



SAS[®] Model Manager: Quick Start Tutorial

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Overview

This Quick Start Tutorial is an introduction to some of the primary features of SAS Model Manager. The tutorial covers basic tasks that are related to model management within an enterprise computing environment.

In this tutorial, you complete the following steps:

- 1 [Download the tutorial files.](#)
- 2 [Sign in to SAS Model Manager.](#)
- 3 [Import data.](#)
- 4 [Create a new project.](#)
- 5 [Specify model usage properties for your project.](#)
- 6 [Import models.](#)
- 7 [Set model properties.](#)
- 8 [Analyze training data on page 15.](#)
- 9 [Compare models.](#)
- 10 [Test a model.](#)
- 11 [Set a champion model.](#)
- 12 [Publish a champion model.](#)
- 13 [Add KPI alert rules to your project on page 25.](#)
- 14 [Monitor performance of a champion model.](#)

Here are additional exercises:

- [Evaluate and deploy a Python model.](#)

- Use [SAS Workflow](#) to step through a model life-cycle process.

Download the Tutorial Files

The ZIP file QuickStartTutorial.zip contains the tutorial data sets, sample models, and workflow definitions. It is available at <https://support.sas.com/en/software/model-manager-support.html#documentation>. Before you begin the tutorial, extract the tutorial files to a computer that is accessible to SAS Model Manager users.

- 1 Create a folder on your machine to store the tutorial files.
- 2 Save the QuickStartTutorial.zip file into the folder that you created.
- 3 Extract the contents of the QuickStartTutorial.zip file. In Windows Explorer, right-click **QuickStartTutorial.zip**, and select **WinZip** ⇒ **Extract to here**.

Windows creates a folder called QuickStartTutorial that contains the tutorial data and sample models. In Step 3 of the tutorial, you use SAS Visual Analytics to import the data.

Note: The ZIP file contains SAS Visual Data Mining and Machine Learning sample models, as well as open-source sample models. Using open-source models requires some additional steps. The optional exercise “[Evaluate and Deploy a Python Model](#)” on page 38 demonstrates how to evaluate and deploy a Python model. For more information about using open-source models with SAS Model Manager, see “[Concepts: Open-Source Models](#)” in *SAS Model Manager: User's Guide*.

Sign In to SAS Model Manager

Note: If you are already signed in to another SAS web application, you can access SAS Model Manager by clicking  and selecting **Manage Models**.

To sign in to SAS Model Manager:

- 1 In the address bar of your web browser, enter the URL for SAS Model Manager and press **Enter**. The Sign In page appears.

Note: Contact your system administrator if you need the URL for SAS Model Manager. The default URL is `https://host_name:port/SASModelManager`. The last part of the URL (the application name) is case sensitive. If the default port of 80 is used during configuration, you do not need to include the colon and port in the URL.

- 2 Enter a user ID and password.

4

- 3 Click **Sign In**.
- 4 (Optional) If this is your first time signing in to SAS Model Manager, the Welcome to SAS window appears. Here you can set up a profile, which enables you to customize some settings.

Note: The SAS Model Manager Home page appears the first time you sign in to the web application. The page that you are on when you sign out of SAS Model Manager determines the page that is displayed the next time you sign in. For more information, see [“SAS Model Manager Home” in SAS Model Manager: User’s Guide](#).

Import Data

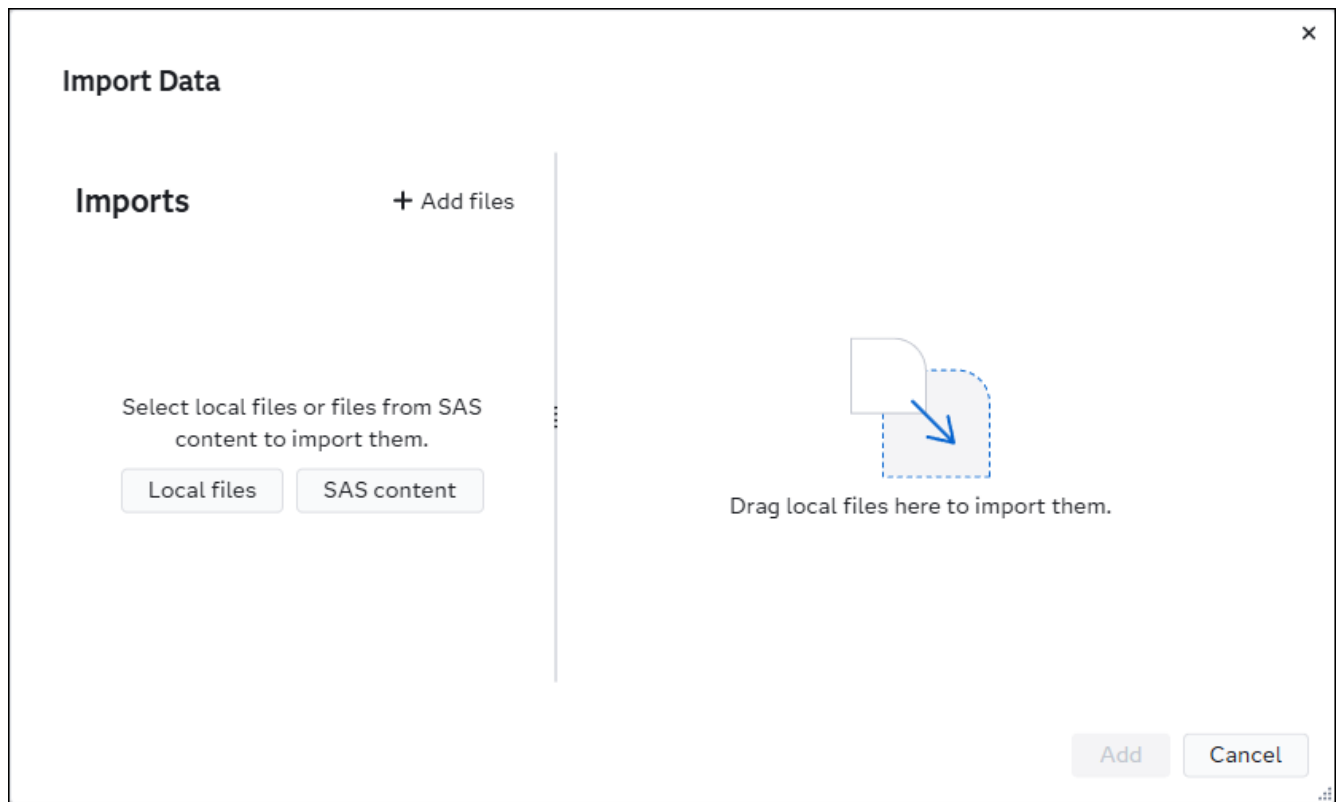
- 1 Click  to navigate to the Projects category view.
- 2 In the toolbar above the table, click  and select **Manage data**. The Manage Data window appears.

Note: You can access the Manage Data window only after a project has been added to the common model repository. If you have a new installation you can import your data after you create a project or you can

click  and select **Manage Data**.

.

-
- 3 Click **Import data**.



- 4 Drag the following files from the `\QuickStartTutorial\Data` directory where you previously extracted the tutorial files.

TIP You can also click **Local files** and navigate to the file location.

- `hmeqperf_1_q1.sas7bdat`
- `hmeqperf_2_q2.sas7bdat`
- `hmeqperf_3_q3.sas7bdat`
- `hmeqperf_4_q4.sas7bdat`
- `hmeq_test.sas7bdat`
- `hmeq_train.sas7bdat`

- 5 Make sure that the target location is set to the default library location `cas-shared-default/Public`.

Note: You can accept the default format or select a target format that is appropriate for the source data. Not all source data should be saved to some formats, even if they are supported by the target caslib. For example, the CSV format might be supported, but you cannot save a binary image file to a CSV target file and get useful data.

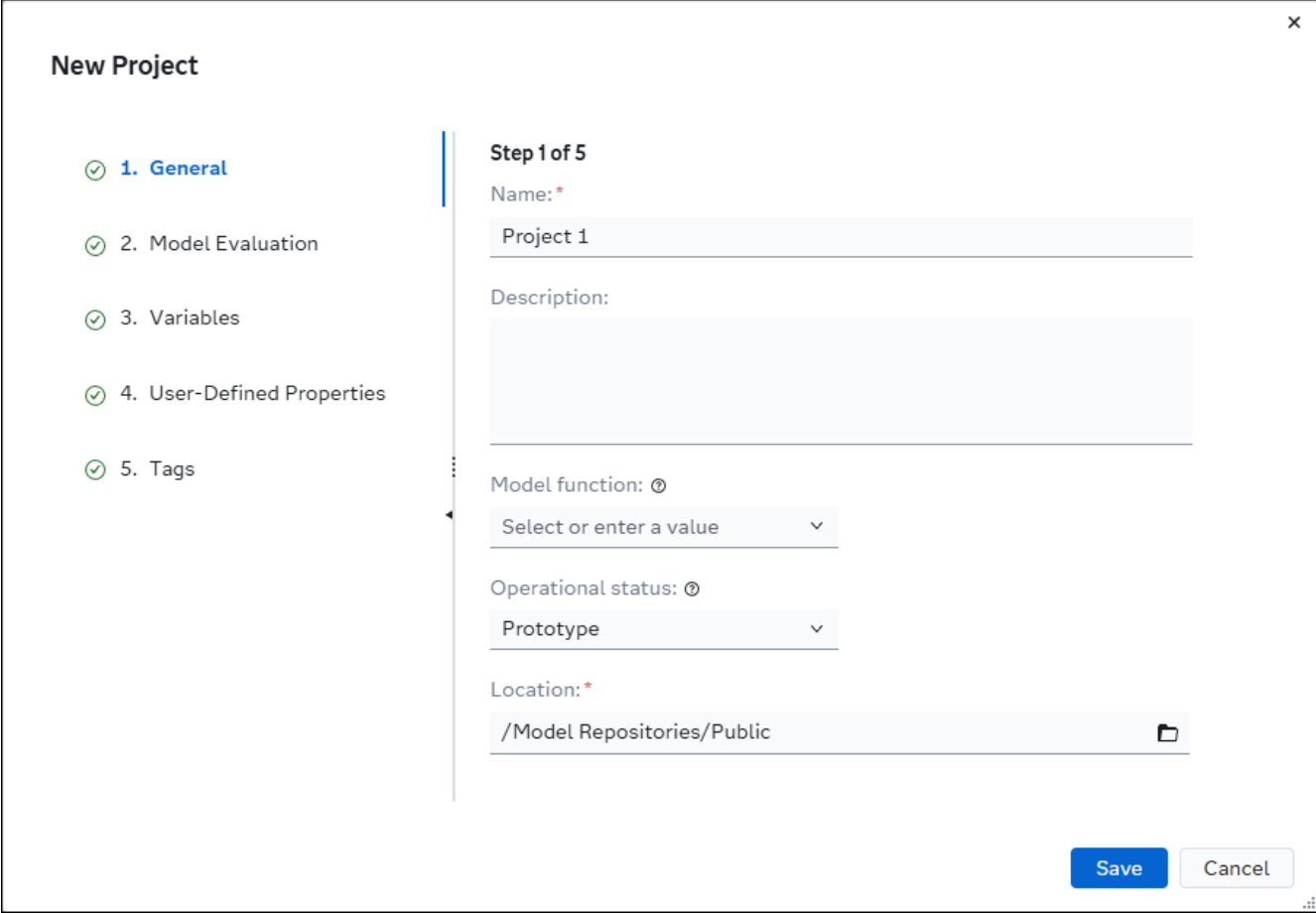
- 6 Click **Import all**. By default, the tables are imported into the library `cas-shared-default/Public`.
- 7 Click **Add** and then click **Close** in the Manage Data window.

