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# SAS® Field Quality Analytics 6.1

## User's Guide

SAS® Documentation

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**SAS® Field Quality Analytics 6.1: User's Guide**



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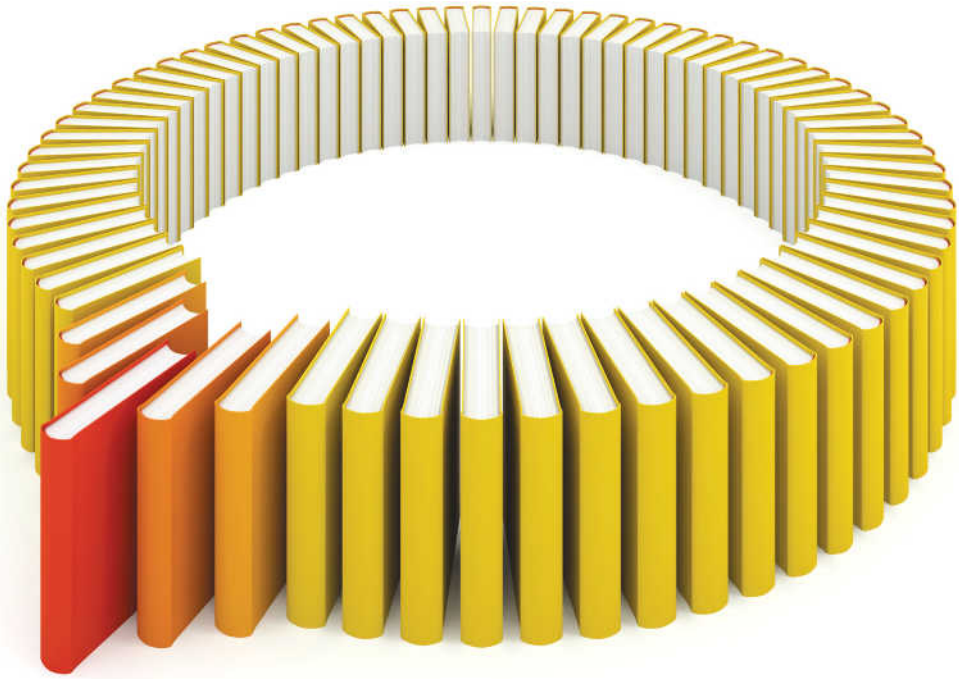

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# Contents

# What's New in SAS Field Quality Analytics 6.1

## Overview

SAS Field Quality Analytics is part of the SAS Quality Analytic Suite, which provides you with an enterprise view of quality performance to help you manage the cost of quality, achieve quality excellence, and increase customer satisfaction. The SAS Quality Analytic Suite also provides an integration point with other solutions, such as SAS Asset Performance Analytics. In addition to providing access to all SAS Field Quality Analytics features, the SAS Quality Analytic Suite application provides access to common features such as the **Report Library** workspace.

The following workspaces in SAS Field Quality Analytics 6.1 have been redesigned to enhance the user's experience in monitoring and analyzing warranty data:

- **Early Warning** workspace
- **Data Selection** workspace
- **Analysis** workspace
- **Report Library** workspace
- **Administration** workspace

## Early Warning Workspace

The **Early Warning** workspace enables you to create and manage enterprise analytic, ad hoc analytic, and ad hoc threshold issues. Alerts can be assigned to specific users, Early Warning e-mails contain direct links to alert output, and Enterprise Analytic alert groups can be deleted.

For more information about the **Early Warning** workspace, see "Overview of the Early Warning Workspace" on page 27.

## Data Selection Workspace

The **Data Selection** workspace enables you to create and manage data selections and data selection templates. Data selection templates replace product and event templates. They are created during data selection creation and are optional. It is no longer required

to store the underlying filtered data for data selections. You can also transfer ownership of a data selection.

For more information about the **Data Selection** workspaces, see "Data Selections" on page 69 and "Data Selection Templates" on page 81.

## Analysis Workspace

The **Analysis** workspace enables you to create and manage projects and analyses. There are significant performance enhancements for analysis run times. Speed and flexibility have been enhanced for exporting information. An Event Forecasting analysis with improved models replaces the Forecasting analysis. Display option updates are applied immediately and do not require rerunning. Additional files can be stored in projects. Analyses and files can be moved across projects. Also, comments can be created and maintained for analyses.

For more information about the **Analysis** workspace, see "Overview of Projects" on page 15 and "Overview of Analyses" on page 89.

## Report Library Workspace

The **Report Library** workspace enables you to manage all the reports that summarize your business data and to provide both technical and non-technical users access to that information. SAS Warranty Analysis version 4 reports have been replaced with expanded analyses. The **Report Library** workspace includes integration with SAS Visual Analytics and other external reporting tools, as well as support for the LASR reporting mart and HANA data mart.

For more information about the **Report Library** workspace, see "Managing Reports" on page 169.

## Administration Workspace

The **Administration** workspace enables you to manage administrative tasks in SAS Field Quality Analytics. It is available to users with administrative permissions. You can use the **Administration** workspace to maintain most of the underlying configuration, import and export configuration information, and perform a partial or complete migration.

For more information about the **Administration** workspace, see the *SAS Field Quality Analytics 6.1: Administrator's Guide*.

# Part 1

# Overview of SAS Field Quality Analytics

*Chapter 1*

# Introduction to SAS Field Quality Analytics



## What Is SAS Field Quality Analytics?

Quality and reliability are the most significant prerequisites for profitability. Warranty data and other types of data about field failures are becoming increasingly important for manufacturers and resellers to analyze and to understand. In most practical situations, warranty information provides the closest representation of how a product operates in customers' hands. However, simply reporting on warranty data is not sufficient. Such reporting is reactive and time-consuming, and it can be misleading. Instead, successful enterprises are proactive with warranty data and use analytics to bring issues to light and to accelerate problem identification and root cause analysis.

SAS Field Quality Analytics is an integrated reporting and analysis tool that provides the flexibility and functionality to perform warranty-related problem identification, prioritization, and definition for root cause analysis. The components of SAS Field Quality Analytics are the results of more than 30 years of experience in helping leading manufacturers take full advantage of the data that they collect. SAS Field Quality Analytics provides the foundation for incorporation of multiple data types (for example, call center, customer survey, and end-of-line audit data) to produce a comprehensive representation of a product's field performance.

SAS Field Quality Analytics is part of the SAS Quality Analytic Suite, which provides you with an enterprise view of quality performance to help you manage the cost of quality, achieve quality excellence, and increase customer satisfaction. The SAS Quality Analytic Suite also provides an integration point with other solutions, such as SAS Asset Performance Analytics.

In addition to providing access to all SAS Field Quality Analytics features, the SAS Quality Analytic Suite application provides access to common features such as the **Report Library** workspace.

# Benefits to Using SAS Field Quality Analytics

SAS Field Quality Analytics empowers you to report on and analyze your field quality or warranty data. With SAS Field Quality Analytics, you can easily create and save specific filtering criteria to apply to any of the base analyses in the solution. These criteria, called data selections, include product attributes, such as production date and model, and event attributes, such as claim date and failure code. Analysis results are not static; you can interact with your results in a number of ways. The feature-rich set of analytics ensures not only that you have a clear view of the warranty-related events that have occurred, but also that you have a better understanding of the underlying causes.

Here are a few of the goals that you can accomplish using SAS Field Quality Analytics:

- You can integrate customer, supplier, and organizational data with warranty data in one convenient location.
- You can create and automate an early warning process.
- You can perform statistical analyses to investigate the root cause of warranty issues.
- You can efficiently and effectively communicate key metrics, goals, and performance measures throughout the organization.

You can interact with analysis results in various ways, including the following:

- You can dynamically filter the results for many of the analyses.
- You can drill into the subset of information for an individual bar on a Pareto chart for more information.
- You can get a list of customer comments related to a spike on a trend and control chart.

The feature-rich set of analytics provides a clear view of not only what happened, but also why it might have happened.

# Launching SAS Field Quality Analytics

Perform the following steps to log on to the SAS Field Quality Analytics application:

1. In the address bar of your web browser, enter the URL for the SAS Quality Analytic Suite, and press Enter. For example, this URL typically takes the following form:

   ```
   http(s)://hostname:port/SASQualityAnalyticSuite
   ```

   *Note:*

   - Contact your system administrator if you do not have the URL for the SAS Quality Analytic Suite.
   - It is recommended that you launch SAS Field Quality Analytics using either the SAS Visual Analytics Hub or the SAS Quality Analytic Suite. You can launch SAS Field Quality Analytics from the SAS Visual Analytics Hub by clicking **Manage Quality Analytics**. The URL of the SAS Visual Analytics Hub typically takes the following form:

     **`http(s)://hostname:port/SASVisualAnalyticsHub`**

2. Enter a user ID and password. Your user ID might be case sensitive, depending on the operating system that is used to host the application server. Your password is case sensitive.
3. Click **Sign In**.

   The SAS Field Quality Analytics application appears.

*Note:* You cannot log on to the SAS Field Quality Analytics application until the server is completely up and running (for example, all caching done during server start-up must be complete).

## Navigate to the SAS Portal

To navigate to the SAS Portal, select **File** ⇨ **Go to SAS Portal** from the main menu after you have logged on to the SAS Field Quality Analytics application.

SAS Field Quality Analytics can also be launched from the Portal. For more information about integration with the portal, see the *SAS Field Quality Analytics 6.1: Administrator's Guide*, and "Add to Portlet" on page 156.

## Exit SAS Field Quality Analytics

To exit the SAS Field Quality Analytics application, select **File** ⇨ **Sign Out** from the main menu.

*Chapter 2*

# Preferences Overview



## Preferences Overview

### *About User Preferences*

You can customize SAS Field Quality Analytics in the following ways:

- "Language Preferences" on page 7
- "Theme Preferences" on page 7
- "Default Workspace Preferences" on page 8

*Note:* Preferences do not take effect until you log off and log back on.

### *Language Preferences*

Perform the following steps to specify the language that you want SAS Field Quality Analytics to display in:

1. Select **File** ⇨ **Preferences** on the main menu.

   The Preferences dialog box appears.

2. Click **Global Preferences**.
3. Select a language from the **User locale** menu.
4. Click **OK**.

### *Theme Preferences*

Perform the following steps to specify the theme that you want SAS Field Quality Analytics to display in:

1. Select **File** ⇨ **Preferences** on the main menu.

   The Preferences dialog box appears.

2. Click **Global Preferences**.
3. Select a theme from the **Theme** menu.
4. Click **OK**.

### *Default Workspace Preferences*

Perform the following steps to specify the default workspace that you want to view when you log on to SAS Field Quality Analytics:

1. Select **File** ⇨ **Preferences** on the main menu.

   The Preferences dialog box appears.

2. Select **Quality Analytic Suite** ⇨ **General**.
3. Select a workspace from the **Open application using this workspace** menu.
4. Click **OK**.

*Chapter 3*

# Help Overview



## How to Get Help for SAS Field Quality Analytics

### *About Accessing Help and Additional Information*

You can find additional information about SAS Field Quality Analytics in the product and on the web in the following ways:

- "Open the User's Guide" on page 9
- "Search for Additional Information about SAS Field Quality Analytics on the Web" on page 10
- "View Configuration Information" on page 10
- "Context Specific Help" on page 10
- "How-To Topics" on page 10

### *Open the User's Guide*

To open the *SAS Field Quality Analytics 6.1: User's Guide*, select **Help ⇨ User's Guides ⇨ SAS Field Quality Analytics User's Guide (PDF)** on the main menu.

The *SAS Field Quality Analytics 6.1: User's Guide* opens in a new window.

### Search for Additional Information about SAS Field Quality Analytics on the Web

To search for additional information about SAS Field Quality Analytics on the web, select **Help** ⇨ **SAS on the Web** on the main menu. Select a web page from the menu that appears.

### View Configuration Information

Perform the following steps to view configuration information for SAS Field Quality Analytics:

1. Select **Help** ⇨ **About SAS Quality Analytic Suite** on the main menu.

   A dialog box appears that contains configuration information.

2. (Optional) To view legal information, click **Legal Notices**.
3. (Optional) To view configuration details, click **Configuration Details**.
4. (Optional) To copy the configuration details, click **Copy to Clipboard**, open a document, such as Microsoft Word, and then press Ctrl + V on your keyboard to paste the configuration information.

