pattern
Area_redacted	5.97% (580)			
Date_Closed	96.40% (886)	5.34% (519)		
Date_Created	99.25% (9643)			
Date_Due	6.91% (669)	0.32% (31)		
Date_of_Incident	7.93% (770)			
Department_redacted	1.63% (158)			
Deviation_Level	0.03% (3)	3.02% (293)		
Event_Category_1	0.06% (6)	3.09% (300)		
Event_Category_2	0.30% (28)	3.09% (300)		
Event_Category_3	2.21% (208)	3.10% (301)		
Item_ID	100.00% (9716)			
Item_State	0.08% (8)			
Location	0.09% (9)			
RCC1_1	0.06% (5)	9.52% (925)		

Input table (AZ_DEVIA...Run Profile

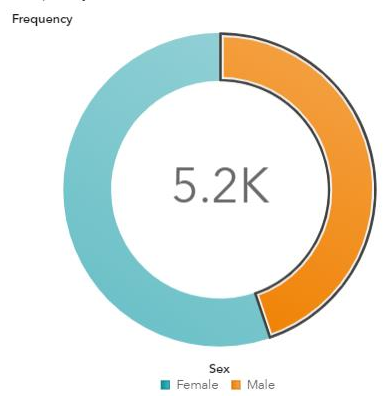
Mode	Standa...	Standa...	Minimum	Maximum	Data Ty
Area 3...			Area 1	Area 99	char
21,42...	197.82	2.06	20,739.61	21,466.60	double
	206.09	2.09	20,737.43	21,466.62	double
21,40...	206.00	2.09	20,779.00	21,508.00	double
	221.50	2.25	16,071.00	21,466.00	double
Dept 65			Dept 1	N/A	char
Minor			Critical	Minor	char
Produ...			Facility and...	Quality Sys...	char
Produ...			Change C...	Utilities	char
Other			APR/PQR ...	Yield Discr...	char
	10,38...	105.34	68,994.00	105,365.00	double
Close...			Awaiting A...	Minor Devi...	char
Argen...			Argentina ...	Global Qu...	char
People			Environment	People	char

Heart Analysis

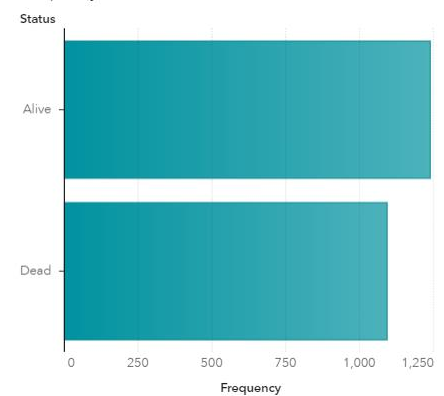
« Data Exploration Automated Analysis Decision Tree Gradient Boosting Neural Network +