See Also

- [“Import Data” in SAS Model Manager: User’s Guide](#)
- [Getting Started with SAS Data Preparation for the SAS Viya Platform](#)
- [“Importing Local Files” in SAS Data Hub: User’s Guide](#)

Create a New Project

- 1 Click  to navigate to the Projects category view.
- 2 Click **New project**. The New Project wizard appears.



New Project

1. General

2. Model Evaluation

3. Variables

4. User-Defined Properties

5. Tags

Step 1 of 5

Name: *

Project 1

Description:

Model function: ⓘ

Select or enter a value

Operational status: ⓘ

Prototype

Location: *

/Model Repositories/Public

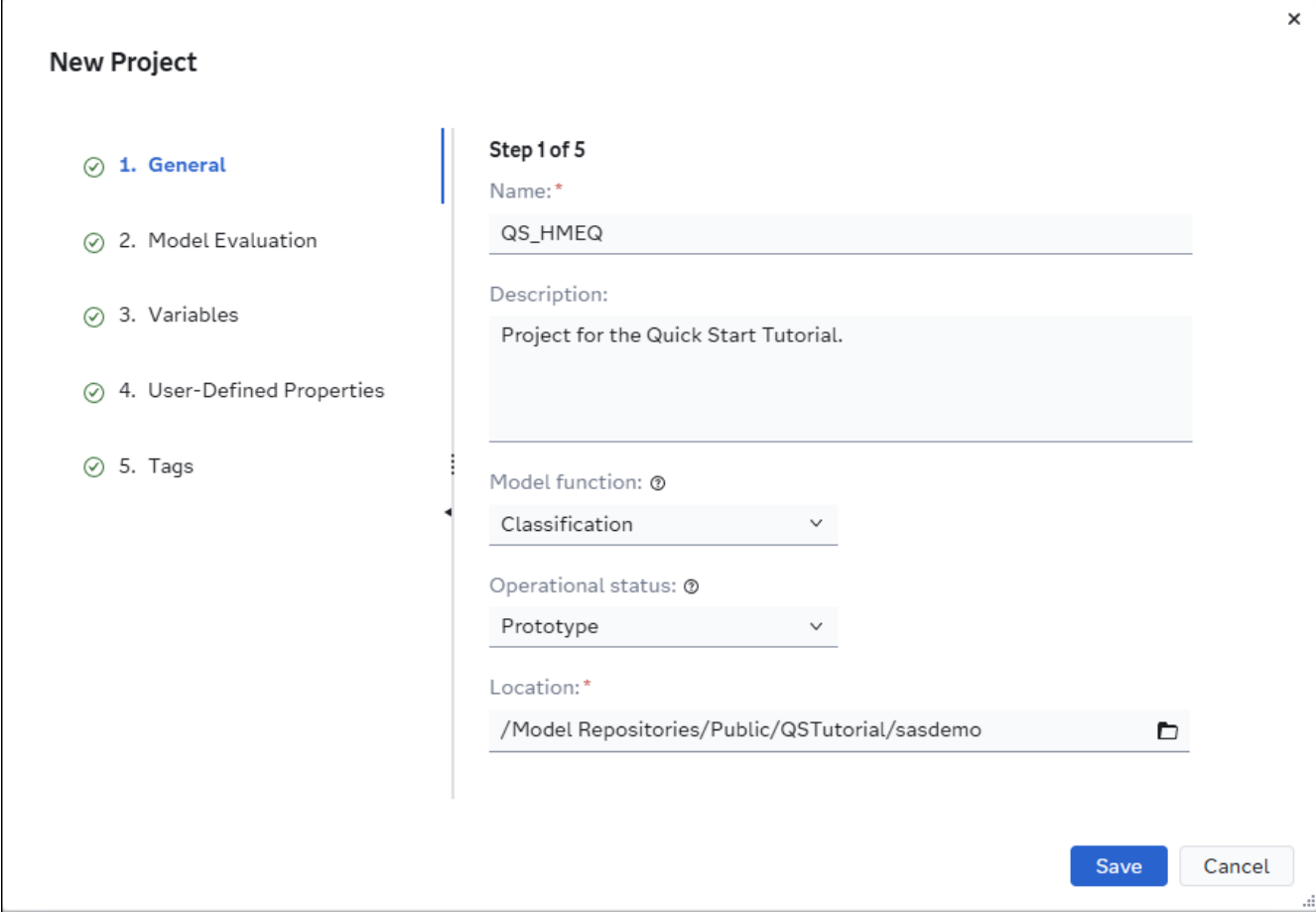
Save Cancel

- 3 On the **General** page, enter **QS_HMEQ** for the name of the project.
- 4 (Optional) Enter a description for the project.
- 5 Select **Classification** for the model function.
- 6 Accept the default value of **Prototype** for the operational status.

- 7 Click , and select the default repository folder (for example, **Public**).

Note: For information about creating a new custom repository, see [“Create a New Repository” in SAS Model Manager: User’s Guide](#).

- 8 Click  and select **Folder** to create a new folder with the name **QSTutorial**.
- 9 Open the **QSTutorial** folder and click  and select **Folder** to create a new folder. Enter your user ID for the name (for example, **sasdemo**).
- 10 Select the new folder and click **OK**.



New Project

✓ 1. **General**

✓ 2. Model Evaluation

✓ 3. Variables

✓ 4. User-Defined Properties

✓ 5. Tags

Step 1 of 5

Name: *

QS_HMEQ

Description:

Project for the Quick Start Tutorial.

Model function: ⓘ

Classification

Operational status: ⓘ

Prototype

Location: *

/Model Repositories/Public/QSTutorial/sasdemo

Save Cancel

- 11 Click the **Model Evaluation** page and specify values for each setting:

Note: If you do not specify values for these settings when creating a project, you must specify them before running a performance definition.

- a Select a default training table. Click , enter **HMEQ_TRAIN** in the search box, and select it. Click **OK**.

TIP If the desired data table is not available, you can import the table from the Choose Data window. The table is then listed within the results in the Choose Data window and can be selected as the data table for the project. For more information, see [“Overview of SAS Data Hub” in SAS Data Hub: User's Guide](#).

- b Select **BAD** for the target variable.
- c Select **Binary** for the target level.
- d Enter 1 for the target event value.
- e (Optional) Enter target values such as 0, 1.
- f Specify values for the model assessment criteria:
 - Select **Misclassification** for the assessment indicator.
 - Select **Greater than** for the alert condition.
 - Enter 0.2 for the alert threshold.

New Project

1. General

2. **Model Evaluation**

3. Variables

4. User-Defined Properties

5. Tags

Step 2 of 5

Default training table:
cas-shared-default/Public/HMEQ_TRAIN Clear

Target variable:
BAD

Target level:
Binary

Target event value:
1

Target values:

MODEL ASSESSMENT CRITERIA

Assessment indicator:
Misclassification

Alert condition:
Greater than

Alert threshold:
0.2

Save Cancel

12 Click the **Variables** page.

Note: If you do not specify project variables on this page, you are prompted to set them when you set a model as the project champion or as a challenger.

a Select input variables:

- 1 Click **Browse**. The **Choose Input Variables** window appears.
- 2 Select all of the variables from the default training table.
- 3 Click **OK**.

b Select output variables:

- 1 Click **Browse**. The **Choose Output Variables** window appears.
- 2 Click **Add custom variables**. The Add Custom Variables window appears.

- 3 Specify the following information for the variable.

Name	EM_EVENTPROBABILITY
Data type	Decimal
Length	12
Measurement	(none)

- 4 Click **Add** and then click **OK**.
- 5 Select **EM_EVENTPROBABILITY** from the list and click **OK**.
- c Select **EM_EVENTPROBABILITY** for the output event probability variable.

New Project

1. General

2. Model Evaluation

3. **Variables**

4. User-Defined Properties

5. Tags

Step 3 of 5

Input variables:

12 items selected Browse

Output variables:

1 items selected Browse

Output event probability variable:

EM_EVENTPROBABILITY

Save Cancel

- 13 (Optional) Click the **User-Defined Properties** page to add properties.

TIP You can also add user-defined properties after you create a project. For more information, see [“Add User-Defined Properties” in SAS Model Manager: User’s Guide](#).

- 14 (Optional) Click the **Tags** page to add tags.

Enter a value and select an existing tag, or press Enter to add a new tag. Repeat this step for additional tags.

Enter a value and select an existing tag, or press Enter to add a new tag. ⓘ

Tag1 x Tag2 x

Note: The tag name can contain only alphanumeric characters, double-byte characters, an underscore (_), a hyphen (-), and a period (.). Spaces are not allowed.

TIP You can also add tags after you create a project. For more information, see [“Add Tags to a Project” in SAS Model Manager: User’s Guide](#).

15 Click **Save**. The project opens.

See Also

[“Working with Projects” in SAS Model Manager: User’s Guide](#)

Specify Model Usage Properties

- 1 On the **Properties** tab of the **QS_HMEQ** project, click the **Model Usage** page.
- 2 Specify values for the following properties:
 - Model purpose
 - Intended use
 - Expected benefit
 - Out-of-scope use cases
 - Limitations
 - Model responsible party
- 3 Click .

Note: The values of the model-level properties are inherited from the project-level properties. However, model-specific information can be specified for each property value at the model level. The **Model responsible party** property is read-only at the model level, if the model is located within a project. The information specified in this section at the model-level is surfaced on the **Model Card** tab of a model object.

See Also

[“Specify Model Usage Properties” in SAS Model Manager: User’s Guide](#)

Import Models

To import models into a project:

Note: By default the models are imported into the latest project version (for example, **Version 1 (1.0)**).

- 1 On the **Models** tab of the **QS_HMEQ** project, click **Add models** and select **Import** from the drop-down list. The Import Models window appears.
- 2 Select models to import.
 - a Click  and navigate to the location of the model files (for example, `<drive:> \QuickStartTutorial\Models\`) in your local file system.
 - b Select the **QS_Reg1.zip** file that contains your model contents and click **Open**.

Note: Select only one file at a time in the Open window. The name of the selected file is used as the default model name. You can enter a different name in the **Import as** box or you can rename the model from the **Models** page later.

- 3 Click **+ Add model** to add rows so that you can import more models.
- 4 Repeat steps 2 and 3 to import the model contents from the following files:
 - **QS_Tree1.zip**
 - **QS_Reg_PyModel.zip**
 - **QS_Reg_PMMLModel_v4.x.xml**

Note: You can select v4.2 or v4.4 of the sample PMML model.

- **QS_DTree_RModel**

×

Import Models

Select one file at a time to import the model contents: ⓘ

File:

QS_Reg1.zip

📁

🗑

Import as: * QS_Reg1

File:

QS_Tree1.zip

📁

🗑

Import as: * QS_Tree1

File:

QS_Reg_PyModel.zip

📁

🗑

Import as: * QS_Reg_PyModel

File:

QS_Reg_PMMLModel_v4.4.xml

📁

🗑

Import as: * QS_Reg_PMMLModel

File:

QS_DTree_RModel.zip

📁

🗑

Import as: * QS_DTree_RModel

+ Add model

Import

Cancel

TIP To remove extra lines that do not contain a file to import, click 🗑 before you click **Import**.