You can also view copyright information about SAS Field Quality Analytics by clicking **About** on the login page.

*Note:* If you have trouble viewing information about SAS Field Quality Analytics, check the browser version that you are using by pressing F12. Internet Explorer 7 is not supported in SAS 9.4.

### Context Specific Help

For additional help in some windows or dialog boxes, click  .

### How-To Topics

Select **Help** ⇨ **How To** from the main menu to open a dialog box with available help items. Select a help item from the menu that appears for more information about how to perform that task.

*Note:* For your primary source of help information, check the *SAS Field Quality Analytics 6.1: User's Guide*, and the *SAS Field Quality Analytics 6.1: Administrator's Guide* if you are an administrator. How-To topics are not available in all views in SAS Field Quality Analytics, and only contain basic information about navigating around SAS Field Quality Analytics.

*Chapter 4*

# Accessibility Overview



## Accessibility

SAS Field Quality Analytics includes accessibility and compatibility features that improve the usability of the product for users with disabilities. These features are related to accessibility standards for electronic information technology that were adopted by the U.S. Government under Section 508 of the U.S. Rehabilitation Act of 1973, as amended. SAS Field Quality Analytics conforms to accessibility standards for the Windows platform.

SAS Field Quality Analytics includes keyboard shortcuts. To view the keyboard shortcuts that are available, select **Help** ⇨ **Keyboard Shortcuts** from the menu.

The following is a list of accessibility limitations and workaround steps in SAS Field Quality Analytics:

- To expand or collapse an expandable or collapsible section from the keyboard, use the spacebar after selecting it with the Tab key.
- To change the focus from inside a text area, use Ctrl + F6 to open the landmarks window.
- If you have trouble accessing all options from the keyboard with the Tab key, try using reverse tab (Shift + Tab) to access other options.
- Some error messages do not receive immediate focus. If this occurs, dismiss the window below the error message to interact with the error message.
- JAWS screen reader does not function with Firefox or Chrome browsers.
- Graphs and other visualizations of data are not read correctly by screen readers.
- Screen readers do not read labels associated with some fields, or calendars.
- It is not possible to toggle check boxes that are contained in some tables or lists from the keyboard.
- In some lists, the right mouse button menu is not available via keyboard.

For specific information about Windows accessibility features, refer to your operating system's help. If you have questions or concerns about the accessibility of SAS products, send e-mail to **`accessibility@sas.com`**.

# Part 2

# Projects

*Chapter 5*

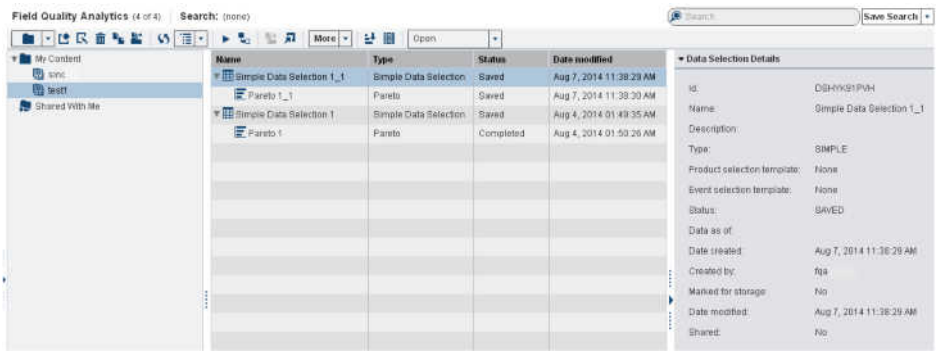
# Overview of Projects



## Overview

The **Analysis** workspace enables you to group and track your analytical activities within projects, and those activities persist in the workspace until you delete them. You can save and share analyses that you create in a project.

The **Analysis** workspace display area contains a project tree and a project pane where the results and details of analyses are displayed. To begin working with SAS Field Quality Analytics, you must create a new project.



A project is an area where you can group analyses and optionally their supporting files (PDFs, images, documents, and so on). You determine how to group these analyses in a way that makes sense to you.

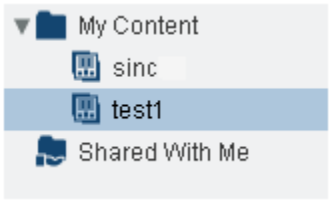
You might choose to organize analyses in any of the following ways:

- all analyses related to a specific field issue (for example, power supply failures on a given model)
- all analyses conducted for a specific person (for example, analyses for Joe)
- analyses to track the validation of fixes (for example, trend charts for all closed issues)

You can create a new project or open a project that already exists. You specify a name and description for each project when you create it. After you select a project in the table, its name and any analyses with associated data selections are displayed in the **Analysis** workspace.

## The Project Tree

The project tree displays the **My Content** folder, which contains the projects that you have created, and the **Shared With Me** folder, which contains analyses that have been shared with you by another user. Analyses that appear in the **Shared With Me** folder are Read-Only. You can copy an analysis that has been shared with you to analyze in one of your projects. For more information about how to copy an analysis that has been shared with you, see "Copy and Analyze in a Project" on page 153.




## The Project Table

The project table displays analyses with associated data selections that are part of your project. Project contents can be viewed in Hierarchy View, with analyses displayed beneath their data selection and child analyses beneath their parents, or in a flat List View.

| Name | Type | Status | Date modified |
|---|---|---|---|
| Simple Data Selection 1_1 | Simple Data Selection | Saved | Aug 7, 2014 11:38:29 AM |
| Pareto 1_1 | Pareto | Saved | Aug 7, 2014 11:38:30 AM |
| Simple Data Selection 1 | Simple Data Selection | Saved | Aug 4, 2014 01:49:35 AM |
| Pareto 1 | Pareto | Completed | Aug 4, 2014 01:50:26 AM |

When you select a data selection or analysis in the table, the pane at the far right of the workspace displays information for the selected item. Depending on which item you select, one or more of the following is displayed in this pane:

- the **Properties** pane

  For information, see "Properties Pane" on page 17.
- the **Data Selection Details** pane

  For information, see "Data Selection Details Pane" on page 18.
- the **Basic Settings** pane

  For information, see "Basic Settings Pane" on page 19.
- the **Advanced Settings** pane

  For information, see "Advanced Settings Pane" on page 20.
- the **Display Settings** pane

  For information, see "Display Settings Pane" on page 20.
- the **Messages** pane

  For information, see "Messages Pane" on page 21.
- the **Update** pane

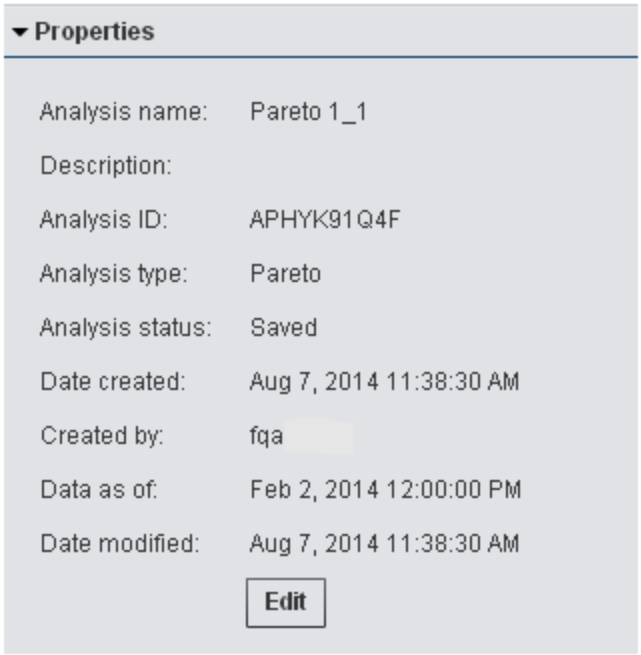
  For information, see "Update Pane" on page 21.
- the **Comments** pane

  For information, see "Using the Comment Manager" on page 178.
- the **Sharing** pane

  For information, see "Share an Analysis" on page 154.

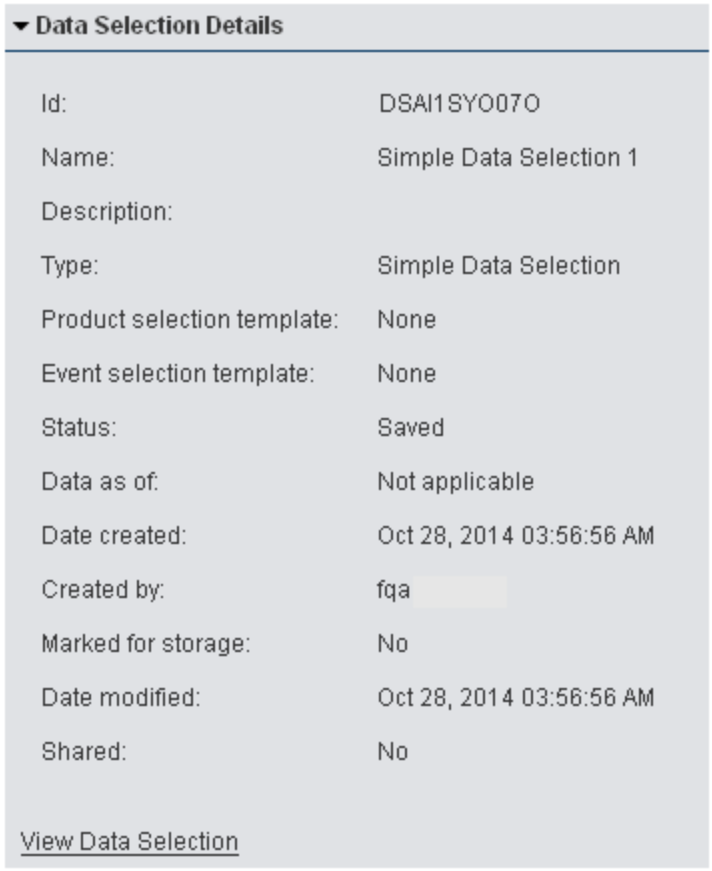
## Properties Pane

When you select an analysis in the table, the **Properties** pane is displayed. The **Properties** pane contains information about the analysis. You can edit some of these properties by selecting **Edit**.



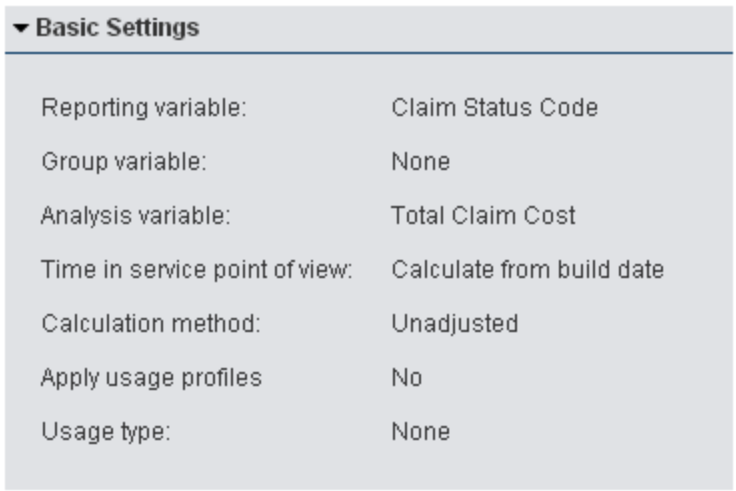

## Data Selection Details Pane

When you select an analysis in the table, the **Data Selection Details** pane is displayed. The **Data Selection Details** pane contains data selection information for the analysis. For analyses with a Completed or Error status, these details describe the data selection the analysis was run against. For other analyses, these details describe the data selection the analysis will be run against.



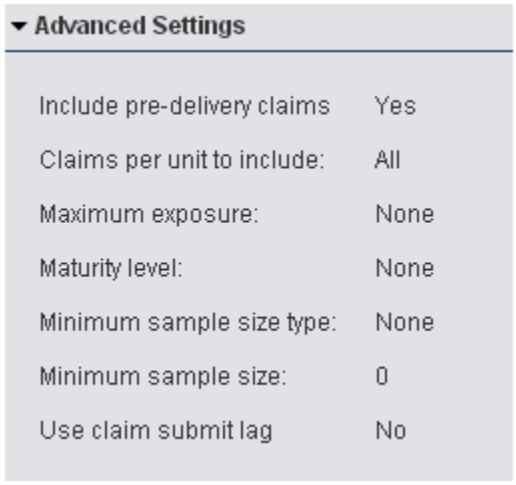

## Basic Settings Pane

When you select an analysis in the table, the **Basic Settings** pane is displayed. The **Basic Settings** pane contains basic information about the analysis. This information is frequently changed when creating or editing an analysis.