Filters: Male 🔍

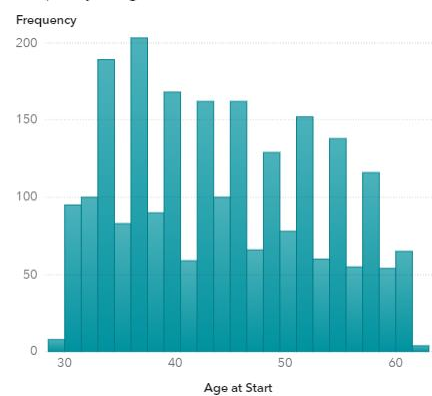
Frequency of Sex



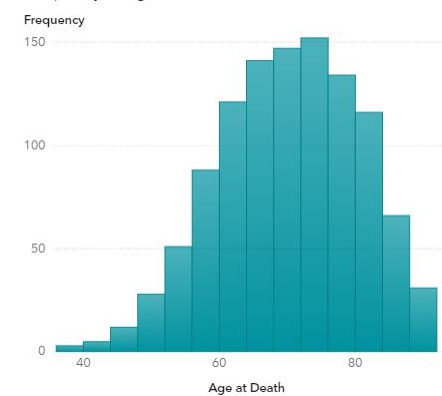
Frequency of Status



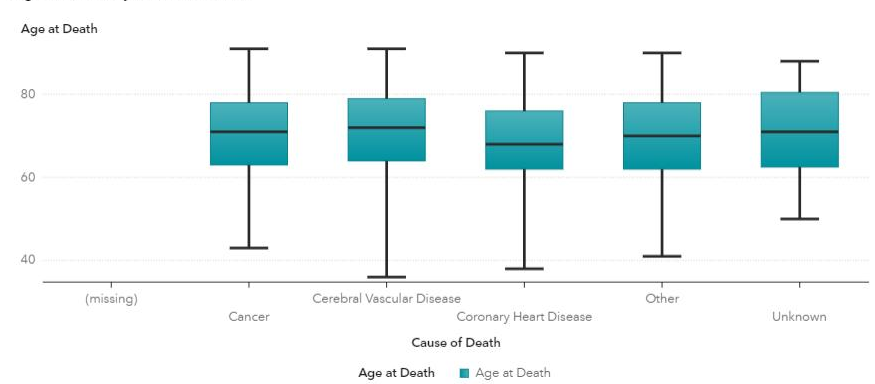
Frequency of Age at Start



Frequency of Age at Death



Age at Death by Cause of Death



Scatter Plot of Selected Measures



Explaining Status

Alive

61.78%

Overall, **Status** has a 61.78% chance (3.2K out of 5.2K cases) of being **Alive**. Age at Start, Systolic, Diastolic, Blood Pressure Status, Cholesterol, Sex and eight other predictors best explain **Status**.



Groups by Chance of Status

80.84%

If Age at Start is less than 47, Systolic is less than 140, then Status has a 80.84% chance (2.1K out of 2.6K cases) of being Alive.

76.70%

If **Age at Start** is less than 47, Smoking is 0, 1, 5, 10, or 35, Systolic is between 140 and 160, then Status has a 76.70% chance (237 out of 309 cases) of being Alive.

72.37%

If Systolic is greater than or equal to 140, Age at Start is less than 39, Smoking is 15 or 20, then Status has a 72.37% chance (55 out of 76 cases) of being Alive.

69.01%

If **Age at Start** is less than 47, Smoking is 0, 1, 5, 10, or 35, Systolic is greater than or equal to 160, Cholesterol is less than 221, then Status has a 69.01% chance (49 out of 71 cases) of being Alive.

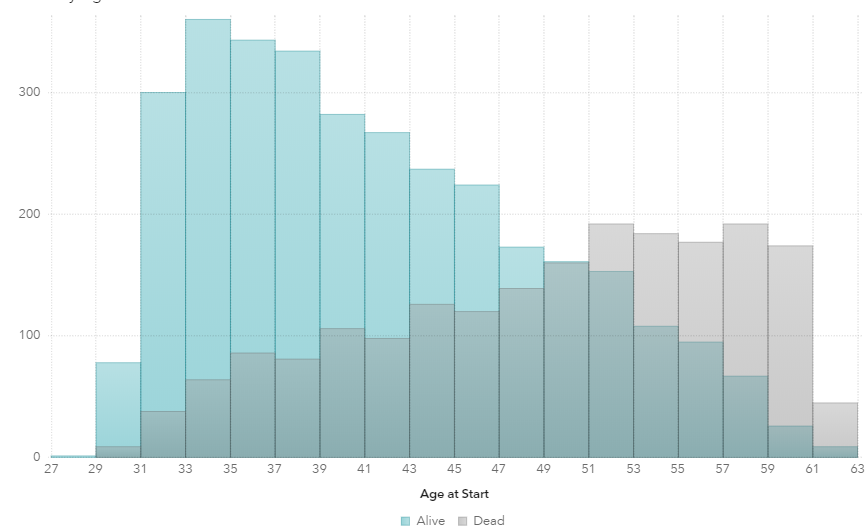
18.75%

If Age at Start is greater than or equal to 55, Sex is Female, Systolic is greater than or equal to 154, then Status has a 18.75% chance (30 out of 160 cases) of being Alive.

11.22%

If Age at Start is greater than or equal to 55, Sex is Male, then Status has a 11.22% chance (33 out of 294 cases) of being Alive.