5 Click **Import**.

Here is an example of the **Models** tab, after the models have been imported.

QS_HMEQ

Models

Variables

Properties

Files

Scoring

Performance

History

Filter name

Version: Version 1 (1.0)

Add models

Compare

Publish

☐	Name	Role	Model Function	Project Version	Score Code Type	Algorithm	Date Modified	Modified By	Tags
☐	QS_DTree_RModel		Classification	Version 1 (1.0)	R	Decision Tree	Nov 20, 2025, 05:05:55 PM	sasdemo	R
☐	QS_Reg_PMMLModel		Classification	Version 1 (1.0)	DATA step	Logistic regressi...	Nov 20, 2025, 05:05:52 PM	sasdemo	DATA step
☐	QS_Reg_PyModel		Classification	Version 1 (1.0)	Python	Logistic regressi...	Nov 20, 2025, 05:05:56 PM	sasdemo	Python
☐	QS_Reg1		Classification	Version 1 (1.0)	DATA step	Logistic regressi...	Nov 20, 2025, 05:06:00 PM	sasdemo	DATA step
☐	QS_Tree1		Classification	Version 1 (1.0)	DS2 multi-type	Decision tree	Nov 20, 2025, 05:06:21 PM	sasdemo	DS2 multi-type

See Also

“Import Models” in *SAS Model Manager: User’s Guide*

Set Model Properties

- 1 Click the name of the model **QS_Reg1**. The model object opens.
- 2 Click the **Properties** tab.
- 3 On the **General** page, verify that the following properties are set:

Property	Value
Score code type	■ DATA step for the QS_Reg1 and QS_Reg_PMMLModel models ■ DS2 multi-type for the QS_Tree1 model ■ Python for the QS_Reg_PyModel model ■ R for the QS_DTree_RModel model
Training table	<code>cas-shared-default/Public/HMEQ_TRAIN</code> To select a training table. Click , enter HMEQ_TRAIN in the search box, and select it. Click OK.
Target variable	BAD
Target level	Binary

Property	Value
Target event value	1
Output event probability variable	■ EM_EVENTPROBABILITY for the QS_Reg1, QS_Tree1, QS_Reg_PyModel, and QS_DTree_RModel models ■ Probability_1 for the QS_Reg_PMMLModel model

4 (Optional) Click the **Model Usage** page to review the model usage properties and make any necessary changes.

5 (Optional) Click the **Tags** page to add tags.

Enter a value and select an existing tag, or press Enter to add a new tag. Repeat this step for additional tags.

Note: The tag name can contain only alphanumeric characters, double-byte characters, an underscore (_), a hyphen (-), and a period (.). Spaces are not allowed.

6 If you made changes, click .

7 To return to the **QS_HMEQ** project, click .

8 Repeat steps 1 through 5 for the following models:

- **QS_Tree1**
- **QS_Reg_PyModel**
- **QS_Reg_PMMLModel**
- **QS_DTree_RModel**

See Also

[“Modifying Model Properties” in SAS Model Manager: User’s Guide](#)

Analyze Training Data

To populate the **Data Summary** section of the **Model Card** tab for the models that you imported, you must analyze the training data. If you want to view the information privacy for the variables that are marked to be assessed for bias, the information privacy for those variables must be set for the HMEQ_TRAIN asset in SAS Information Catalog before you analyze the data.

Note: Only SAS administrators can set the classifications and information privacy in SAS Information Catalog. Other users can view only the classifications and information privacy.

Tutorial for Authenticated Users

Here are the steps for how you can populate the **Data Summary** section of the model card:

- 1 Verify that the training table model property is set for the imported models. See: [“Set Model Properties”](#).
- 2 On the **Model Card** tab of the model, select the **Data Summary** section.
- 3 (Optional) Send a request to a SAS Administrator to set the information privacy and classifications for the variables in the HMEQ_TRAIN table that you want to assess for bias. See: [“Tutorial for SAS Administrators”](#).
- 4 Click **Analyze data** and then click **Continue**.

Note: If you need to reanalyze the training data you can do that using SAS Data Governance. For more information, see [“Analyze Assets” in SAS Data Governance: User’s Guide](#).

Tutorial for SAS Administrators

Here are the steps for how a SAS administrator can set the classifications and information privacy for your variables:

- 1 Click  and select **Discover and Govern Data**.
- 2 Click the **HMEQ_TRAIN** asset to open it.
- 3 (Optional) Edit the description of the asset in the **Properties** pane.
- 4 Click **Analyze data**. Click **Submit request**.

Note: If you need to reanalyze the training data you can do that using SAS Data Governance. For more information, see [“Analyze Assets” in SAS Data Governance: User’s Guide](#).

- 5 When the analysis has completed, click **View the analysis**.
- 6 Set the classifications and information privacy for the variables that you want to assess for bias.
For more information, see [“Reviewing and Managing Classifications” in SAS Data Governance: User’s Guide](#).

Table 1 Sample Classification and Information Privacy Values for Variables

Variable Name	Classification	Information Privacy
JOB	Salary	Sensitive
LOAN	Company	Candidate
REASON	Individual	Private

See Also

[Generating Model Card Content](#)

Compare Models

- 1 On the **Models** tab of the **QS_HMEQ** project, select the **QS_Reg1** and **QS_Tree1** models.
- 2 Click **Compare**. The **Compare** page appears.

QS_HMEQ		
Models	QS_Reg1 (1.0)	QS_Tree1 (1.0)
▼ Model Properties		
Name	QS_Reg1	QS_Tree1
Model function	Classification	Classification
Score code type	DATA step	DS2 multi-type
Project version	Version 1 (1.0)	Version 1 (1.0)
Location	/Model Repositories/Public/QSTutorial/sasdemo/QS_HMEQ/Version 1	/Model Repositories/Public/QSTutorial/sasdemo/QS_HMEQ/Version 1
Date modified	Nov 20, 2025, 05:06:00 PM	Nov 20, 2025, 05:06:21 PM
Modified by	sasdemo	sasdemo
Date published		
Description		
> User-Defined Properties		
> Input Variables		
> Output Variables		
> Target Variable		
> Fit Statistics		
> Plots		

- 3 Review the differences for the following types of model information:

Note: Section titles appear whether the section contains content.

TIP Click ► to expand a section, and click ◀ to collapse a section.

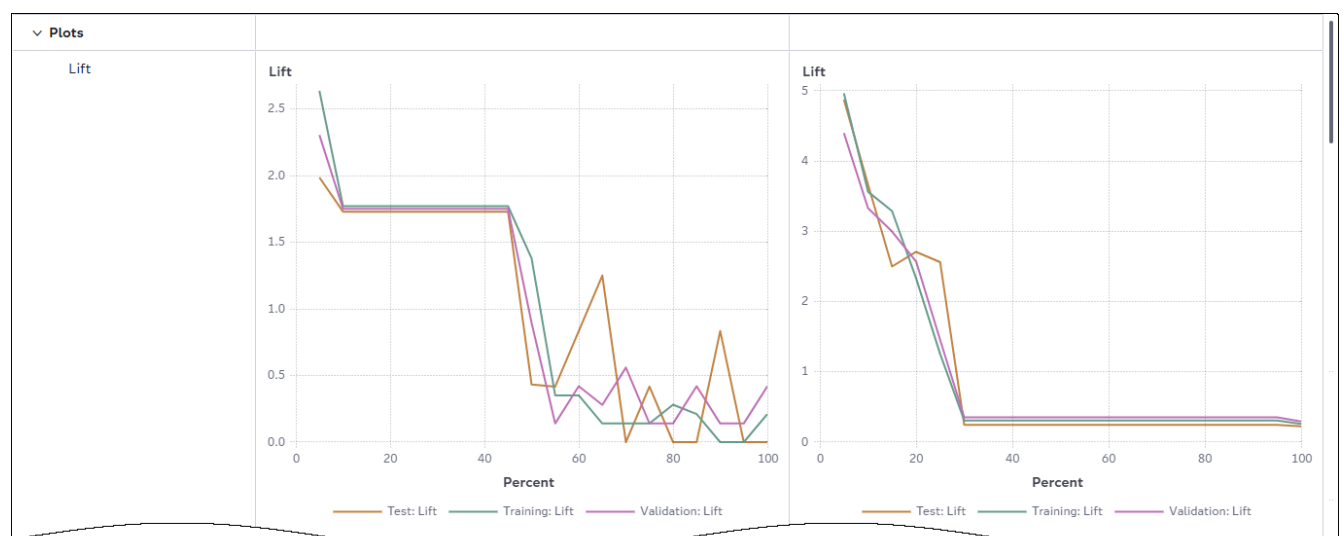
- Model Properties
- User-Defined Properties
- Input Variables
- Output Variables
- Target Variable
- Fit Statistics

Note: This section compares the fitness statistics for the chosen models.

- Plots

Note: This section contains both Lift and ROC plots.

Note: The model comparison output includes fit statistics and plots (Lift and ROC) for the models only if the required JSON model files (dmcas_fitstat.json, dmcas_lift.json, dmcas_roc.json) are available. The models that are used in this exercise already contain these files. For information about how these files can be generated, see [“Compare Models” in SAS Model Manager: User’s Guide](#).



4 Click × to close the page.

See Also

“Compare Models” in *SAS Model Manager: User's Guide*

Test a Model

By default, only the user who creates a test definition can view, update, or delete the test definition, as well as run the test and view the test results. For more information, see “Default Permissions” in *SAS Model Manager: Administrator's Guide*.

- 1 Select the **Scoring** tab of the **QS_HMEQ** project, and then click **New test** on the **Tests** tab. The New Test window appears.
- 2 Enter **QS_Test1** for the name of the test.
- 3 (Optional) Enter a description for the test (for example, *Test to determine the project champion model.*).
- 4 Click **Choose model** and select the **QS_Tree1** model to test.
- 5 Select the version of the model to use for the test. Accept the default value of **Use latest version** for this tutorial.
- 6 Select an input table for the test. Click , select **HMEQ_TEST** from the **Public** caslib in the Choose Data window, and then click **OK**.
- 7 Verify that the variables are mapped.

Note: SAS Model Manager automatically maps model input variables to the columns in the input table when the names and data types of the variables match those of the table columns. If any input variables cannot be mapped automatically, a warning message is displayed.

Input table: *

HMEQ_TEST

Variables

 Model input variables must be mapped to the input table columns.
 ×

To map variables:

- a Click **Variables**. The Variable Mappings window appears.
- b For each input variable, select the table column to which the variable should be mapped.
- c Click **OK**.

- 8 (Optional) By default, the library for the output data is the same as that for the input table. Click  to specify a different library to store the new test output table that is created when the test is run. The input table and output data library must be on the same CAS server.

×

New Test

Name: *

Description:

Model: *

Version: ⓘ

Input table: *

Output data library: *

- 9 Click **Run** to save and run the test.

The status of the test is indicated by the icon in the **Status** column.

- 10 When the test has completed, click  in the **Results** column to view the results of the test. The content of the output table is displayed. If you click the **Test Results** section title, information about the test, including the URIs for the test definition and test results are displayed. The test results also include the SAS code that was run by SAS Model Manager and the SAS log that was generated when the code was run.