## Advanced Settings Pane

When you select an analysis in the table, the **Advanced Settings** pane is displayed. The **Advanced Settings** pane contains advanced information about the analysis. This information needs to be adjusted less frequently than the basic settings.

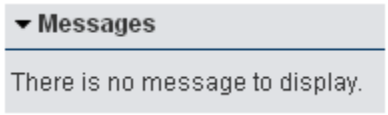



## Display Settings Pane

When you select an analysis in the table, the **Display Settings** pane is displayed. The **Display Settings** pane contains information about the graphical output for an analysis. You can edit some of these properties by selecting **Edit**. Edited display settings take effect the next time the analysis is opened. The analysis does not need to be rerun.

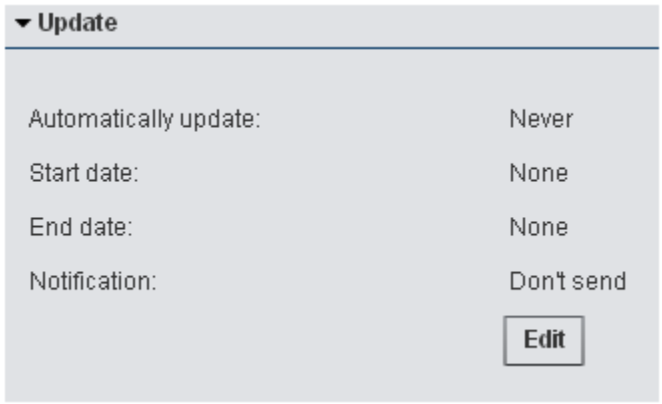
## Messages Pane

When you select an analysis in the table, the **Messages** pane is displayed. The **Messages** pane contains messages that have been generated by the system for the selected analysis. A typical message contains information or errors about the last run of the analysis.




## Update Pane

When you select an analysis in the table, the **Update** pane is displayed. The **Update** pane contains automatic update and notification options. You can modify these options by selecting **Edit**.



*Chapter 6*

# Working with Projects



## About Projects

SAS Field Quality Analytics uses projects to manage a collection of related data, tasks, and analyses. All analyses are defined and submitted in the **Analysis** workspace. Projects enable you to run multiple analyses on a single data selection. You can open and work with only one project at a time. A project includes at least one data selection. You can select from a number of different analyses to submit for the specified data selections. You can then apply additional analyses to the results. This process enables you to pinpoint product attributes that seem to be related to specific failures.

*Note:* If you use the same user ID to log on to the SAS Field Quality Analytics application client on two different PCs simultaneously, then the same project could be opened and altered on each PC. Errors and unpredictable results could occur. To avoid this risk, you should have only one active logon session at any given time.

## Create a Project

Perform the following steps to create a project in the **Analysis** workspace:

1. Select **New Project** from the project menu (  ).

   The New Project dialog box appears.
2. Specify a valid name for the project.
3. (Optional) Provide a description for the project.
4. Click **OK**.

The project appears in the project tree.

*Note:* New projects are always created in the **My Content** folder.

## Open a Project

Perform the following steps to open a project:

1. Navigate to the project that you want to open in the project tree menu.


2. Select the project.

   Contents of the project appear in the projects table.

## Modify a Project

Perform the following steps to modify a project:

1. Navigate to the project that you want to modify in the project tree menu, and select it.
2. Select **Edit Project** from the project menu (  ).

   The Edit Project dialog box appears.
3. Modify any fields that you are allowed to change.
4. Click **OK**.

## Delete a Project

Perform the following steps to delete a project:

1. Navigate to the project that you want to delete in the project tree menu, and select it.
2. Select **Delete Project** from the project menu (  ).
3. A confirmation dialog box appears that explains that all analyses within the project will be deleted.
4. Click **Delete**.

# *Part 3*

# Early Warning

*Chapter 7*

# Overview of the Early Warning Workspace



## About Early Warning Alerts and Graphics

The purpose of Early Warning alerts is to provide an early warning of field issues. You can monitor field event data, such as warranty claims or call center records, to identify significant upward shifts. You can detect changes across the production period, time in service, and event period.

There are two categories of Early Warning alerts. The first category is Analytic. The Analytic early warning process automatically monitors all combinations of select product and event attributes, and it flags statistically significant changes in event rates. It is recommended for the vast majority of issues. The second category is Threshold. The Threshold early warning process compares actual event rates, counts, or costs to user-specified targets. It flags instances where targets are exceeded, and it is recommended for safety and regulatory issues.

In the Early Warning Analytic process, the administrator creates an alert group. Information about the alert group consists of the following:

- definition of data to be analyzed
- product attributes (for example, make or model) that stratify the analysis
- event attributes (for example, labor code or part #) that will be monitored
- analysis settings such as sensitivity, seasonality, and alert gap

Additional business rules can be applied to remove certain event records or units from the process.

SAS Field Quality Analytics executes the alert groups after a data refresh, and it generates alert tables and charts for product and event combinations with significant changes.

SAS Field Quality Analytics Early Warning processes analyze your data to determine whether warranty issues are currently developing and whether alerts should be issued.

The following types of Early Warning processes are supported:

- The Enterprise Analytic process (Production Period) and the Ad Hoc Analytic process (Event Period) detect statistically significant upward shifts in claims or other warranty event activity and flag these events for investigation.

  The Production Period Method, based on the Wu and Meeker (2002) paper, monitors event activity and sample size at risk relative to a particular production period at different time-in-service periods. Data for each production period and time-in-service combination accumulates over time, since sales are staggered.

  The Claim Period Method monitors event count across calendar months to identify when the actual count within a calendar month exceeds what is expected to occur within that calendar month.

- The Ad Hoc Threshold process notifies you when claim counts or other metrics of interest have surpassed specified thresholds.

These processes display alerts and related graphics for you to review in the **Early Warning** workspace.

## Reference

Wu, H. and W. Meeker. 2002. “Early Detection of Reliability Problems Using Information from Warranty Databases.” *Technometrics* 79: 120–133.

## Production Period Methodology

The Production Period methodology looks at whether the actual claim rate is less than the expected claim rate for all time-in-service periods or whether the actual claim rate is greater than the expected claim rate for at least one of the time-in-service periods being monitored.

The statistical hypothesis test is as follows:

$$H_0: \lambda_1<\lambda_1^0, \lambda_2<\lambda_2^0,\ldots.,\lambda_K<\lambda_K^0$$

versus

$$H_a: \lambda_J > \lambda_J^0 \text{ for any } J=1,\ldots.,K$$

$\lambda_K$ represents the actual claim rate during time-in-service period K, and

$\lambda_K^0$ represents the expected claim rate for the same period.

The actual claim rate for a particular time-in-service period is greater than the expected if, for units produced in any production month being investigated, the number of claims that occurred in that time-in-service period on those units is greater than some critical value.

Therefore, it concludes that:

$$\lambda_K > \lambda_K^0$$

$$\text{if } S_{ijk} > C_{ijk}$$

$$\text{where } S_{ijk} = \sum_{j=1 \text{ to } p} R_{ipk}$$

and $R_{ipk}$ is the number of claims that occurred in the $k^{th}$ claim time-in-service period for units produced in the $i^{th}$ production period and sold in the $p^{th}$ sales period after production.

Given a particular production period (for example, July 2002), and a particular time-in-service period (for example, 1 month in service), an issue would be flagged if the sum of all claims that occurred on those units sold over a particular series of sales periods (for example, 1 month from build, 2 months from build, and so on) exceeds a calculated critical value. Why so specific? Units from a given month of production are staggered as they enter the population of units exposed, and claims occurring within the first month in service (for example) for a given production period might span several calendar periods.

The critical value ($C_{ijk}$) is calculated while taking the following into account:

- past claim rate history for the different time-in-service periods
- sales proportions, or the proportion of units produced in a particular production period that would go into service in each of the periods after production
- number of units produced in each of the production periods
- false alarm probability (alpha)

The output from the Production Period methodology identifies combinations of production month and time-in-service values where the actual event activity exceeds a critical value that is based on what is expected to occur. The output is represented on a matrix to quickly identify patterns in production months or time in service.

## Event Period Methodology

The Event Period methodology looks at whether the number of claims expected to occur is based on the age base of the population within that calendar month and historic claim

rates at various product ages. A statistical test is performed for each calendar month in order to identify when the actual claim count is greater than the critical value.

The critical value is based on the expected claim count and a false alarm probability. The expected claim count is based on how old the units at risk are in month (for example, the age base of the population), and the historic claim rate pattern associated with each time-in-service interval.

Event Period output includes a chart that identifies instances where the number of claims that occurred within a calendar month exceeded a critical value. The critical value is based on the number of claims expected to occur.

## Additional Functionality for Analytic Methods

The following table describes additional functionality for the analytical methods:

***Table 7.1*** *Additional Functionality for Analytic Methods*

| Functionality | Problem | Solution |
|---|---|---|
| Claim Intensity Estimates | Type II errors occur when the data includes production periods with higher than normal claim intensities. | Use robust estimators for the claim intensities. |
| Seasonal Factor Estimation | Seasonal patterns in the data lead to erroneous results. | Seasonal factors are estimated independently of the analysis models using a logistic regression model and applied to the claim intensities and expected counts. |
| Alert Scoring | Alerts are difficult to compare and prioritize. | Alert index scores (based on counts and cost) are generated to allow comparison of alerts. |
| Early Warning Reconciliation | Wu/Meeker was designed to analyze a point in time. In subsequent runs, alert statuses can change. | To maintain consistency, reconciliation routines keep critical values for specific combinations constant over time. After an alert is signaled, it is maintained across runs. |
| Alert Processing | Alerts across production periods are viewed independently. | Multiple flagged production or event periods are gathered together to produce a single alert, unless the gap between periods exceeds a specified number. |

## Threshold Process

In the Early Warning Threshold Process, the administrator creates an alert group that contains information about the following:

- definition of data to be analyzed
- event attributes (for example, labor code or part #) that will be monitored
- threshold values (for example, 10 claims or .1 incidents per 100 units)

SAS Field Quality Analytics executes alert groups after a data refresh, and generates alert tables and charts for items that exceeded the specified threshold.

## The Early Warning Workspace

The Early Warning alerts that result from Enterprise Analytic, Ad Hoc Analytic, and Ad Hoc Threshold processes are organized in the **Early Warning** workspace. This workspace enables you to manage and explore the results of the Early Warning processes that run after the extraction, transfer, and loading of data.

You can use the **Early Warning** workspace for the following purposes:

- search and sort the alerts
- view the alerts for enterprise analytic, ad hoc analytic, and ad hoc threshold types
- sort the alerts by alert group
- export an early warning alert as a PDF file
- export alert tables to Microsoft Excel or to a comma-separated values (CSV) format file
- zoom into graphs
- view alert status and modify subscriptions
- add comments

## Alert Output Examples

An Early Warning graph (production and event period) is generated to illustrate an alert. Both methods, production and claim period, work analogously to a control chart. For claim period, the data is considered with respect to claim counts in claim periods. For production period, the data is considered with respect to claim counts in production, in-service, and claim periods.