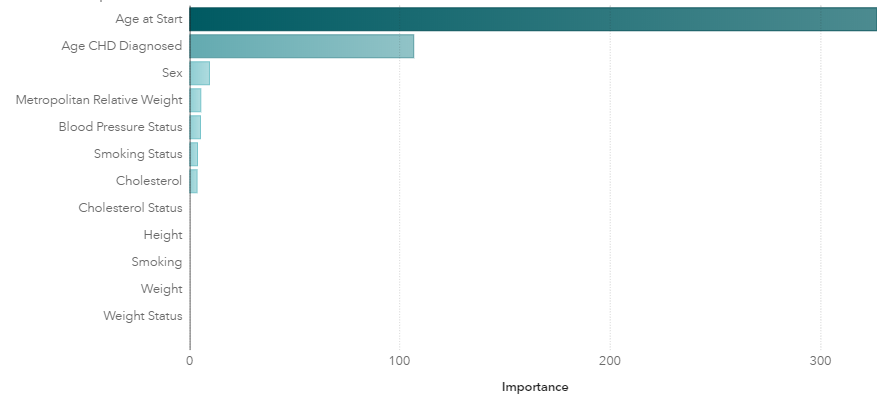
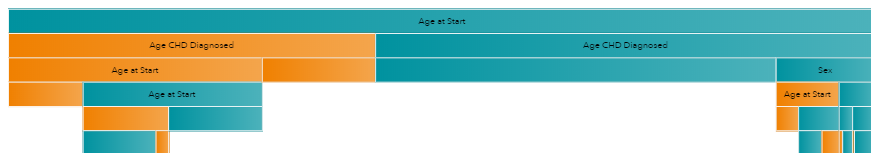
Status by Age at Start



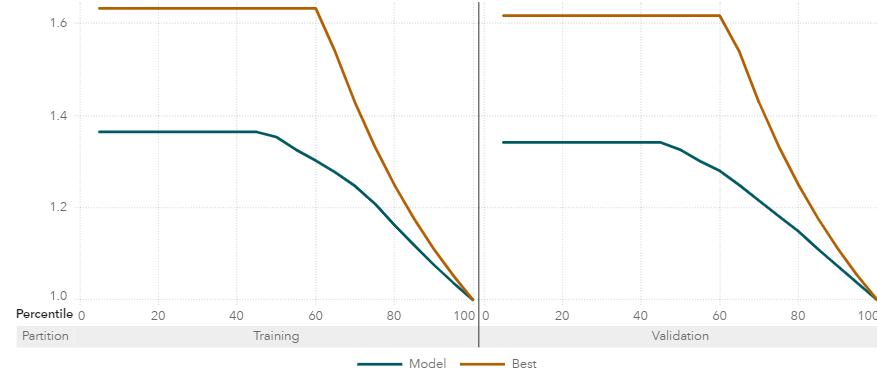
The average Age at Start when Status is Alive is 41, with a minimum of 28 and a maximum of 62. The average Age at Start when Status is Dead is 47, with a minimum of 29 and a maximum of 62.

«
Data
Objects
Outline

[Create pipeline](#)



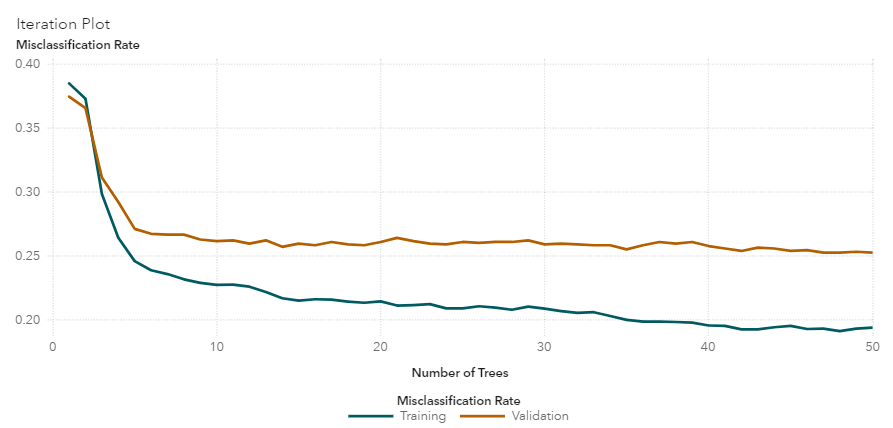
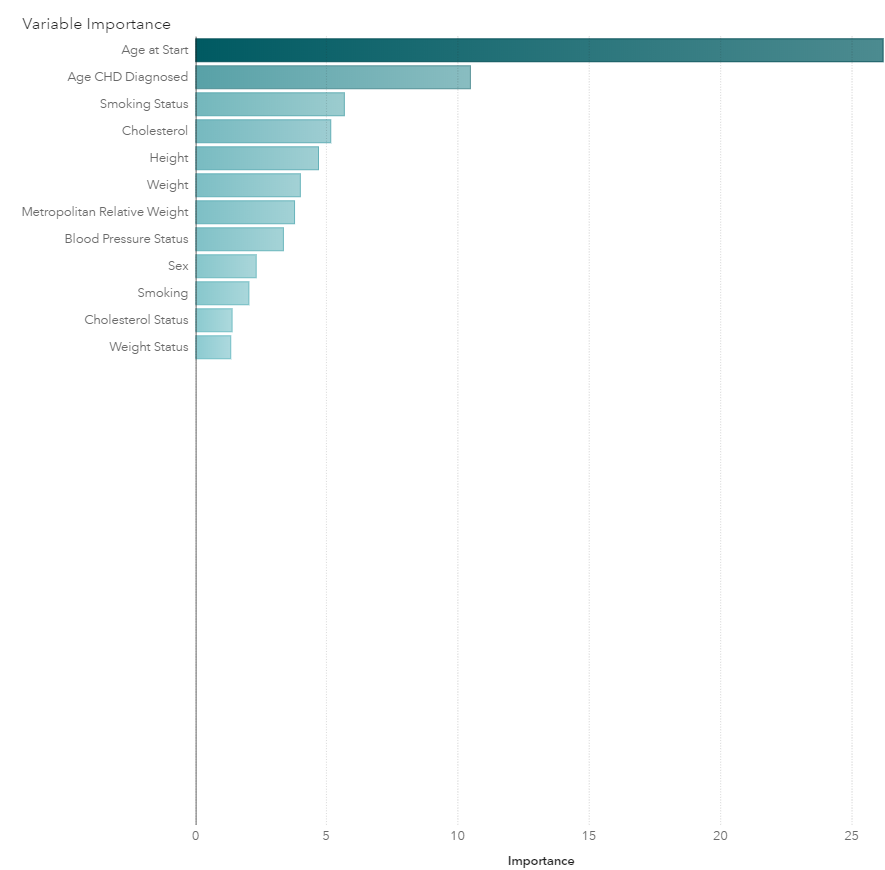
Cumulative Lift