QS_HMEQ > QS_Test1 Opened items (1)

QS_HMEQ

Test Results

Output

Code

Log

Output Table

BAD	EM_EVENTPROBABI...	EM_CLASSIFICATION	EM_PROBABILITY	P_BAD1	P_BAD0	I_BAD	
1	0.6510067114	1	0.6510067114	0.6510067114	0.3489932886	1	
1	0.6510067114	1	0.6510067114	0.6510067114	0.3489932886	1	
1	1	1	1	1	0	1	
1	1	1	1	1	0	1	
1	0.0612991766	0	0.9387008234	0.0612991766	0.9387008234	0	
1	0.347826087	0	0.652173913	0.347826087	0.652173913	0	
1	0.6510067114	1	0.6510067114	0.6510067114	0.3489932886	1	
1	0.6510067114	1	0.6510067114	0.6510067114	0.3489932886	1	
0	0.6510067114	1	0.6510067114	0.6510067114	0.3489932886	1	
1	0.347826087	0	0.652173913	0.347826087	0.652173913	0	
1	1	1	1	1	0	1	
	0.0612991766	0		0.0612991766	0.9387008234	0	

11 Click **x** to close the page.

See Also

“Test Models” in *SAS Model Manager: User's Guide*

Set a Champion Model

- 1 Click the **Models** tab of a project.
- 2 Select the check box for the **QS_Tree1** model, click **:**, and select **Set as champion**. A warning message is displayed indicating that setting the champion locks the current model version. You can also choose whether to create a new model version.
- 3 Accept the default option to create a new model version, and then click **Yes** to continue to set the champion model.

Note: The Map Output Variables window appears only for a model that has a score code type of DATA step, SAS program, PMML, R or Python. The QS_Tree1 model has a score code type of DS2 multi-type.

- 4 If some of the model input variables are not project input variables, you are prompted to add the input variables to the project.

In the confirmation message, click **Yes**.

Note: If you click **No**, the model is not set as the project champion.

QS_HMEQ									
Models Variables Properties Files Scoring Performance History									
Filter name		Version: Version 1 (1.0)		Add models		Compare		Publish	
☐	Name	Role	Model Function	Project Version	Score Code Type	Algorithm	Date Modified	Modified By	Tags
☐	QS_DTree_RModel		Classification	Version 1 (1.0)	R	Decision Tree	Nov 20, 2025, 05:05:55 PM	S sasdemo	R
☐	QS_Reg_PMMLModel		Classification	Version 1 (1.0)	DATA step	Logistic regression	Nov 20, 2025, 05:53:16 PM	S sasdemo	DATA step
☐	QS_Reg_PyModel		Classification	Version 1 (1.0)	Python	Logistic regression	Nov 20, 2025, 05:05:56 PM	S sasdemo	Python
☐	QS_Reg1		Classification	Version 1 (1.0)	DATA step	Logistic regression	Nov 20, 2025, 06:05:59 PM	S sasdemo	DATA step
☐	QS_Tree1		Classification	Version 1 (1.0)	DS2 multi-type	Decision tree	Nov 20, 2025, 06:04:43 PM	S sasdemo	DS2 multi-type

5 (Optional) Set **QS_Reg1** as a challenger model.

- Select the check box for the **QS_Reg1** model, click **⋮**, and select **Set as challenger**. The Map Output Variables window appears.
- Select the model output variables to map with the project output variables, and then click **Save**.
- If the model input variables are not project input variables, you are prompted to add the input variables to the project.

In the confirmation message, click **Yes**.

Note: If you click **No**, the model is not set as a challenger model.

See Also

[“Set Champion and Challenger Models” in SAS Model Manager: User’s Guide](#)

Publish the Champion Model

Note: Before you can complete this exercise, a CAS publishing destination must be configured by a SAS Administrator. For more information, see [“Configuring Publishing Destinations” in SAS Model Manager: Administrator’s Guide](#).

- On the **Models** tab of the **QS_HMEQ** project, select the champion model **QS_Tree1** and click **Publish**. The Publish Models window appears.
- Select a CAS destination (for example, **CAS_Public**).

Note: You must have Read and Write permission to the caslib that is specified in the CAS publishing destination. For more information, see “CAS Authorization: Host Access” in *SAS Viya Platform: CAS Authorization*.

Publish Models

Destination:
 CAS (CAS_Public) [Details](#)

Tags:
 Press Enter after each tag.

ITEMS TO PUBLISH

QS_Tree1 (1.1)
 Model version to publish:
 1.1 (champion)

☒ Create a new model version after publishing this model

Published name:
 QS_Tree1

☐ Replace item with the same name

Publish Cancel

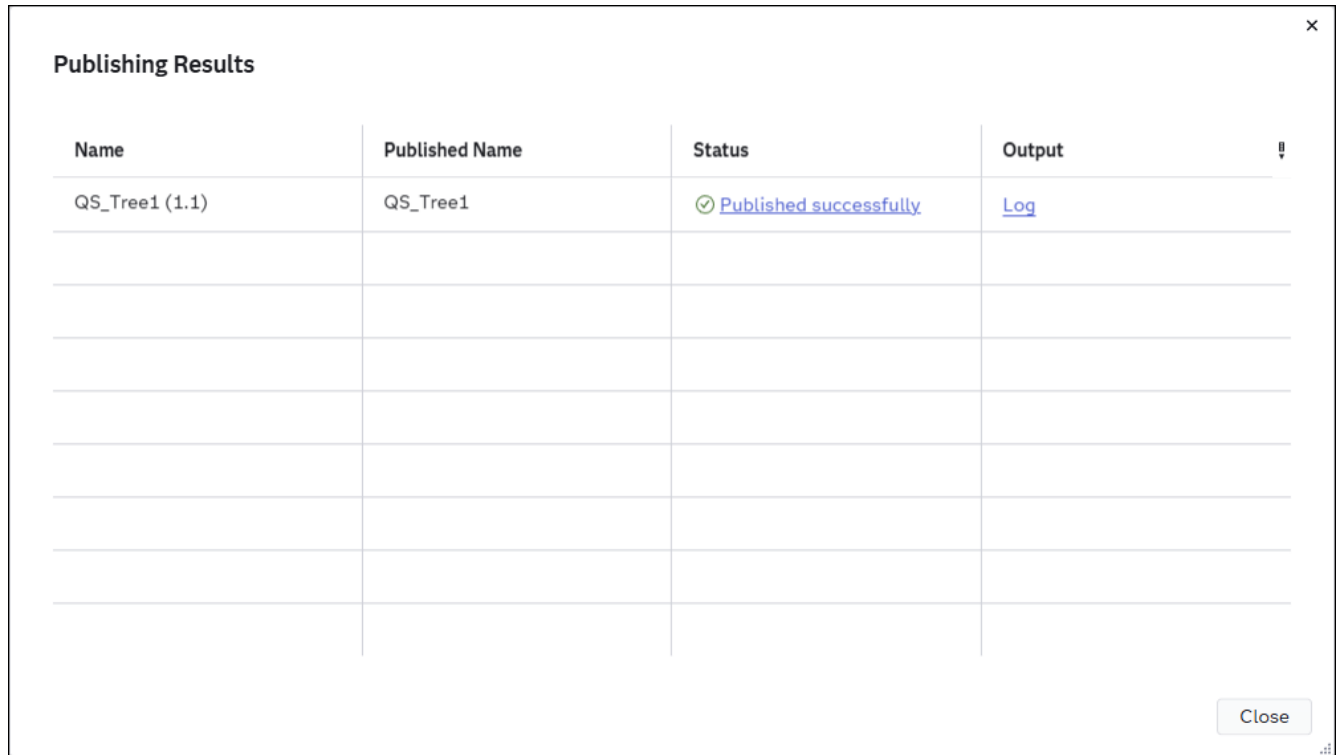
- 3 (Optional) Assign tags to the published model by entering a tag value. Press Enter after each tag.

TIP Tag names cannot start with a period or a hyphen, and cannot contain more than 128 characters. They can contain only alphanumeric characters, the underscore (_), the hyphen (-), and the period (.).

- 4 In the **Items to Publish** section, select a model version to publish. The default value is the latest version of the model.
- 5 Accept the default option to create a new model version after publishing the model.
- 6 (Optional) If you previously published a model with the same published name, you can replace the model. In the **Items to Publish** section, enable the **Replace item with the same name** toggle for each model that you want to replace with the same published name.

- Click **Publish**. The Publishing Results window appears. The status of the publishing request is displayed in the **Status** column.

Note: When you select a CAS destination and click **Publish**, the CAS destination table is automatically reloaded and the newly published item is made available to other applications.

A screenshot of the 'Publishing Results' window. It features a table with four columns: 'Name', 'Published Name', 'Status', and 'Output'. The first row shows 'QS_Tree1 (1.1)' as the Name, 'QS_Tree1' as the Published Name, a green checkmark and 'Published successfully' as the Status, and a 'Log' link as the Output. There are several empty rows below. A 'Close' button is in the bottom right corner.

Name	Published Name	Status	Output
QS_Tree1 (1.1)	QS_Tree1	✓ Published successfully	Log

- When the status changes to **Published successfully**, click **Close**.

TIP When you publish a model, the system creates a publishing validation test. You can edit the publishing validation test to select a test data source and output library. The validation of the model runs within the publishing destination that the model was published to. For more information, see “[Validate Published Models](#)” in *SAS Model Manager: User's Guide*.

See Also

“[About Publishing Models](#)” in *SAS Model Manager: User's Guide*

Add KPI Alert Rules

Note: KPI alert rules and performance monitoring results are required for the **Model Audit** section on the **Model Card** tab of a model.

- 1 Click the **Properties** tab of the **QS_HMEQ** project.

Note: If the **QS_HMEQ** project is not already open, you can open it from the Projects category view or Home page.

- 2 Click the **Model Evaluation** page.
- 3 Click **+** in the **KPI Alert Rules** section. The Add KPI Alert Rule window appears.
- 4 Select a key performance indicator (KPI) category and a specific KPI.

Table 2 Sample Values for KPI Alert Rules

KPI Category	KPI	Variable	Alert Condition	Alert Threshold	Priority	Occurrences
Accuracy	Misclassification	(not applicable)	Greater than	0.3	Low	1
Fairness	Equal opportunity	JOB	Greater than	0.2	Low	1
Model Drift	Input variable stability	YOJ	Greater than	0.2	Low	1

- 5 Click  to select one or more variables to assess.

Note: When selecting a fairness or model drift KPI metric you are also prompted to select the variables to assess. Fairness metrics use variables that are marked to be assessed for bias. Model drift metrics use input variables or output variables depending on which KPI is selected. Verify that the model variables that are marked for bias assessment are also marked at the project level.

- 6 Select an alert condition.
- 7 Enter a value for the alert threshold.
- 8 Select a priority for the KPI alert.
- 9 Enter a value for the number of occurrences after which you want to set an alert for this KPI rule.

- 10 Accept the default rule name or enter your own rule name.
- 11 Click **OK**.
- 12 Repeat steps 3 through 11 for each KPI alert rule that you want to add.
- 13 Click .

See Also

[“Add KPI Alert Rules” in SAS Model Manager: User’s Guide](#)

Monitor Performance of a Champion Model

To monitor performance of a model, you create a performance definition and then run it. The performance results include several charts, such as Variable Distribution, Characteristic, Stability, Lift, Gini, ROC, Kolmogorov-Smirnov (KS), Average Squared Error (ASE), and Feature Contribution.