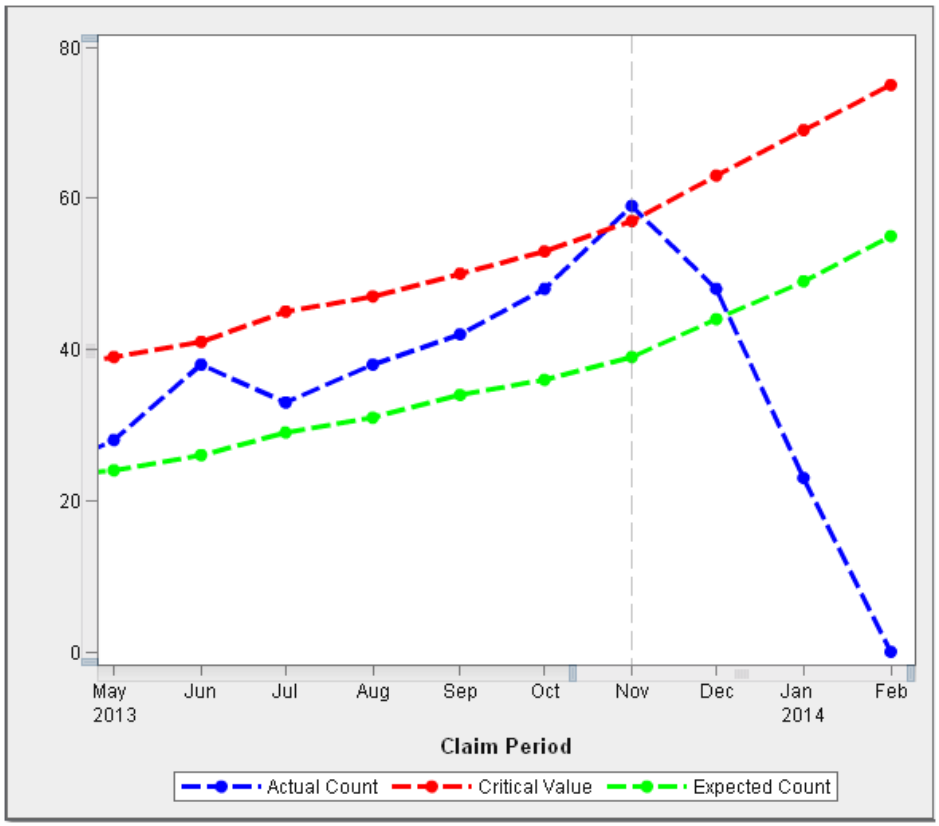
To determine critical values, both methods use a common average time-to-claim rate distribution. Based on the average claim rates and the desired false alarm (alpha) level, critical values for claim counts are calculated using a Poisson distribution. A count is judged as significant, and the corresponding time period flagged, if it is greater than or equal to the critical value.

Determining what to set for the false alarm (alpha) level is primarily a subjective process. Alpha levels are set at the alert group level. During system initialization, the recommended way of setting the alpha level is to evaluate runs at several alpha levels against a known set of problems. Later, you might consider whether too many alerts seem inconsequential. In that case, the alpha should be made smaller. So if you are getting too many false alarms, then make the alpha smaller. On the other hand, if you

think that too many real problems are being missed, then you might make the alpha level somewhat larger.

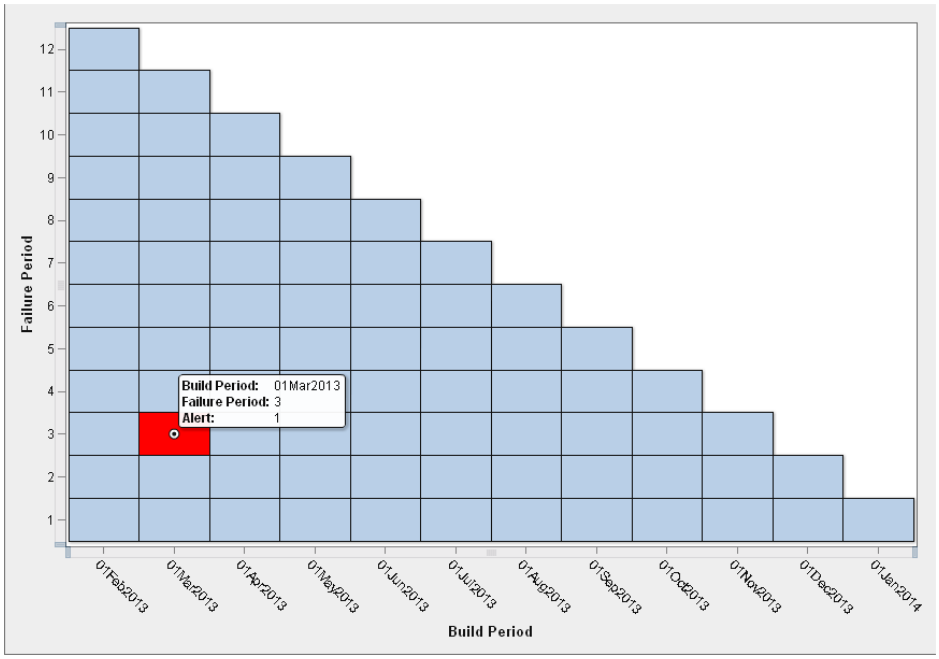
If the actual claim count exceeds or is equal to the critical value or the control limit, then the time period is flagged. In Figure 7.1 on page 32, November 1st is flagged.

***Figure 7.1*** *Total Claim Counts by Early Warning Claim Period*



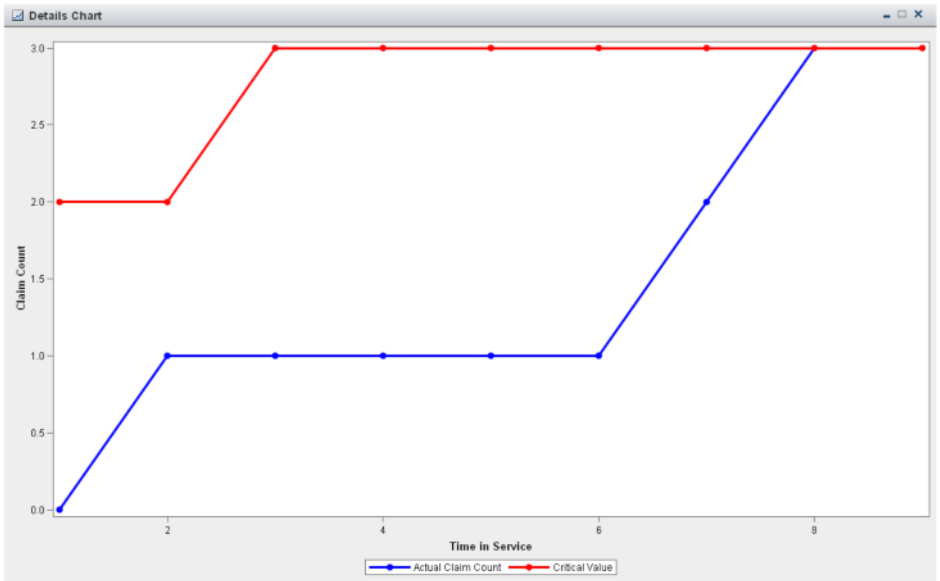

The following Production Period Matrix chart is related to when an event occurs.

***Figure 7.2*** *Production Period Matrix Chart*




The Production Period Detail Chart in Figure 7.3 on page 33 corresponds to the alert period (build period of March 2013 and failure period of 3 months) on the Production Period Matrix chart in Figure 7.2 on page 33.

***Figure 7.3*** *Production Period Detail Chart*



*Chapter 8*

# Working with Early Warning Alerts and Graphics

# Overview of Working with Early Warning Alerts and Graphics

This chapter explains how you can work with alerts in the **Enterprise Analytic**, **Ad Hoc Analytic**, and **Ad Hoc Threshold** sections of the **Early Warning** workspace.

# Enterprise Analytic

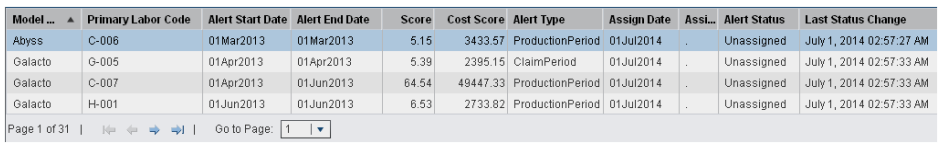
### *Open an Enterprise Analytic Alert Group*

Perform the following steps to open an enterprise analytic alert group:

1. Select an alert group in the table.
2. Click **Open**.

   *Note:* You can also open an alert group by double-clicking it in the table.

   A list of alerts appear for the alert group that you opened.



| Model ... | Primary Labor Code | Alert Start Date | Alert End Date | Score | Cost Score | Alert Type | Assign Date | Assi... | Alert Status | Last Status Change |
|---|---|---|---|---|---|---|---|---|---|---|
| Abyss | C-006 | 01Mar2013 | 01Mar2013 | 5.15 | 3433.57 | ProductionPeriod | 01Jul2014 | . | Unassigned | July 1, 2014 02:57:27 AM |
| Galacto | G-005 | 01Apr2013 | 01Apr2013 | 5.39 | 2395.15 | ClaimPeriod | 01Jul2014 | . | Unassigned | July 1, 2014 02:57:33 AM |
| Galacto | C-007 | 01Apr2013 | 01Jun2013 | 64.54 | 49447.33 | ProductionPeriod | 01Jul2014 | . | Unassigned | July 1, 2014 02:57:33 AM |
| Galacto | H-001 | 01Jun2013 | 01Jun2013 | 6.53 | 2733.82 | ProductionPeriod | 01Jul2014 | . | Unassigned | July 1, 2014 02:57:33 AM |

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### *Refresh Enterprise Analytic Alert Groups*

Click  to refresh your view of enterprise analytic alert groups.

### *Add Subscriptions for an Enterprise Analytic Alert Group*

Perform the following steps to add subscriptions for an enterprise analytic alert group:

1. Select an alert group in the table.
2. Click  .

   The Add Enterprise Analytic Alert Subscriptions window appears.
3. Select an alert group in the **Available alert groups** list.

   *Note:* You can use the search text box to help you find an alert group.
4. Click  .

   The alert group is added to the **Subscribed alert groups** list.

   *Note:*

   - You can use  and  to reorder the relative position of selected alert groups.
   - To unsubscribe a subscribed alert group, select it in the list, and then click **Unsubscribe**.
5. Add or remove a component of a selected alert group.
   a. Select an alert group in the **Subscribed Alert Groups** list.
   b. Navigate to a component of a selected alert group by expanding an alert group in the **Components of Selected Alert Group** pane, and selecting a component.
   c. Click **Add** or **Remove** after selecting a folder to add or remove a component.
6. After you select a component, specify whether you want to subscribe to all values or subscribe only to selected values.
7. If you specified that you want to subscribe only to selected values, click **Select** to specify the values to include or the values to exclude.

   *Note:* If you receive an error message when the Select Attribute Values dialog box appears due to too many values (greater than 1024), try dividing the number of values into multiple subscriptions. You cannot add subscriptions for missing values.
8. Specify whether you want to send e-mail notifications for alerts in this subscription.
9. Click **Save**.

### *Copy URL*

You can copy the URL of early warning alert information to send to another user in an e-mail.

Perform the following steps to copy the URL of early warning alert information:

1. Select an alert group in the table.
2. Select **Copy URL** from the **More** menu ( 

).

3. Paste the URL into an e-mail using Ctrl + v on your keyboard, or right-click and select **Paste** from the menu that appears.

   *Note:* You can also save the URL by pasting it into a file, such as Microsoft Word, to save it.

   After you send the e-mail, the recipient can open the early warning alert information by clicking on the link that you sent.

### Add an Alert Group to the Portlet

Perform the following steps to add an alert group to the portlet:

1. Select an alert group in the table.
2. Select **Add to Portlet** from the **More** menu.

### Sort Rows

For information about how to sort rows, see "Modify Your View of Columns and Rows" on page 177.

### Manage Columns

For information about how to manage columns, see "Modify Your View of Columns and Rows" on page 177.

### Search for an Enterprise Analytic Alert Group

Perform the following steps to search for an enterprise analytic alert group:

1. Type terms that you want to search for in the **Search** text box.

   Items that match what you have typed so far are displayed in the table.

2. (Optional) Click **Save Search** to save your search terms for a future use.
   a. The Save Search dialog box appears.
   b. Provide a name for the search.
   c. Provide a description for the search.
   d. Click **Save**.

   *Note:* To use a saved search, click  , and then select **Manage Saved Searches**.

   The Manage Saved Searches dialog box appears. Select a saved search, and then click **OK**.

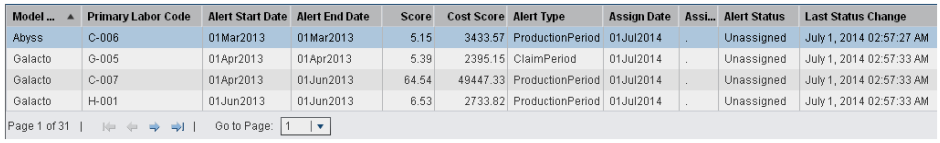
### Explore an Enterprise Analytic Alert Group

Perform the following steps to explore an enterprise analytic alert group:

1. Select an enterprise analytic alert group in the table.
2. Click **Open**.

   *Note:* You can also open an alert group by double-clicking it in the table.