Heart Analysis

« Data Exploration Automated Analysis Decision Tree **Gradient Boosting** Neural Network +

Gradient Boosting Status (event=Alive) Misclassification Rate **0.1939** Observations Used **5,209** [Create pipeline](#)

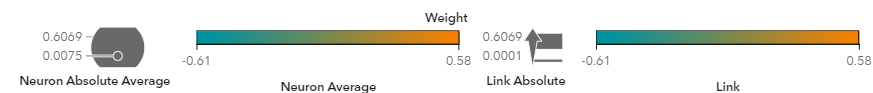
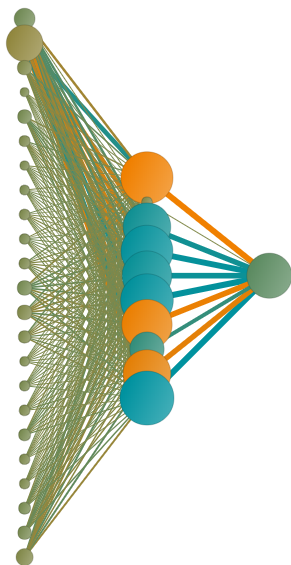


Heart Analysis

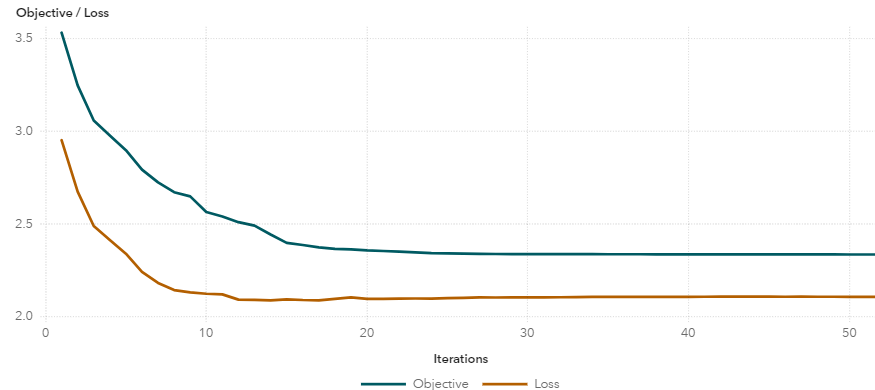
« Data Exploration Automated Analysis Decision Tree Gradient Boosting **Neural Network** +

Neural Network Status (event=Alive) Misclassification Rate 0.2768 Observations Used 1,404 Unused 3,805 Create pipeline

Network



Iteration Plot



Lift