Note: Additional charts might appear, based on the model function of the project or after the addition of custom charts to the **Performance** tab layout. For more information about the available performance charts, see [“Concepts: Performance Monitoring” in SAS Model Manager: User’s Guide](#).

Import Performance Data

The following data tables must be available in the Public caslib for this exercise. If you did not import them earlier, complete the steps in the [Import Data on page 4](#) exercise.

- hmeqperf_1_q1.sas7bdat
- hmeqperf_2_q2.sas7bdat
- hmeqperf_3_q3.sas7bdat
- hmeqperf_4_q4.sas7bdat

Set Project Properties

- 1 Click the **Properties** tab of the **QS_HMEQ** project.

- 2 On the **Model Evaluation** page, verify that the following properties are set:

Property	Value
Target variable	BAD
Target level	Binary
Target event value	1
Output event probability variable	EM_EVENTPROBABILITY

- 3 Click .

Create a New Performance Definition

IMPORTANT Before you complete this tutorial, make sure that you have set the model properties. For more information, see [“Set Model Properties” on page 14](#).

- 1 Click the **Performance** tab of a project and then click **New definition**. The New Performance Definition window appears.
- 2 On the **General** page, accept the default name for the performance definition or enter a name of your choosing.
- 3 (Optional) Enter a description.

New Performance Definition

Step 1 of 8

Name: *

QS_HMEQ_Performance

Description:

Performance definition for the QS_HMEQ project.

Note: Each time the definition is run, the results are appended to the output data tables. ⓘ

Save Cancel

4 Click the **Tables** page and select **Library with Prefix** as the input data method. This option indicates to use a library that contains input data tables with a specified prefix.

- a Click , select the **cas-shared-default** data source server, and select **Public** as the CAS library for input tables. Click **OK**.

.....

Note: For the library, select the library that you imported the data tables into during the [Import Data](#) tutorial.

.....

- b Enter **hmeqperf** for the prefix.
- c (Optional) Verify that the CAS library for the output tables is set. The default value is **cas-shared-default/ModelPerformanceData**. The input data source library and the output data library must be on the same CAS server.

New Performance Definition

Step 2 of 8

Input Data Method ⓘ

Single Table
Use a specific data table.

Library with Prefix
Use a library that contains tables with a specified prefix.

Library Configuration

CAS library for input tables: ⓘ
cas-shared-default/Public

Prefix: *
hmeqperf
Example formats: "HMEQPERF" or "HMEQ_PERF"

CAS library for output tables: *
cas-shared-default/ModelPerformanceData

Previous Next Save Cancel

- 5 Click the **Models** page and accept the default option **System scores data using selected models** for the **Data scoring method**.

Note: If you decide you want to use scored data, there are additional sample performance data files in the \QuickStartTutorial\Data directory that you extracted at the beginning of the Quick Start tutorial.

- a For the model-selection options, accept the default option **Use Referenced Models**.
- b Accept the default option in order to use the current champion. The latest version of the champion model is used when running performance.
- c (Optional) Select the **All challengers** option to compare and assess the champion and challenger models, and then view a comparison of the models in the performance results. The latest version of the challenger models are used when running performance.

TIP You can also select specific versions of models from a project. For more information, see [“Create a New Performance Definition” in SAS Model Manager: User’s Guide](#).

New Performance Definition

Step 3 of 8

Data scoring method:

☒ System scores data using selected models

☐ Use scored data from input tables

Model-Selection Options

Use Referenced Models
Select from the champion and challenger models.

Use Specific Models
Select specific versions of models from this project.

Referenced Models

☒ Current champion: QS_Tree1

☒ All challengers: QS_Reg1

Previous Next Save Cancel

6 Click the **Input Variables** page to view the input variables to include in the report results.

- a For the variable binning method, accept the default option **Adaptive**.

Note: For information about variable binning, see [“Create a New Performance Definition” in SAS Model Manager: User’s Guide](#).

- b Select the project input variables that you want to use for analysis when generating the performance results.

TIP By default, all of the project input variables are selected when you are creating a new definition.

New Performance Definition

- 1. General
- 2. Tables
- 3. Models
- 4. Input Variables**
- 5. Output Variables
- 6. Bias Variables
- 7. Target Properties
- 8. Assessment Settings

Step 4 of 8

Variable binning method:

☒ Adaptive
☐ Quantile

Select the project input variables to use for analysis:

Show all
Show selected

☐	Name ↑	Data Type	Assess for Bias	Length	Measurement
☒	CLAGE	⊕ Decimal		12	
☒	CLNO	⊕ Decimal		12	
☒	DEBTINC	⊕ Decimal		12	
☒	DELINQ	⊕ Decimal		12	
☒	DEROG	⊕ Decimal		12	

12 of 12 items selected

Save
Cancel

- 7 Click the **Output Variables** page to view the output variables to include in the report results. Select the project output variables that you want to use for analysis when generating the performance results.

TIP By default, all of the project output variables are selected when you are creating a new definition.

New Performance Definition

- 1. General
- 2. Tables
- 3. Models
- 4. Input Variables
- 5. **Output Variables**
- 6. Bias Variables
- 7. Target Properties
- 8. Assessment Settings

Step 5 of 8

Select the project output variables to use for analysis:

Show all
Show selected

☐	Name	Data Type	Assess for Bias	Length	Measurement
☒	EM_EVENTPRO...	Decimal		12	
☐					
☐					
☐					
☐					
☐					
☐					
☐					

1 of 1 items selected

Save
Cancel

- 8 (Optional) Click the **Bias Variables** page to view the variables that are marked for bias assessment and will be included in the performance results.

TIP You can modify the variables that are marked for bias assessment on the **Variables** tab of this project.

New Performance Definition

- 1. General
- 2. Tables
- 3. Models
- 4. Input Variables
- 5. Output Variables
- 6. Bias Variables**
- 7. Target Properties
- 8. Assessment Settings

Step 6 of 8

The following variables are marked for bias assessment and will be included in the performance results. You can modify them on the Variables tab of this project.

Filter name

Name	Data Type	Length	Measurement	Description
REASON	Character	7		char-HMEQ_TRA...
JOB	Character	7		char-HMEQ_TRA...

Save Cancel

- 9 (Optional) Click the **Target Properties** page to view the properties that are being used to compute stability and accuracy measures to access model prediction accuracy.

TIP You can modify the values of the target properties on the **Properties** tab of this project. If the values are changed after a performance definition is created, you must edit the performance definition and save it, in order for the changes to take effect.

New Performance Definition

1. General

2. Tables

3. Models

4. Input Variables

5. Output Variables

6. Bias Variables

7. Target Properties

8. Assessment Settings

Step 7 of 8

The following properties are used to compute stability and accuracy measures to access model prediction accuracy. You can modify them on the Properties tab of this project.

Target variable:
BAD

Target event value:
1

Target level:
Binary

Output event probability variable:
EM_EVENTPROBABILITY

Save

Cancel

- 10 (Optional) Click the **Assessment Settings** page to customize the options that are used for assessment calculations.

New Performance Definition

1. General

2. Tables

3. Models

4. Input Variables

5. Output Variables

6. Bias Variables

7. Target Properties

8. Assessment Settings

Step 8 of 8

Note: Specifying a higher number than the default value for these settings can result in a longer run time, especially when the performance input tables are large.

Changing the default number of bins in the lift calculation can cause some lift-based KPIs to be unavailable.

Number of bins for lift calculations:
20

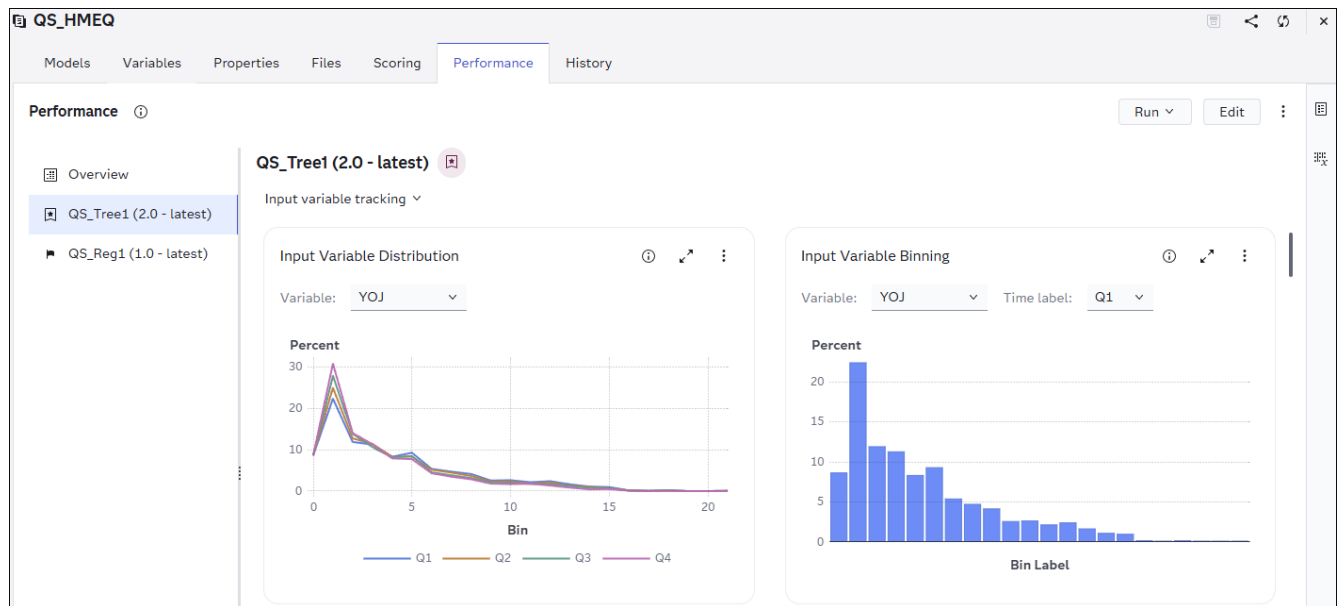
Number of ROC cut-off values:
100

Maximum number of percentile iterations:
200

Save

Cancel

- 11 Click **Save**.



Note: For the **Input Variable Distribution** and **Feature Contribution** charts, you can select variables from the drop-down list to change the content of the chart. This is an example of the YOJ variable distribution.

- b Click  to view the performance definition details.