   Tabular and graphical output results for the enterprise analytic alert group appear in a window. The following is an example of a table of alerts that could appear for a particular alert group:



| Model ... | Primary Labor Code | Alert Start Date | Alert End Date | Score | Cost Score | Alert Type | Assign Date | Assi... | Alert Status | Last Status Change |
|---|---|---|---|---|---|---|---|---|---|---|
| Abyss | C-006 | 01Mar2013 | 01Mar2013 | 5.15 | 3433.57 | ProductionPeriod | 01Jul2014 | . | Unassigned | July 1, 2014 02:57:27 AM |
| Galacto | G-005 | 01Apr2013 | 01Apr2013 | 5.39 | 2395.15 | ClaimPeriod | 01Jul2014 | . | Unassigned | July 1, 2014 02:57:33 AM |
| Galacto | C-007 | 01Apr2013 | 01Jun2013 | 64.54 | 49447.33 | ProductionPeriod | 01Jul2014 | . | Unassigned | July 1, 2014 02:57:33 AM |
| Galacto | H-001 | 01Jun2013 | 01Jun2013 | 6.53 | 2733.82 | ProductionPeriod | 01Jul2014 | . | Unassigned | July 1, 2014 02:57:33 AM |

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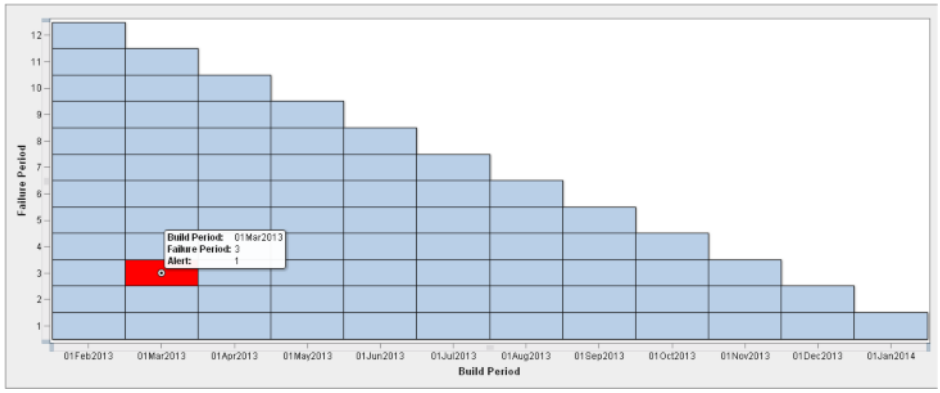
   *Note:* If the vertical scroll bar is not available in the table to scroll down to view all the alerts, try closing the properties pane first.

   The following is an example of graphical output that is available for an alert:




   Select a different alert to view its graphical output.

3. (Optional) Filter your view of alerts in the table:

   a. Select whether you want to view all alerts or only the alerts that you are subscribed to by selecting **All Alerts** or **My Subscribed Alerts** from the menu.

   b. Expand the **Search** pane.

   c. Select options to filter your view of alerts in the table.

      You can use the pipe character ( | ) on your keyboard as a logical OR in a search. The following are some examples of how you can use the pipe character for character and numeric search values:

      Assume that you want to search for “I am in | I was in”. The following illustrates how each variable value selection will process this character search:

      - **Contains one or more words** — This will search for text that contains the words ‘I’, ‘am’, ‘in’, or ‘was’. It is equal to “I | am | in | was”.
      - **Contains all the words** — This will search for text that contains ‘I’, ‘am’, ‘in’, and ‘was’.
      - **Contains the exact phrase** — This will search for text that contains “I am in” or “I was in”.
      - **Start with one or more words** — This will search for text that starts with the words ‘I’, ‘am’, ‘in’, or ‘was’.

- **Start with the exact phrase** — This will search for text that begins with "I am in" or "I was in".
- **Ends with one or more words** — This will search for text that ends with the words 'I', 'am', 'in', or 'was'.
- **Ends with the exact phrase** — This will search for text that ends with the words "I am in" or "I was in".
- **Not containing any words** — This will search for text that does not contain the words 'I', 'am', 'in', and 'was'.

Assume that you want to search for "50 | 100". The following illustrates how each variable value selection will process this numeric search:

- **Equal to** — This will search for the values 50 and 100.

  *Note:* If you use the **Equal to** operator, search results will not be accurate when a column has formatted decimal values. This is because the values that are shown in such columns are rounded up according to the format set by the administrator, while the search on a paginated output screen happens by design on the server side raw values. So, for example, the value 6.33 that is shown on the output screen in fact could be 6.333333 in the data set where this search will look for a match. Therefore, when searching on decimal columns, it is recommended that you use the **Less Than** or **Greater Than** operators, or both of them in conjunction, to arrive at the desired result.
- **Greater Than** — This search will find results that are greater than 50.
- **Less Than** — This search will find results that are less than 100.
- **Greater Than or Equal to** — This search will find results that are greater than or equal to 50.
- **Less Than or Equal to** — This search will find results that are less than or equal to 100.
- **Not Equal to** — This search will find results that are not equal to 50 or 100.
- **Not Greater Than** — This search will find results that are less than 50.
- **Not Less Than** — This search will find results that are greater than 50.
- **Not Greater Than or Equal to** — This search will find results that are less than or equal to 50.
- **Not Less Than or Equal to** — This search will find results that are greater than or equal to 50.

Date and datetime searches will return results depending on the dates that are given for before and after.

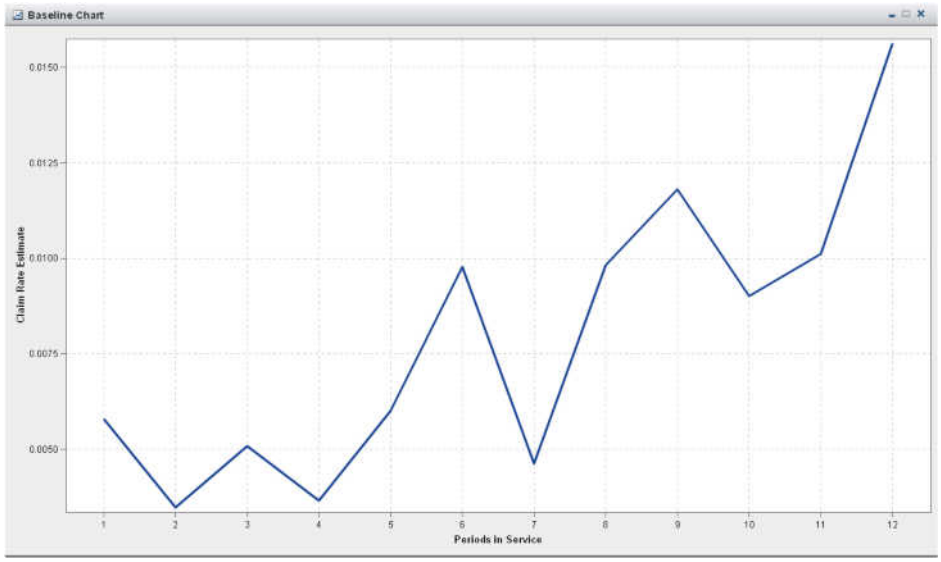
4. Select an alert in the table.
5. Select the drop-down menu and select one of the following to change your view of the graphical and tabular output that is available for each alert:
   - **One chart** shows the graphical output for an alert.
   - **One chart and table** shows the graphical and tabular output for the alert.
   - **One table** shows the tabular output for the alert.
   - **Multiple charts** shows graphs for each of the alerts.

6. Expand your view of the table of alerts, or the graphical and tabular output, by clicking , holding the mouse button down, and dragging the mouse upward or downward.
7. Expand your view of the properties pane, or the table of alerts and graphical and tabular output, by clicking , holding the mouse button down, and dragging the mouse left or right.

   The properties pane shows alert group properties, data selection details, basic settings, advanced settings, auto update information, and comments for the alert group. To expand your view of a section, click . To hide your view of a section, click . For more information about adding a comment for an alert group, see "Add Comments to an Item Using the Comment Manager" on page 179.
8. View the details chart for an alert:
   a. Select **View Details Chart** from the **More** drop-down menu.

      The details chart for the alert appears in a new window.
   b. Close your view of the details chart.
9. View the baseline chart for an alert:
   a. Select **View Baseline Chart** from the **More** drop-down menu.

      The baseline chart for the alert appears in a new window.




   b. Close your view of the baseline chart.

## *Analyze an Enterprise Analytic Alert in a Project*

To further analyze the data underlying an alert, you can copy the alert data to the **Analysis** workspace for further investigation.

Perform the following steps to analyze an enterprise analytic alert in a project:

1. Open an enterprise analytic alert group.
2. Select an alert in the table.

3. Click  .

   The Analyze in Project dialog box appears.

4. Select a project from the menu.
5. Provide the data selection name.
6. Provide the data selection description.
7. Specify the number of weeks to expire.

   *Note:* Data selections created by analyzing an early warning alert are a special type of data selection. These data selections re-create and store the filtered subsets to preserve the snapshot of data of that time. You should extend the expiration date of this data selection until you want to use this data selection. If the stored filtered subsets on this data selection expire, then this data selection goes into an error state, and any analysis that is run on this data selection can go into an error state. Therefore, after the time has expired, the data selection that was created to help analyze an early warning alert cannot be used to create a new analysis or subset an analysis. Running an analysis that uses this data selection in the error state, or running the data selection itself in the error state, will result in an error. However, you can still open the output of earlier runs that occurred before the data selection reached the error state.

8. Click **OK**.

### Assign an Enterprise Analytic Alert to a User

Perform the following steps to assign an enterprise analytic alert to a user:

1. Open an enterprise analytic alert group.
2. Select an alert in the table.
3. Click  .

   The Assign Alert dialog box appears.

4. Specify the status for the alert.
5. Select a user name in the list.

   *Note:* You can use the **Search** text box 

   to narrow the list of users that are available to select. The list will update with what you have typed so far.

6. Click  .
7. Click **OK**.

### Add a Comment for an Enterprise Analytic Alert

Perform the following steps to add a comment for an enterprise analytic alert:

1. Open an enterprise analytic alert group.
2. Select an alert in the table.

3. Click  .

   The Comments dialog box appears.

4. Provide a topic name.
5. Enter a comment.
6. (Optional) Attach a file.
   a. Click  .

      A dialog box appears.

   b. Navigate to the file that you want to attach.
   c. Click **Open**.

   *Note:* If you want to remove an attachment, click **Remove**.

7. Click **Post**.

## Export an Enterprise Analytic Alert

Perform the following steps export an enterprise analytic alert:

1. Open an enterprise analytic alert group.
2. Select an alert in the table.
3. Click  .

   The Export Analysis to PDF dialog box appears.

4. Provide the title of the analysis that you want to export.
5. Select the orientation of the analysis.
6. Specify whether you want to export both graphs and tables, just graphs, or just tables.
7. Select the type of analysis information that you want to include.
8. Specify the columns to include in the table:
   a. Select a column that you want to include in the **Available Items** list.
   b. Click  .

      The column is added to the **Selected Items** list.

      *Note:* You can use  and  to reorder the relative position of the columns.

   c. (Optional) To remove a column, select the column in the **Selected Items** list, and then click  .

      The column is added to the **Available Items** list.

9. Specify the rows that you want to include in the table.
10. Specify whether you want to keep all the selected columns in one table, or whether you want to create multiple tables by providing a maximum number of columns per table.

11. Click **OK**.

    A dialog box appears.

12. Specify whether you want to open or save the file.

### *Save an Alert in Microsoft Excel or CSV Format*

Perform the following steps to save an alert in Microsoft Excel or a CSV document:

1. Open an enterprise analytic alert group.
2. Select an alert in the table.
3. Click  .

   The Export to File dialog box appears.

4. Specify whether you want to export data into Microsoft Excel or into a CSV format.
5. Select the type of alert information that you want to include.
6. Specify the columns to include in the table:
   a. Select a column that you want to include in the **Available Items** list.
   b. Click  .

      The column is added to the **Selected Items** list.