Definition Details

▼ General

Definition name:
QS_HMEQ_Performance

Last run:
Nov 20, 2025, 07:34:45 PM

Champion model:
QS_Tree1 (Version 1)

Target variable:
BAD

▼ Tables

Input library:
cas-shared-default/Public

Table prefix:
hmeqperf

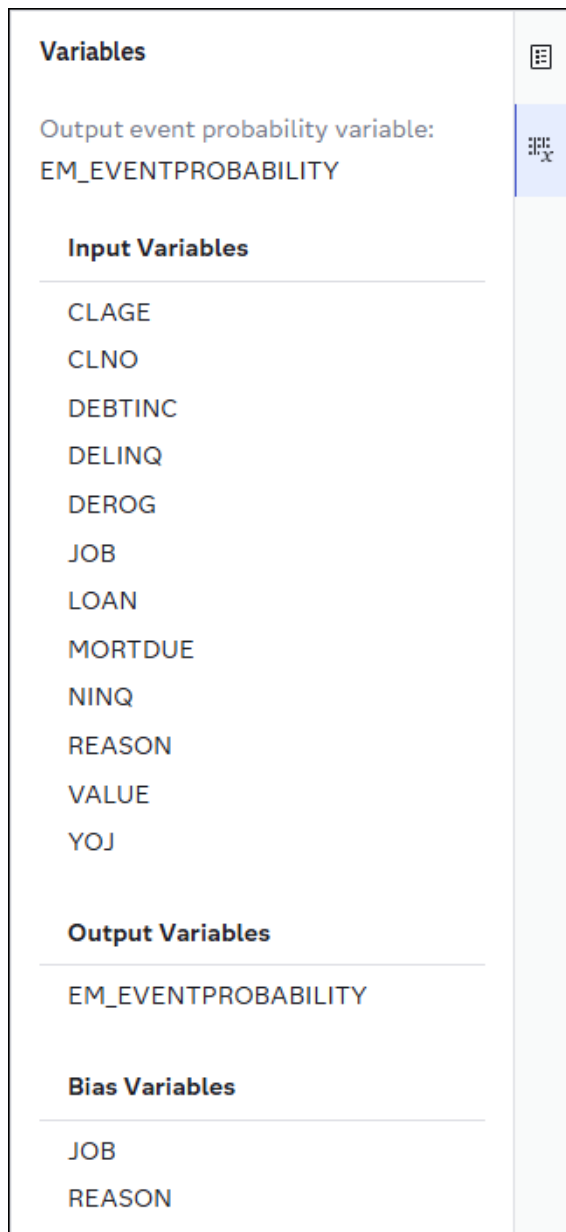
Output library:
cas-shared-
default/ModelPerformanceData

▼ Models

Selected models:

QS_Tree1 (2.0 - latest)
QS_Reg1 (1.0 - latest)

- c Click  to view the variables that are included in the performance definition.



15 Click **x** to return to the **Projects** category view.

See Also

[“Monitoring Performance” in SAS Model Manager: User’s Guide](#)

Evaluate and Deploy a Python Model

This optional exercise demonstrates the following features of SAS Model Manager:

- [Test a Python model.](#)

- Publish a Python model.
- Monitor performance of a Python model.

Prerequisites

Before you can score a Python model, make sure that Python 3.9 or later and the Python packages that are needed for this exercise are installed. You must also be a member of the CASHostAccountRequired custom group in order to run a scoring test, to run a publishing validation test, or to monitor performance for a Python model. For more information, see [“Python Code Files” in SAS Model Manager: Administrator’s Guide](#).

Test a Python Model

By default, only the user who creates a test can view, update, or delete the test definition, as well as run the test and view the test results. For more information, see [“Default Permissions” in SAS Model Manager: Administrator’s Guide](#).

Verify the Location of the Pickle File in the Python Score Code

- 1 Open the **QS_Reg_PyModel** model that you previously imported in the **QS_HMEQ** project.
- 2 Click the **Files** tab and then select the `hmeq_logistic_score.py` file.
- 3 Verify that the following lines exist in the Python code and that it contains the name of your Python model’s pickle file.

```
with open(settings.pickle_path + "hmeq_logistic.pickle", "rb") as _pickle_file:
    _thisModelFit = read_pickle(_pickle_file)

def score_hmeq_log_reg_model(REASON, JOB, YOJ, DEROG, DELINQ, CLAGE, NINQ, CLNO, DEBTINC):
    "Output: EM_CLASSIFICATION, EM_EVENTPROBABILITY"

    try:
        global _thisModelFit
    except NameError:
        with open(settings.pickle_path + "hmeq_logistic.pickle", "rb") as _pickle_file:
            _thisModelFit = read_pickle(_pickle_file)
```

- 4 If you made changes, click .
- 5 Click the project link in the toolbar to return to the **QS_HMEQ** project.

See Also

[“Python Models” in SAS Model Manager: User’s Guide](#)

Create and Run a Scoring Test

- 1 On the **Scoring** tab of the **QS_HMEQ** project, click the **Tests** tab, and then click **New test**. The New Test window appears.
- 2 Enter **QS_Test2** for the name of the test.
- 3 (Optional) Enter a description for the test (for example, *Test to determine the project champion model.*).
- 4 Click **Choose model** and select the **QS_Reg_PyModel** model to test.
- 5 Select the version of the model to use for the test. Accept the default value of **Use latest version** for this tutorial.
- 6 Select an input table. Click , select **HMEQ_TEST** from the **Public** caslib in the Choose Data window, and then click **OK**.
- 7 Verify that the variables are mapped.

Note: SAS Model Manager automatically maps model input variables to the columns in the input table when the names and data types of the variables match those of the table columns. If any input variables cannot be mapped automatically, a warning message is displayed.

Input table: *

HMEQ_TEST



Variables

 **Model input variables must be mapped to the input table columns.**

x

TIP You can change the automatic variable mappings.

To map variables:

- a Click **Variables**. The Variable Mappings window appears.
 - b For each input variable, select the table column to which the variable should be mapped.
 - c Click **OK**.
- 8 (Optional) By default, the output data library location is the same as that for the input table. Click  to specify a different library to store the new test output table that is created when the test is run. The input table and output data library must be on the same CAS server.

New Test

Name: *

QS_Test2

Description:

Test to determine the project champion model.

Model: *

QS_Reg_PyModel Choose model

Version: ⓘ

Use latest version (1.0) v

Input table: *

HMEQ_TEST Variables

Output data library: *

Public

Save Run Cancel

- 9 Click **Run** to save and run the test.

The status of the test is indicated by the icon in the **Status** column.

- 10 When the test has completed, click  in the **Results** column to view the results of the test. The content of the output table is displayed. If you click the **Test Results** section title, information about the test, including the URIs for the test definition and test results are displayed. The test results also include the SAS code that was run by SAS Model Manager and the SAS log that was generated when the code was run.

QS_HMEQ

Test Results

Output

Code

Log

Output Table

BAD	EM_EVENTPROBABIL...	EM_CLASSIFICATION	JOB	REASON	CLAGE	CLNO	DEBTINC	!
1	0.0875026636	0	Other	Homelmp	94.366666667	9	.	!
1	0.0740961723	0	Other	Homelmp	149.466666667	10	.	
1	0.0598379917	0			.	.	.	
1	0.77211195	1	Other	Homelmp	77.1	17	.	
1	0.0971322493	1	Other	Homelmp	88.766029879	8	36.884894093	
1	0.2507968097	1	Other	Homelmp	216.93333333	12	.	
1	0.1737173068	1	Sales	Homelmp	115.8	13	.	
1	0.1027603905	1	Office	Homelmp	122.53333333	9	.	
0	0.041947195	0	Mgr		147.13333333	24	.	
1	0.0905402855	1	Other	Homelmp	300.86666667	8	.	
1	0.9752421719	1	Mgr	Homelmp	122.9	22	.	
0	0.0306033807	0	Office	Homelmp	90.992533467	13	31.588503178	
1	0.1911011664	1	ProfExe	Homelmp	.	0	.	
	0.0768006024	0				22	.	

- 11 Click **x** to return to the **Scoring** tab of the project.

See Also

[“Test Models” in SAS Model Manager: User's Guide](#)

Publish a Python Model

- 1 On the **Models** tab of the **QS_HMEQ** project, select the Python model **QS_Reg_PyModel**.
- 2 Click **Publish**. The **Publish Models** window appears.
- 3 Select the **SAS Micro Analytic Service (maslocal)** destination.

Publish Models

Destination:

SAS Micro Analytic Service (maslocal) [Details](#)

Tags:

Press Enter after each tag.

ITEMS TO PUBLISH

QS_Reg_PyModel (1.0)

Model version to publish:

1.0

☒ Create a new model version after publishing this model

Published name:

QS_Reg_PyModel

☐ Replace item with the same name

Publish Cancel

- 4 (Optional) Assign tags to the published model by entering a tag value. Press Enter after each tag.

TIP Tag names cannot start with a period or a hyphen, and cannot contain more than 128 characters. They can contain only alphanumeric characters, the underscore (_), the hyphen (-), and the period (.).

- 5 In the **Items to Publish** section, select a model version to publish. The default value is the latest version of the model.
- 6 Accept the default option to create a new model version after publishing the model.
- 7 (Optional) If you previously published a model with the same published name, you can replace the model. In the **Items to Publish** section, enable the **Replace item with the same name** toggle for each model that you want to replace with the same published name.
- 8 Click **Publish**. The Publishing Results window appears. The status of the publishing request is displayed in the **Status** column.

Publishing Results				
Name	Published Name	Status	Output	Micro Analytic Module
QS_Reg_PyModel (1.0)	QS_Reg_PyModel	✓ Published successfully	Log	/microanalyticScore/modules/qs_reg...

- 9 When the status changes to **Published successfully**, click **Close**.

TIP When you publish a model, the system creates a publishing validation test. You can edit the publishing validation test to select a test data source and output library. The validation of the model runs within the publishing destination that the model was published to. For more information, see “[Validate Published Models](#)” in *SAS Model Manager: User's Guide*.

See Also

“[About Publishing Models](#)” in *SAS Model Manager: User's Guide*

Monitor Performance of a Python Model

To monitor performance of a model, you create a performance definition and then run it. The performance results include several charts, such as Variable Distribution, Characteristic, Stability, Lift, Gini, ROC, Kolmogorov-Smirnov (KS), and Feature Contribution charts.

Import Performance Data

The following data tables must be available in the Public caslib for this exercise. If you did not import them earlier, complete the steps in the [Import Data on page 4](#) exercise.

- hmeqperf_1_q1.sas7bdat
- hmeqperf_2_q2.sas7bdat
- hmeqperf_3_q3.sas7bdat
- hmeqperf_4_q4.sas7bdat

Set Project Properties

- 1 Click the **Properties** tab of the **QS_HMEQ** project.
- 2 On the **Model Evaluation** page, verify that the following properties are set:

Property	Value
Target variable	BAD
Target level	Binary
Target event value	1
Output event probability variable	EM_EVENTPROBABILITY

- 3 Click .

Create a New Performance Definition

IMPORTANT Before you complete this tutorial, make sure that you have set the model properties. For more information, see [“Set Model Properties” on page 14](#).

- 1 Click the **Performance** tab of a project and then click **New definition**. The New Performance Definition window appears.

.....

Note: If you already have a performance definition in the project, you must click **Edit**. The Edit Performance Definition window appears.

- 2 On the **General** page, accept the default name for the performance definition or enter a name of your choosing.
- 3 (Optional) Enter a description.

New Performance Definition

Step 1 of 8

Name: *

QS_HMEQ_Performance

Description:

Performance definition for the QS_HMEQ project.

Note: Each time the definition is run, the results are appended to the output data tables. ⓘ

Save Cancel

4 Click the **Tables** page and select **Library with Prefix** as the input data method. This option indicates to use a library that contains input data tables with a specified prefix.

- a Click , select the **cas-shared-default** data source server, and select **Public** as the CAS library for input tables. Click **OK**.

.....

Note: For the library, select the library that you imported the data tables into during the [Import Data](#) tutorial.

.....

- b Enter **hmeqperf** for the prefix.
- c (Optional) Verify the CAS library for the output tables is set. The default value is **cas-shared-default/ModelPerformanceData**. The input data source library and the output data library must be on the same CAS server.

New Performance Definition

Step 2 of 8

Input Data Method ⓘ

Single Table
Use a specific data table.

Library with Prefix
Use a library that contains tables with a specified prefix.

Library Configuration

CAS library for input tables: ⓘ
cas-shared-default/Public

Prefix: *
hmeqperf
Example formats: "HMEQPERF" or "HMEQ_PERF"

CAS library for output tables: *
cas-shared-default/ModelPerformanceData

Previous Next Save Cancel

- 5 Click the **Models** page and accept the default option **System scores data using selected models** for the **Data scoring method**.

Note: If you decide you want to use scored data, there are additional sample performance data files in the \QuickStartTutorial\Data directory that you extracted at the beginning of the Quick Start tutorial.

- a For the model-selection options, select the **Use Specific Models** option, and then click **Latest versions** to filter the list of models.
- b Select the **QS_Reg_PyModel** model from the table.

New Performance Definition

Step 3 of 8

Data scoring method:

☒ System scores data using selected models

☐ Use scored data from input tables

Model-Selection Options

Use Referenced Models
Select from the champion and challenger models.

Use Specific Models
Select specific versions of models from this project.

Specific Models

Filter name All versions Latest versions

☐	Name	Model Version	Project Version	Role	Date Modified
☐	QS_DTree_RModel	Use latest version (1.0)	Version 1 (1.0)		Jul 7, 2026, 06:58:2...
☐	QS_Reg_PMMLModel	Use latest version (1.0)	Version 1 (1.0)		Jul 7, 2026, 07:02:2...
☒	QS_Reg_PyModel	Use latest version (1.0)	Version 1 (1.0)		Jul 7, 2026, 06:58:2...
☐	QS_Reg1	Use latest version (1.0)	Version 1 (1.0)		Jul 7, 2026, 07:11:5...
☐	QS_Tree1	Use latest version (2.0)	Version 1 (1.0)		Jul 7, 2026, 07:15:5...

1 of 12 items selected

Previous Next Save Cancel

- 6 Click the **Input Variables** page to view the input variables to include in the report results.
- a For the variable binning method, accept the default option **Adaptive**.

Note: For information about variable binning, see [“Create a New Performance Definition” in SAS Model Manager: User's Guide](#).

- b Select the project input variables that you want to use for analysis when generating the performance results.

TIP By default, all of the project input variables are selected when creating a new definition.

New Performance Definition

- 1. General
- 2. Tables
- 3. Models
- 4. Input Variables**
- 5. Output Variables
- 6. Bias Variables
- 7. Target Properties
- 8. Assessment Settings

Step 4 of 8

Variable binning method:

☒ Adaptive
☐ Quantile

Select the project input variables to use for analysis:

Show all
Show selected

☐	Name ↑	Data Type	Assess for Bias	Length	Measurement
☒	CLAGE	Decimal		12	
☒	CLNO	Decimal		12	
☒	DEBTINC	Decimal		12	
☒	DELINQ	Decimal		12	
☒	DEROG	Decimal		12	

12 of 12 items selected

Save
Cancel

- 7 Click the **Output Variables** page to view the output variables to include in the report results. Select the project output variables that you want to use for analysis when generating the performance results.

TIP By default, all of the project output variables are selected when creating a new definition.

New Performance Definition

- 1. General
- 2. Tables
- 3. Models
- 4. Input Variables
- 5. **Output Variables**
- 6. Bias Variables
- 7. Target Properties
- 8. Assessment Settings

Step 5 of 8

Select the project output variables to use for analysis:

☐	Name	Data Type	Assess for Bias	Length	Measurement
☒	EM_EVENTPRO...	Decimal		12	
☐					
☐					
☐					
☐					
☐					
☐					
☐					

1 of 1 items selected

- 8 (Optional) Click the **Bias Variables** page to view the variables that are marked for bias assessment and will be included in the performance results.

TIP You can modify the variables that are marked for bias assessment on the **Variables** tab of this project.

New Performance Definition

- 1. General
- 2. Tables
- 3. Models
- 4. Input Variables
- 5. Output Variables
- 6. Bias Variables**
- 7. Target Properties
- 8. Assessment Settings

Step 6 of 8

The following variables are marked for bias assessment and will be included in the performance results. You can modify them on the Variables tab of this project.

Filter name

Name	Data Type	Length	Measurement	Description
REASON	Character	7		char-HMEQ_TRA...
JOB	Character	7		char-HMEQ_TRA...

Save Cancel

- 9 (Optional) Click the **Target Properties** page to view the properties being used to compute stability and accuracy measures to access model prediction accuracy.

TIP You can modify the values of the target properties on the **Properties** tab of this project. If the values are changed after a performance definition is created, you must edit the performance definition and save it, in order for the changes to take effect.

New Performance Definition

1. General

2. Tables

3. Models

4. Input Variables

5. Output Variables

6. Bias Variables

7. Target Properties

8. Assessment Settings

Step 7 of 8

The following properties are used to compute stability and accuracy measures to assess model prediction accuracy. You can modify them on the Properties tab of this project.

Target variable:
BAD

Target event value:
1

Target level:
Binary

Output event probability variable:
EM_EVENTPROBABILITY

Save

Cancel

- 10 (Optional) Click the **Assessment Settings** page to customize the options that are used for assessment calculations.

New Performance Definition

1. General

2. Tables

3. Models

4. Input Variables

5. Output Variables

6. Bias Variables

7. Target Properties

8. Assessment Settings

Step 8 of 8

Note: Specifying a higher number than the default value for these settings can result in a longer run time, especially when the performance input tables are large.

Changing the default number of bins in the lift calculation can cause some lift-based KPIs to be unavailable.

Number of bins for lift calculations:
20

Number of ROC cut-off values:
100

Maximum number of percentile iterations:
200

Save

Cancel

- 11 Click **Save**.

- 12 On the **Performance** tab in your open project, click **Run** and select **Run now** to generate the performance results.

TIP You can also schedule performance jobs to run at a specific frequency, such as daily, weekly, monthly, or quarterly. For more information, see [“Schedule Performance Monitoring” in SAS Model Manager: User’s Guide](#).

- 13 Click  and select **View job history** to view the current status of the performance job.

QS_HMEQ > Job History												Opened items (1)
QS_HMEQ												  
Items (3):												
Job Name	Input Library	Table Pre...	Model	Data Table	Output Library	Status	Date Started	Date Completed	Submitted By	Log	Code	
QS_HMEQ_Performance	Public	hmeqperf	QS_Reg_PyModel (2.0)		ModelPerformanceData		Nov 20, 2025, 04:46:02 PM	Nov 20, 2025, 04:52:16 PM	sasdemo			

- 14 When the job is complete, click  to return to the **Performance** tab and view the results.

The Overview page contains assessment information about the models that are included in the project’s performance results.

Note: This image also contains the performance results for the QS_Tree1 champion model, whose performance was previously run as part of the [Monitor Performance of a Champion Model](#) on page 26 step of the main tutorial.

QS_HMEQ

Models Variables Properties Files Scoring **Performance** Workflow History

Performance ⓘ

Run ▾ Edit ⋮

Overview

- QS_Tree1 (2.0 - latest)
- QS_Reg_PyModel (2.0 - latest)
- QS_Reg1 (1.0 - latest)

Scored Observations

23,840

Job status:  Completed [View job history](#)

Date completed: Nov 21, 2025, 04:52:16 PM

Definition Details

Created by: sasdemo

Last run: Nov 21, 2025, 04:46:02 PM

Models: QS_Tree1 (2.0 - latest)
QS_Reg_PyModel (2.0 - latest)
QS_Reg1 (1.0 - latest)

Model Performance Rank ⓘ

- 1 QS_Tree1 (2.0 - latest)
- 2 QS_Reg_PyModel (2.0 - latest)
- 3 QS_Reg1 (1.0 - latest)

QS_Tree1 (2.0 - latest)

22.47%
Misclassification

12.94%
False positive rate

50.21%
Recall

Last updated: Nov 20, 2025, 06:27:42 PM
Modified by: sasdemo
Created by: sasdemo
Score code type: DS2 multi-type

QS_Reg_PyModel (2.0 - latest)

26.33%
Misclassification

19.41%
False positive rate

42.60%
Recall

Last updated: Nov 21, 2025, 04:27:37 PM
Modified by: sasdemo
Created by: sasdemo
Score code type: Python

QS_Reg1 (1.0 - latest)

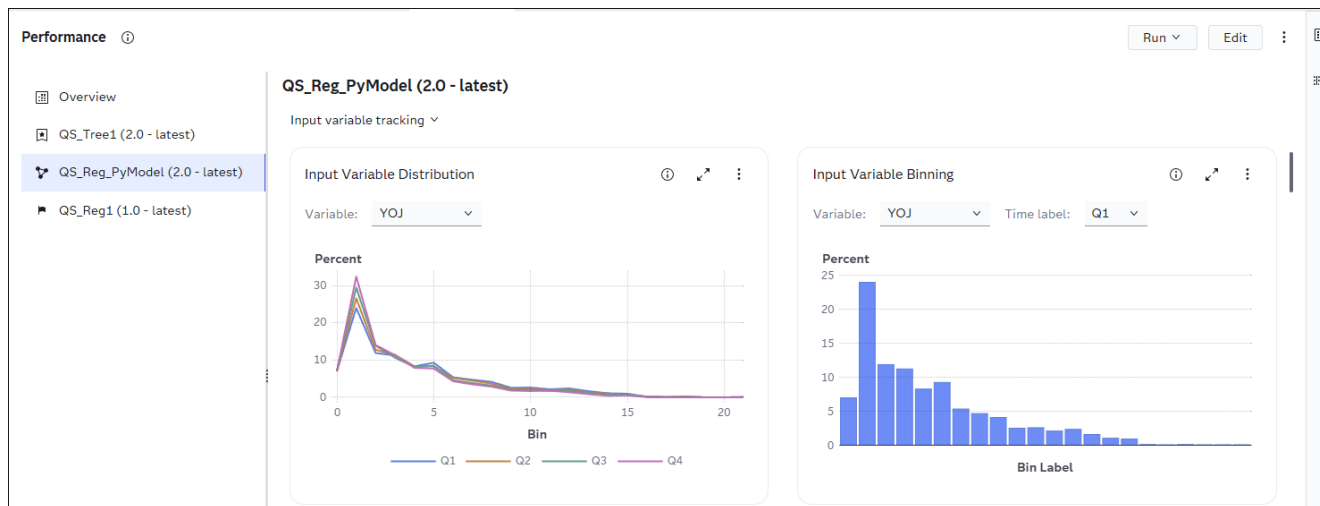
27.77%
Misclassification

42.06%
False positive rate

67.14%
Recall

Last updated: Nov 20, 2025, 06:05:59 PM
Modified by: sasdemo
Created by: sasdemo
Score code type: DATA step

- a Click the **QS_Reg_PyModel** model tab to view the performance results for that specific model.



Note: For the **Input Variable Distribution** and **Feature Contribution** charts, you can select variables from the drop-down list to change the content of the chart. This is an example of the YOJ variable distribution.

- b Click ⓘ to view the performance definition details.

Definition Details

▼ General

Definition name:
QS_HMEQ_Performance

Last run:
Nov 21, 2025, 04:46:02 PM

Champion model:
QS_Tree1 (Version 1)

Target variable:
BAD

▼ Tables

Input library:
cas-shared-default/Public

Table prefix:
hmeqperf

Output library:
cas-shared-
default/ModelPerformanceData

▼ Models

Selected models:

QS_Tree1 (2.0 - latest)
QS_Reg_PyModel (2.0 - latest)
QS_Reg1 (1.0 - latest)

- c Click  to view the variables that are included within the performance definition.