      *Note:* You can use  and  to reorder the relative position of the columns.

   c. (Optional) To remove a column, select the column in the **Selected Items** list, and then click  .

      The column is added to the **Available Items** list.

7. If you specified to export data into Microsoft Excel, specify the following options:
   a. Specify the rows that you want to include in the table.
   b. Specify whether you want to keep the first few columns fixed in all of the tables that are created.
   c. If you specified that you want to keep the first few columns fixed in all of the tables, provide the number of columns to be fixed.
8. Click **OK**.

## Ad Hoc Analytic

### *Create a New Ad Hoc Analytic Alert Group*

Perform the following steps to create a new ad hoc analytic alert group:

1. Click  .

The Select Data Selection window appears.

2. Select a data selection in the table.
3. Click **OK**.

   The Ad Hoc Analytic window appears.
4. Provide an alert group name.
5. Provide an alert group description.
6. Select a reporting variable from the menu.
7. Specify a monitoring time window length.
8. Select a production period alert alpha level.
9. Specify a warranty time length.
10. Select an event period alert alpha level.
11. Specify an event rate estimation time window.
12. Specify a minimum number of production periods.
13. Select the method of notification from the menu.
14. Provide the users that you want to notify if you have selected a method of notification.
    a. Click **Select**.

       The Notify Users window appears.

    b. Select a user or group in the **Available** list.

    c. Click  .

       The user or group is added to the **Selected** list.

    d. Click **OK**.
15. Specify whether you want the analysis to automatically update.
16. If you selected **Between these dates** in the previous step, select a start date and an end date by clicking  .
17. Click **Save and Submit** or **Save**.

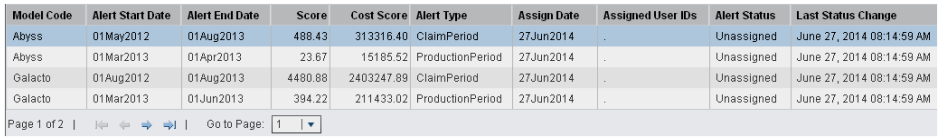
## *Open an Ad Hoc Analytic Alert Group*

Perform the following steps to open an ad hoc analytic alert group:

1. Select an alert group in the table.
2. Click **Open**.

   *Note:* You can also open an alert group by double-clicking it in the table.

   A list of alerts appears for the alert group that you opened.



| Model Code | Alert Start Date | Alert End Date | Score | Cost Score | Alert Type | Assign Date | Assigned User IDs | Alert Status | Last Status Change |
|---|---|---|---|---|---|---|---|---|---|
| Abyss | 01May2012 | 01Aug2013 | 488.43 | 313316.40 | ClaimPeriod | 27Jun2014 | . | Unassigned | June 27, 2014 08:14:59 AM |
| Abyss | 01Mar2013 | 01Apr2013 | 23.67 | 15185.52 | ProductionPeriod | 27Jun2014 | . | Unassigned | June 27, 2014 08:14:59 AM |
| Galacto | 01Aug2012 | 01Aug2013 | 4480.88 | 2403247.89 | ClaimPeriod | 27Jun2014 | . | Unassigned | June 27, 2014 08:14:59 AM |
| Galacto | 01Mar2013 | 01Jun2013 | 394.22 | 211433.02 | ProductionPeriod | 27Jun2014 | . | Unassigned | June 27, 2014 08:14:59 AM |

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### Modify an Ad Hoc Analytic Alert Group

Perform the following steps to modify an ad hoc analytic alert group:

1. Select an alert group in the table.
2. Click  .
3. Modify the fields that you want to change.
4. Click **Save and Submit** or **Save**.

### Delete an Ad Hoc Analytic Alert Group

Perform the following steps to delete an ad hoc analytic alert group:

1. Select an alert group in the table.
2. Click  .

   A Confirmation dialog box appears.
3. Click **Delete**.

### Copy an Ad Hoc Analytic Alert Group

Perform the following steps to copy an ad hoc analytic alert group:

1. Select an alert group in the table.
2. Click  .

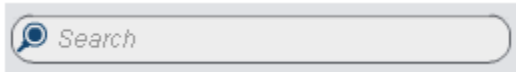
   A copy of the ad hoc analytic alert group appears in the table.

### Replace a Data Selection for the Selected Alert Group

Perform the following steps to replace a data selection for a selected alert group:

1. Select an alert group in the table.
2. Click  .

   The Replace Data Selection window appears.
3. Select a data selection in the list to replace the one that is currently being used.

   *Note:* You can use the **Search** text box 
   
   to narrow the list of available data selections. The list of data selections in the table will update to match what you have typed so far. You can also use the drop-down menu to filter the type of data selections that appear in the table.
4. (Optional) Click **View Summary** to view additional information about the selected data selection.

A View Summary window appears with additional information about the data selection. Click **OK** when you have finished viewing information about the data selection.

5. Click **Save and Submit** or **Save**.

### *Refresh Ad Hoc Analytic Alert Groups*

Click  to refresh your view of ad hoc analytic alert groups.

### *View the SAS Log*

Select **View SAS Log** from the **More** menu. The SAS log appears in a new window.

### *Download the SAS Log*

Select **Download SAS Log** from the **More** menu. A dialog box appears. Specify whether you want to open or save the SAS log.

### *Add Subscriptions for an Ad Hoc Analytic Alert Group*

Perform the following steps to add subscriptions for an ad hoc analytic alert group:

1. Select an alert group in the table.
2. Click  .

   The Add Ad Hoc Analytic Alert Subscriptions window appears.
3. Select an alert group in the **Available alert groups** list.

   *Note:* You can use the **Search** text box to help you find an alert group.
4. Click  .

   The alert group is added to the **Subscribed alert groups** list.

   *Note:*

   - You can use  and  to reorder the relative position of selected alert groups.
   - To unsubscribe from a subscribed alert group, select it in the list, and then click **Unsubscribe**.
5. Add or remove a component of a selected alert group.
   a. Select an alert group in the **Subscribed Alert Groups** list.
   b. Navigate to a component of a selected alert group by expanding an alert group in the **Components of Selected Alert Group** pane, and selecting a component.
   c. Click **Add** or **Remove** after selecting a folder to add or remove a component.
6. After you select a component, specify whether you want to subscribe to all values or subscribe only to selected values.

7. If you specified that you want to subscribe only to selected values, click **Select** to specify the values to include or the values to exclude.

   *Note:* If you receive an error message when the Select Attribute Values dialog box appears due to too many values (greater than 1024), try dividing the number of values into multiple subscriptions. You cannot add subscriptions for missing values.

8. Specify whether you want to send e-mail notifications for alerts in this subscription.
9. Click **Save**.

### Copy URL

You can copy the URL of early warning alert information to send to another user in an e-mail.

Perform the following steps to copy the URL of early warning alert information:

1. Select an alert group in the table.
2. Select **Copy URL** from the **More** menu ( 

).
3. Paste the URL into an e-mail using Ctrl + v on your keyboard, or right-click and select **Paste** from the menu that appears.

   *Note:* You can also save the URL by pasting it into a file, such as Microsoft Word, to save it.

   After you send the e-mail, the recipient can open the early warning alert information by clicking on the link that you sent.

### Add an Alert Group to the Portlet

Perform the following steps to add an alert group to the portlet:

1. Select an alert group in the table.
2. Select **Add to Portlet** from the **More** menu.

### Sort Rows

For information about how to sort rows, see "Modify Your View of Columns and Rows" on page 177.

### Manage Columns

For information about how to manage columns, see "Modify Your View of Columns and Rows" on page 177.

### Search for an Ad Hoc Analytic Alert Group

Perform the following steps to search for an ad hoc analytic alert group:

1. Type terms that you want to search for in the **Search** text box.


Items that match what you have typed so far are displayed in the table.

2. (Optional) Click **Save Search** to save your search terms for a future use.
   a. The Save Search dialog box appears.
   b. Provide a name for the search.
   c. Provide a description for the search.
   d. Click **Save**.

*Note:* To use a saved search, click  , and then select **Manage Saved Searches**.

The Manage Saved Searches dialog box appears. Select a saved search, and then click **OK**.

## *Explore an Ad Hoc Analytic Alert Group*

Perform the following steps to explore an ad hoc analytic alert group:

1. Select an ad hoc analytic alert group in the table.
2. Click **Open**.

*Note:* You can also open an alert group by double-clicking it in the table.

Tabular and graphical output results for the ad hoc analytic alert group appear in a window. The following is an example of a table of alerts that could appear for a particular alert group:

| Model Code | Alert Start Date | Alert End Date | Score | Cost Score | Alert Type | Assign Date | Assigned User IDs | Alert Status | Last Status Change |
|---|---|---|---|---|---|---|---|---|---|
| Abyss | 01May2012 | 01Aug2013 | 488.43 | 313316.40 | ClaimPeriod | 27Jun2014 | . | Unassigned | June 27, 2014 08:14:59 AM |
| Abyss | 01Mar2013 | 01Apr2013 | 23.67 | 15185.52 | ProductionPeriod | 27Jun2014 | . | Unassigned | June 27, 2014 08:14:59 AM |
| Galacto | 01Aug2012 | 01Aug2013 | 4480.88 | 2403247.89 | ClaimPeriod | 27Jun2014 | . | Unassigned | June 27, 2014 08:14:59 AM |
| Galacto | 01Mar2013 | 01Jun2013 | 394.22 | 211433.02 | ProductionPeriod | 27Jun2014 | . | Unassigned | June 27, 2014 08:14:59 AM |

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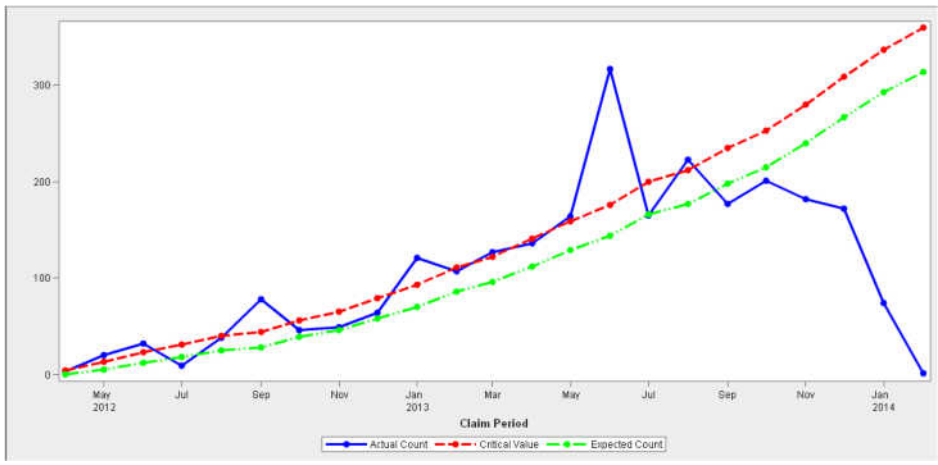
*Note:* If the vertical scroll bar is not available in the table to scroll down to view all the alerts, try closing the **Properties** pane first.

The following is an example of graphical output that is available for an alert:




Select a different alert to view its graphical output.

3. (Optional) Filter your view of alerts in the table:

   a. Select whether you want to view all alerts or only the alerts that you are subscribed to by selecting **All Alerts** or **My Subscribed Alerts** from the menu.

   b. Expand the **Search** pane.

   c. Select options to filter your view of alerts in the table.

      You can use the pipe character ( | ) on your keyboard as a logical OR in a search. The following are some examples of how you can use the pipe character for character and numeric search values:

      Assume that you want to search for "I am in | I was in". The following illustrates how each variable value selection will process this character search:

      - **Contains one or more words** — This will search for text that contains the words 'I', 'am', 'in', or 'was'. It is equal to "I | am | in | was".
      - **Contains all the words** — This will search for text that contains 'I', 'am', 'in', and 'was'.
      - **Contains the exact phrase** — This will search for text that contains "I am in" or "I was in".
      - **Start with one or more words** — This will search for text that starts with the words 'I', 'am', 'in', or 'was'.
      - **Start with the exact phrase** — This will search for text that begins with "I am in" or "I was in".
      - **Ends with one or more words** — This will search for text that ends with the words 'I', 'am', 'in', or 'was'.
      - **Ends with the exact phrase** — This will search for text that ends with the words "I am in" or "I was in".
      - **Not containing any words** — This will search for text that does not contain the words 'I', 'am', 'in', and 'was'.