Variables

Output event probability variable:
EM_EVENTPROBABILITY

Input Variables

CLAGE
CLNO
DEBTINC
DELINQ
DEROG
JOB
LOAN
MORTDUE
NINQ
REASON
VALUE
YOJ

Output Variables

EM_EVENTPROBABILITY

Bias Variables

JOB
REASON

x

15 Click **x** to return to the **Projects** category view.

See Also

[“Monitoring Performance” in SAS Model Manager: User’s Guide](#)

Using SAS Workflow

In this exercise you import a workflow definition, start a new workflow, and complete the tasks within the workflow.

Requirements

Before users can complete this exercise, a system administrator must complete the following tasks:

- Configure a user account for a workflow client. This enables the account to use service tasks within a definition. For more information, see [“Configure the Workflow Client” in SAS Workflow Manager: Administrator’s Guide](#).
- Grant users or a user group workflow administrative privileges. Add users or a user group to the Application Administrators group or configure a custom workflow administrator group. As a result, users or groups can import and activate a workflow definition within SAS Workflow Manager, and can start a workflow in SAS Model Manager.

Note: If you configure a custom workflow administrator group, the Application Administrators group will no longer have workflow administrative privileges.

For more information, see [“Configuring SAS Workflow” in SAS Model Manager: Administrator’s Guide](#).

- Create a custom group with the name **MM Quick Start Workflow Users** and the ID **MMQuickStartWorkflowUsers**. Within this new custom group, place users who you want to be participants for the user tasks within the **Model_Lifecycle** workflow. For more information, see [“Manage Custom Groups” in SAS Environment Manager: User’s Guide](#).

Note: Alternatively, you can modify each user task to specify your user ID or an existing user group in your organization. For more information, see [“Managing Participants” in SAS Workflow Manager: User’s Guide](#).

- Define a publishing destination. This enables a user to enter a name in the **Publishing destination** prompt for the **Publish champion model** task and run the task successfully. For more information, see [SAS Viya Platform: Publishing Destinations](#).

Import and Activate a Workflow Definition

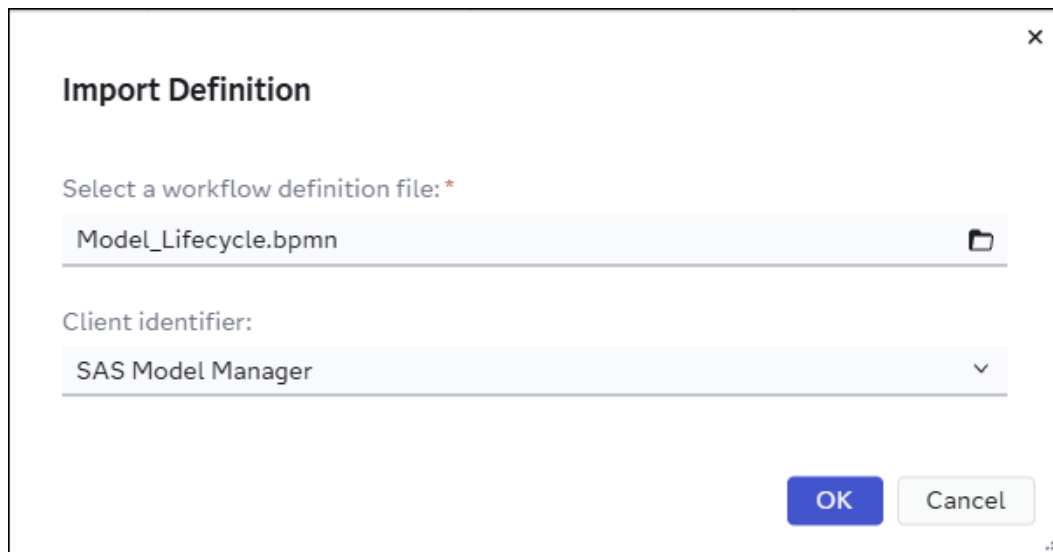
This task must be done by a user who is in the Application Administrators user group. For more information, see [SAS Workflow Manager: Administrator’s Guide](#).

If you want to create your own workflow definition, see [SAS Workflow Manager: Quick Start Tutorial](#).

IMPORTANT Before you import the Model_Lifecycle.bpmn workflow definition file, you must create a business calendar named **Work week**. The **Work week** calendar is used in the Approve champion task. For more information, see [“Create a Business Calendar” in SAS Workflow Manager: Quick Start Tutorial](#).

- 1 Click  and select **Manage Workflows**.
- 2 Click **Import**. The Import Definition window appears.
- 3 Click  and navigate to where the workflow definition is stored (for example, <drive:> \QuickStartTutorial\WorkflowDefinitions\).
- 4 Select the **Model_Lifecycle.bpmn** file and click **Open**.
- 5 Select **SAS Model Manager** as the client identifier.

Note: The client identifier denotes the application that starts the workflow. You must specify a client identifier for a workflow definition before it can be activated.



- 6 Click **OK**.

Note: If the workflow definition already exists and you do not want to overwrite another user's definition, select **Reimport with new name** in the Import Definition window, enter a new name (for example, Model_Lifecycle_sasdemo), and click **OK**.

- 7 Open the workflow definition that you just imported (for example, Model_Lifecycle).

TIP You can use the search field to find the workflow definition that you imported.

- 8 Activate the workflow definition.

- a Click the **Versions** tab.

Notice that SAS Workflow Manager has saved your workflow definition as the **Current** version.

- b Click  to create a static numbered version of the workflow definition.
- c (Optional) Enter notes about the new version of the workflow definition.

- d Click **Yes** to create a new version that will be shared with other application administrators. SAS Model Manager assigns the number 1.0 to the version.
- e Click  to activate version 1.0 of the workflow definition.

The version is marked Active in the **Status** column.

Model_Lifecycle (1.0)

Definition

Versions

Set version

Version ↓	Displayed Version	Status	Owner	Date Modified	Notes
1.0	✓	Active	sasdemo	Nov 20, 2025 3:11 PM	

TIP The checkmark ✓ indicates the version that is displayed on the **Definition** page. If a workflow has multiple versions, you can view a different version by selecting the version on the **Versions** tab, and then clicking **Set Version**.

- f Click **x** to close the workflow definition.

See Also

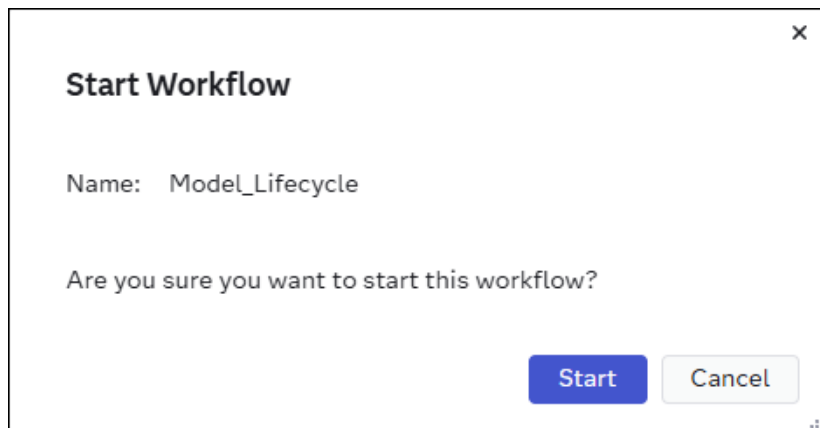
- [SAS Workflow Manager: Quick Start Tutorial](#)

Start a New Workflow

You must be in the Application Administrators group or Workflow Administrator group to complete this exercise. For more information, see [SAS Workflow Manager: Administrator's Guide](#).

- 1 Click  and select **Manage Models**.
- 2 Open the **QS_HMEQ** project and click the **Workflow** tab.
- 3 Click **Start workflow** and select the **Model_Lifecycle** workflow definition from the drop-down list. The Start Workflow window appears.
- 4 Specify values for any prompts that are displayed.

Note: What is displayed in the **Start Workflow** window depends on how you configured the workflow definition start node. For example, if you created your own workflow definition, but did not configure prompts for the start node, you will see the default text "Are you sure you want to start this workflow?"



- 5 Click **Start**. The workflow is added to the list with a status of **In progress**.

 A screenshot of the SAS Model Manager interface showing the "Workflow" tab. The tab bar includes Models, Variables, Properties, Files, Scoring, Performance, Workflow (selected), and History. A table lists the workflow "Model_Lifecycle" with status "In progress", started by "sasdemo", and on "Nov 20, 2025, 03:25:27 PM". A "Start workflow" dropdown button is in the top right of the table area.

Name	Status	Started By	Date Started	Date Ended	Description
Model_Lifecycle	In progress	sasdemo	Nov 20, 2025, 03:25:27 PM		

See Also

[“Start a New Workflow” in SAS Model Manager: User’s Guide](#)

Complete Workflow Tasks

You must be in the MM Quick Start Workflow Users custom group (the ID is MMQuickStartWorkflowUsers) or assigned as a participant of each user task to complete this exercise. For more information, see [“Requirements” on page 57](#).

Note: If you are signed in to the SAS Model Manager or the SAS Workflow Manager web application when a system administrator adds you to the custom group, you must sign out and back in before you can access the group.

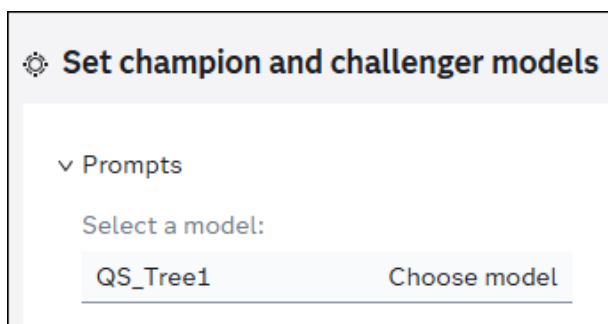
- 1 Click to view the **Tasks** category.
- 2 Click a task to open it.
- 3 Click to claim the task.
- 4 Specify values for any prompts that are displayed in the **Prompts** section.
- 5 Click the **Properties** section title to view task properties, including the associated object.

Note: Click the name of the associated object (for example, **Project: QS_HMEQ**) to open it.

- 6 Complete any actions that are associated with the task. An example is importing models into a project.
-

Note:

- Prompts are disabled until a user claims the task.
- The models that are imported with the **Import models** user task must have a score code type that is compatible with the publishing destination. For more information, see [“Set Model General Properties” in SAS Model Manager: User’s Guide](#).
- In the **Set champion and challenger models** user task, you must first manually set the champion model within the associated project. Then you can select the champion model from the list in the Choose Models window. You access this window from within the task. These steps are needed to complete the task and continue to the next task in the workflow process.



-
- 7 Click **Complete**.
 - 8 Click **Complete** in the confirmation message.
 - 9 Repeat steps 2 through 8 until all of the workflow tasks have been completed.
 - 10 To return to the **QS_HMEQ** project, click  and click the **Workflow** tab. The status of the workflow should be **Completed** and there should be a value in the **Date Ended** column.

See Also

[“Working with Tasks” in SAS Model Manager: User’s Guide](#)