      Assume that you want to search for "50 | 100". The following illustrates how each variable value selection will process this numeric search:

      - **Equal to** — This will search for the values 50 and 100.

        *Note:* If you use the **Equal to** operator, search results will not be accurate when a column has formatted decimal values. This is because the values that are shown in such columns are rounded up according to the format set by the administrator, while the search on a paginated output screen happens by design on the server side raw values. So, for example, the value 6.33 that is shown on the output screen in fact could be 6.333333 in the data set where this search will look for a match. Therefore, when searching on decimal columns, it is recommended that you use the **Less Than** or **Greater Than** operators, or both of them in conjunction, to arrive at the desired result.

      - **Greater Than** — This search will find results that are greater than 50.
      - **Less Than** — This search will find results that are less than 100.
      - **Greater Than or Equal to** — This search will find results that are greater than or equal to 50.
      - **Less Than or Equal to** — This search will find results that are less than or equal to 100.

- **Not Equal to** — This search will find results that are not equal to 50 or 100.
- **Not Greater Than** — This search will find results that are less than 50.
- **Not Less Than** — This search will find results that are greater than 50.
- **Not Greater Than or Equal to** — This search will find results that are less than or equal to 50.
- **Not Less Than or Equal to** — This search will find results that are greater than or equal to 50.

Date and datetime searches will return results depending on the dates that are given for before and after.

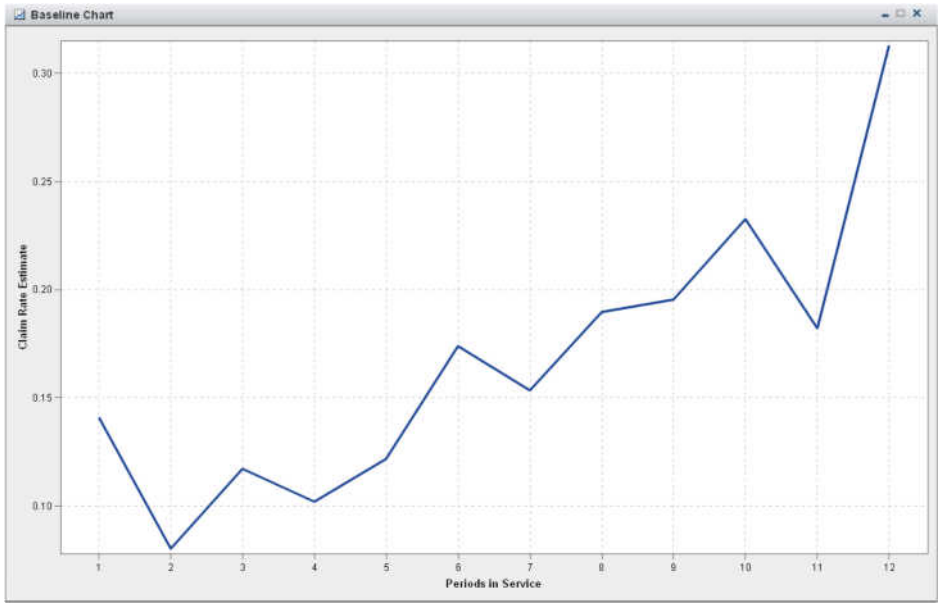
4. Select an alert in the table.
5. Select the drop-down menu and select one of the following to change your view of the graphical and tabular output that is available for each alert:
   - **One chart** shows the graphical output for an alert.
   - **One chart and table** shows the graphical and tabular output for the alert.
   - **One table** shows the tabular output for the alert.
   - **Multiple charts** shows graphs for each of the alerts.
6. Expand your view of the table of alerts, or the graphical and tabular output, by clicking , holding the mouse button down, and dragging the mouse upward or downward.
7. Expand your view of the properties pane, or the table of alerts and graphical and tabular output, by clicking , holding the mouse button down, and dragging the mouse left or right.

   The properties pane shows alert group properties, data selection details, basic settings, auto update information, and comments for the alert group. To expand your view of a section, click . To hide your view of a section, click . For more information about adding a comment for an alert group, see "Add Comments to an Item Using the Comment Manager" on page 179.
8. View the details chart for an alert:
   a. Select **View Details Chart** from the **More** drop-down menu.

      The details chart for the alert appears in a new window.

   b. Close your view of the details chart.
9. View the baseline chart for an alert:
   a. Select **View Baseline Chart** from the **More** drop-down menu.

      The baseline chart for the alert appears in a new window.




b. Close your view of the baseline chart.

## *Analyze an Ad Hoc Analytic Alert in a Project*

Perform the following steps to analyze an ad hoc analytic alert in a project:

1. Open an ad hoc analytic alert group.
2. Select an alert in the table.
3. Click  .

   The Analyze in Project dialog box appears.
4. Select a project from the menu.
5. Provide the data selection name.
6. Provide the data selection description.
7. Specify the number of weeks to expire.

   *Note:* Data selections created by analyzing an early warning alert are a special type of data selection. These data selections re-create and store the filtered subsets to preserve the snapshot of data of that time. You should extend the expiration date of this data selection until you want to use this data selection. If the stored filtered subsets on this data selection expire, then this data selection goes into an error state, and any analysis that is run on this data selection can go into an error state. Therefore, after the time has expired, the data selection that was created to help analyze an early warning alert cannot be used to create a new analysis or subset an analysis. Running an analysis that uses this data selection in the error state, or running the data selection itself in the error state, will result in an error. However, you can still open the output of earlier runs that occurred before the data selection reached the error state.
8. Click **OK**.

### *Assign an Ad Hoc Analytic Alert to a User*

Perform the following steps to assign an ad hoc analytic alert to a user:

1. Open an ad hoc analytic alert group.
2. Select an alert in the table.
3. Click  .

   The Assign Alert dialog box appears.
4. Specify the status for the alert.
5. Select a user name in the list.

   *Note:* You can use the **Search** text box 
   
   to narrow the list of users that are available to select. The list will update with what you have typed so far.
6. Click **OK**.

### *Add a Comment for an Ad Hoc Analytic Alert*

Perform the following steps to add a comment for an ad hoc analytic alert:

1. Open an ad hoc analytic alert group.
2. Select an alert in the table.
3. Click  .

   The Comments dialog box appears.
4. Provide a topic name.
5. Enter a comment.
6. (Optional) Attach a file.
   a. Click  .

      A dialog box appears.
   b. Navigate to the file that you want to attach.
   c. Click **Open**.

   *Note:* If you want to remove an attachment, click **Remove**.
7. Click **Post**.

### *Export an Ad Hoc Analytic Alert*

Perform the following steps export an ad hoc analytic alert:

1. Open an ad hoc analytic alert group.
2. Select an alert in the table.

3. Click  .

   The Export Analysis to PDF dialog box appears.

4. Provide the title of the analysis that you want to export.
5. Select the orientation of the analysis.
6. Specify whether you want to export both graphs and tables, just graphs, or just tables.
7. Select the type of analysis information that you want to include.
8. Specify the columns to include in the table:
   a. Select a column that you want to include in the **Available Items** list.
   b. Click  .

      The column is added to the **Selected Items** list.

      *Note:* You can use  and  to reorder the relative position of the columns.

   c. (Optional) To remove a column, select the column in the **Selected Items** list, and then click  .

      The column is added to the **Available Items** list.
9. Specify the rows that you want to include in the table.
10. Specify whether you want to keep all the selected columns in one table, or whether you want to create multiple tables by providing a maximum number of columns per table.
11. Click **OK**.

    A dialog box appears.

12. Specify whether you want to open or save the file.

## *Save an Alert in Microsoft Excel or CSV Format*

Perform the following steps to save an alert in Microsoft Excel or a CSV document:

1. Open an ad hoc analytic alert group.
2. Select an alert in the table.
3. Click  .

   The Export to File dialog box appears.

4. Specify whether you want to export data into Microsoft Excel or into a CSV format.
5. Select the type of alert information that you want to include.
6. Specify the columns to include in the table:
   a. Select a column that you want to include in the **Available Items** list.
   b. Click  .

      The column is added to the **Selected Items** list.

*Note:* You can use  and  to reorder the relative position of the columns.

c. (Optional) To remove a column, select the column in the **Selected Items** list, and then click  .

The column is added to the **Available Items** list.

7. If you specified to export data into Microsoft Excel, specify the following options:
   a. Specify the rows that you want to include in the table.
   b. Specify whether you want to keep the first few columns fixed in all of the tables that are created.
   c. If you specified that you want to keep the first few columns fixed in all of the tables, provide the number of columns to be fixed.
8. Click **OK**.

# Ad Hoc Threshold

### *Create a New Ad Hoc Threshold Alert Group*

Perform the following steps to create a new ad hoc threshold alert group:

1. Click  .

   The Select Data Selection window appears.
2. Select a data selection in the table.
3. Click **OK**.

   The Ad Hoc Threshold window appears.
4. Provide an alert group name.
5. Provide an alert group description.
6. Select a reporting variable:
   a. Click **Select**.

      The Select Reporting Variables dialog box appears.
   b. Select a reporting variable in the table.
   c. Click **OK**.
7. Select an analysis variable:
   a. Click **Select**.

      The Select Analysis Variables dialog box appears.
   b. Select an analysis variable in the table.
   c. Click **OK**.
8. Select the time-in-service point of view.
9. Select the calculation method.

10. Specify the usage type.
11. If you selected **Adjusted** or **Extrapolated** as the calculation method, specify whether you want to apply usage profiles.
12. If you specify that you want to apply usage profiles, select a warranty program usage limitation.
13. Specify a threshold value.

    *Note:* The threshold value can range from 0 to 1000000000.
14. Specify whether you want to include pre-delivery claims.
15. Select the claims per unit to include.
16. Specify maximum exposure.
    a. Click **Select**.

       The Select Maximum Exposure dialog box appears.
    b. Select a variable from the list.
    c. Click **OK**.
17. Specify the maturity level.
    a. Click **Select**.

       The Select Maturity Level dialog box appears.
    b. Select a variable from the list.
    c. Click **OK**.
18. Select the minimum sample size type from the menu.
19. If you specified a minimum sample size type, specify a minimum sample size.

    *Note:* As a percentage, the minimum sample size value can range from 1 to 100. As a count, the minimum sample size value can range from 1 to 1000000000.
20. Select a title from the menu.
21. If you selected **Custom text** as the title, provide the text that you want as the title in the text box.
22. Select a subtitle from the menu.
23. If you selected **Custom text** as the subtitle, provide the text that you want as the subtitle in the text box.
24. Select a footnote from the menu.
25. If you selected **Custom text** as the footnote, provide the text that you want as the footnote in the text box.
26. Specify the number of bars that you want to display.

    *Note:* The number of bars can range from 1 to 25.
27. Select the value to display from the menu.
28. Select the method of notification from the menu.
29. Provide the users that you want to notify if you have selected a method of notification.
    a. Click **Select**.

       The Notify Users window appears.

b. Select a user or group in the **Available** list.

c. Click  .

The user or group is added to the **Selected** list.

d. Click **OK**.

30. Specify whether you want the analysis to automatically update.

31. If you selected **Between these dates** in the previous step, select a start date and an end date by clicking  .

32. Click **Save and Submit** or **Save**.

## *Open an Ad Hoc Threshold Alert Group*

Perform the following steps to open an ad hoc threshold alert group:

1. Select an alert group in the table.
2. Click **Open**.

*Note:* You can also open an alert group by double-clicking it in the table.

A list of alerts appears for the alert group that you opened.

| Model Code | Sample Size | Unadjusted Total Claim Count | Unadjusted Claim Rate | Maximum Age in Days | Average Age in Days | Percent Weighted Co... | Cumulative Percent Weight... |
|---|---|---|---|---|---|---|---|
| Galacto | 0 | 305175 | 0.00 | 0 | 0.00 | 77.15 | 77.15 |
| Gemini | 0 | 70634 | 0.00 | 0 | 0.00 | 17.86 | 95.00 |
| Abyss | 4820 | 19752 | 4.10 | 1904 | 862.94 | 4.99 | 100.00 |
| Nebula | 73 | 10 | 0.14 | 443 | 30.64 | 0.00 | 100.00 |
| Alpha | 20600 | 0 | 0.00 | 2369 | 1358.27 | 0.00 | 100.00 |
| Beta | 2476 | 0 | 0.00 | 512 | 166.42 | 0.00 | 100.00 |

## *Modify an Ad Hoc Threshold Alert Group*

Perform the following steps to modify an ad hoc threshold alert group:

1. Select an alert group in the table.
2. Click  .
3. Modify the fields that you want to change.
4. Click **Save and Submit** or **Save**.

## *Delete an Ad Hoc Threshold Alert Group*

Perform the following steps to delete an ad hoc threshold alert group:

1. Select an alert group in the table.
2. Click  .

A Confirmation dialog box appears.

3. Click **Delete**.

### Copy an Ad Hoc Threshold Alert Group

Perform the following steps to copy an ad hoc threshold alert group:

1. Select an alert group in the table.
2. Click  .

   A copy of the ad hoc threshold alert group appears in the table.

### Replace a Data Selection for the Selected Alert Group

Perform the following steps to replace a data selection for a selected alert group:

1. Select an alert group in the table.
2. Click  .

   The Replace Data Selection window appears.
3. Select a data selection in the list to replace the one that is currently being used.

   *Note:* You can use the **Search** text box 
   
   to narrow the list of available data selections. The list of data selections in the table will update to match what you have typed so far. You can also use the drop-down menu to filter the type of data selections that appear in the table.
4. (Optional) Click **View Summary** to view additional information about the selected data selection.

   A View Summary window appears with additional information about the data selection. Click **OK** when you have finished viewing information about the data selection.
5. Click **Save and Submit** or **Save**.

### Refresh Ad Hoc Threshold Alert Groups

Click  to refresh your view of ad hoc threshold alert groups.

### Add Subscriptions for an Ad Hoc Threshold Alert Group

Perform the following steps to add subscriptions for an ad hoc threshold alert group:

1. Select an alert group in the table.
2. Click  .

   The Add Ad Hoc Threshold Alert Subscriptions window appears.
3. Select an alert group in the **Available alert groups** list.

   *Note:* You can use the search text box to help you find an alert group.

4. Click  .

   The alert group is added to the **Subscribed alert groups** list.

   *Note:*

   - You can use  and  to reorder the relative position of selected alert groups.
   - To unsubscribe a subscribed alert group, select it in the list, and then click **Unsubscribe**.

5. Add or remove a component of a selected alert group.
   a. Select an alert group in the **Subscribed Alert Groups** list.
   b. Navigate to a component of a selected alert group by expanding an alert group in the **Components of Selected Alert Group** pane, and selecting a component.
   c. Click **Add** or **Remove** after selecting a folder to add or remove a component.
6. After you select a component, specify whether you want to subscribe to all values or subscribe only to selected values.
7. If you specified that you want to subscribe only to selected values, click **Select** to specify the values to include or the values to exclude.

   *Note:* If you receive an error message when the Select Attribute Values dialog box appears due to too many values (greater than 1024), try dividing the number of values into multiple subscriptions. You cannot add subscriptions for missing values.
8. Specify whether you want to send e-mail notifications for alerts in this subscription.
9. Click **Save**.

### *View the SAS Log*

Select **View SAS Log** from the **More** menu. The SAS log appears in a new window.

### *Download the SAS Log*

Select **Download SAS Log** from the **More** menu to download the SAS log. A dialog box appears. Specify whether you want to open or save the SAS log.

### *Copy URL*

You can copy the URL of early warning alert information to send to another user in an e-mail.

Perform the following steps to copy the URL of early warning alert information:

1. Select an alert group in the table.
2. Select **Copy URL** from the **More** menu ( 

).
3. Paste the URL into an e-mail using Ctrl + v on your keyboard, or right-click and select **Paste** from the menu that appears.

*Note:* You can also save the URL by pasting it into a file, such as Microsoft Word, to save it.

After you send the e-mail, the recipient can open the early warning alert information by clicking on the link that you sent.

### Add an Alert Group to the Portlet

Perform the following steps to add an alert group to the portlet:

1. Select an alert group in the table.
2. Select **Add to Portlet** from the **More** menu.

### Sort Rows

For information about how to sort rows, see "Modify Your View of Columns and Rows" on page 177.

### Manage Columns

For information about how to manage columns, see "Modify Your View of Columns and Rows" on page 177.

### Search for an Ad Hoc Threshold Alert Group

Perform the following steps to search for an ad hoc threshold alert group:

1. Type terms that you want to search for in the **Search** text box.


Items that match what you have typed so far are displayed in the table.

2. (Optional) Click **Save Search** to save your search terms for a future use.
   a. The Save Search dialog box appears.
   b. Provide a name for the search.
   c. Provide a description for the search.
   d. Click **Save**.

*Note:* To use a saved search, click  , and then select **Manage Saved Searches**.

The Manage Saved Searches dialog box appears. Select a saved search, and then click **OK**.

### Explore an Ad Hoc Threshold Alert Group

Perform the following steps to explore an ad hoc threshold alert group:

1. Select an ad hoc threshold alert group in the table.
2. Click **Open**.

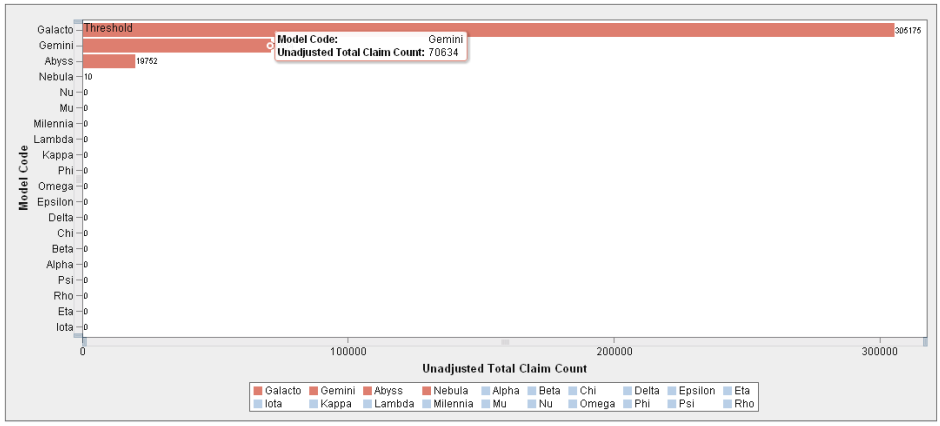
*Note:* You can also open an alert group by double-clicking it in the table.

Tabular and graphical output results for the ad hoc threshold alert group appear in a window. The following is an example of a table of alerts that could appear for a particular alert group:

| Model Code | Sample Size | Unadjusted Total Claim Count | Unadjusted Claim Rate | Maximum Age in Days | Average Age in Days | Percent Weighted Co... | Cumulative Percent Weight... |
|---|---|---|---|---|---|---|---|
| Galacto | 0 | 305175 | 0.00 | 0 | 0.00 | 77.15 | 77.15 |
| Gemini | 0 | 70634 | 0.00 | 0 | 0.00 | 17.86 | 95.00 |
| Abyss | 4820 | 19752 | 4.10 | 1904 | 862.94 | 4.99 | 100.00 |
| Nebula | 73 | 10 | 0.14 | 443 | 30.64 | 0.00 | 100.00 |
| Alpha | 20600 | 0 | 0.00 | 2369 | 1358.27 | 0.00 | 100.00 |
| Beta | 2476 | 0 | 0.00 | 512 | 166.42 | 0.00 | 100.00 |

*Note:* If the vertical scroll bar is not available in the table to scroll down to view all the alerts, try closing the **Properties** pane first.

Graphical output is available for each alert. The following is an example of graphical output that is available for an alert:




Select a different alert to view its graphical output.

3. Select an alert in the table.
4. Select the drop-down menu and select one of the following to change your view of the graphical and tabular output that is available for each alert:
   - **View Graph and Table** shows the graphical and tabular output for the alert.
   - **View Graph Only** shows the graphical output for an alert.
   - **View Table Only** shows the tabular output for the alert.
5. Expand your view of the table of alerts, or the graphical and tabular output, by clicking , holding the mouse button down, and dragging the mouse upward or downward.
6. Expand your view of the properties pane, or the table of alerts and graphical and tabular output, by clicking , holding the mouse button down, and dragging the mouse left or right.

   The **Properties** pane shows alert group properties, data selection details, basic settings, advanced settings, display settings, auto update information, and comments for the alert group. To expand your view of a section, click . To hide your view of a section, click . For more information about adding a comment for an alert group, see "Add Comments to an Item Using the Comment Manager" on page 179.

### Analyze an Ad Hoc Threshold Alert in a Project

Perform the following steps to analyze an ad hoc threshold alert in a project:

1. Open an ad hoc threshold alert group.
2. Select an alert in the table.
3. Click  .

   The Analyze in Project dialog box appears.
4. Select a project from the menu.
5. Provide the data selection name.
6. Provide the data selection description.
7. Specify the number of weeks to expire.

   *Note:* Data selections created by analyzing an early warning alert are a special type of data selection. These data selections re-create and store the filtered subsets to preserve the snapshot of data of that time. You should extend the expiration date of this data selection until you want to use this data selection. If the stored filtered subsets on this data selection expire, then this data selection goes into an error state, and any analysis that is run on this data selection can go into an error state. Therefore, after the time has expired, the data selection that was created to help analyze an early warning alert cannot be used to create a new analysis or subset an analysis. Running an analysis that uses this data selection in the error state, or running the data selection itself in the error state, will result in an error. However, you can still open the output of earlier runs that occurred before the data selection reached the error state.
8. Click **OK**.

### Assign an Ad Hoc Threshold Alert to a User

Perform the following steps to assign an ad hoc threshold alert to a user:

1. Open an ad hoc threshold alert group.
2. Select an alert in the table.
3. Click  .

   The Assign Alert dialog box appears.
4. Specify the status for the alert.
5. Select a user name in the list.

   *Note:* You can use the **Search** text box 
   
   to narrow the list of users that are available to select. The list will update with what you have typed so far.
6. Click **OK**.

### *Export an Ad Hoc Threshold Alert*

Perform the following steps export an ad hoc threshold alert:

1. Open an ad hoc threshold alert group.
2. Select an alert in the table.
3. Click  .

   The Export Analysis to PDF dialog box appears.
4. Provide the title of the analysis that you want to export.
5. Select the orientation of the analysis.
6. Specify whether you want to export both graphs and tables, just graphs, or just tables.
7. Select the type of analysis information that you want to include.
8. Specify the columns to include in the table:
   a. Select a column that you want to include in the **Available Items** list.
   b. Click  .

      The column is added to the **Selected Items** list.

      *Note:* You can use  and  to reorder the relative position of the columns.
   c. (Optional) To remove a column, select the column in the **Selected Items** list, and then click  .

      The column is added to the **Available Items** list.
9. Specify the rows that you want to include in the table.
10. Specify whether you want to keep all the selected columns in one table, or whether you want to create multiple tables by providing a maximum number of columns per table.
11. Click **OK**.

    A dialog box appears.
12. Specify whether you want to open or save the file.

### *Save an Alert in Microsoft Excel or CSV Format*

Perform the following steps to save an alert in Microsoft Excel or a CSV document:

1. Open an ad hoc threshold alert group.
2. Select an alert in the table.
3. Click  .

   The Export to File dialog box appears.
4. Specify whether you want to export data into Microsoft Excel or into a CSV format.

5. Select the type of alert information that you want to include.
6. Specify the columns to include in the table:
   a. Select a column that you want to include in the **Available Items** list.
   b. Click  .

      The column is added to the **Selected Items** list.

      *Note:* You can use  and  to reorder the relative position of the columns.

   c. (Optional) To remove a column, select the column in the **Selected Items** list, and then click  .

      The column is added to the **Available Items** list.
7. If you specified to export data into Microsoft Excel, specify the following options:
   a. Specify the rows that you want to include in the table.
   b. Specify whether you want to keep the first few columns fixed in all of the tables that are created.
   c. If you specified that you want to keep the first few columns fixed in all of the tables, provide the number of columns to be fixed.
8. Click **OK**.

# Part 4

# Data Selections

*Chapter 9*

# Data Selection Overview



## The Data Selection Workspace

The **Data Selection** workspace enables you to manage your data selections and data selection templates. You can also create new data selections (simple or combined) from this workspace.

The **Data Selection** workspace also provides an easy way for you to view basic information about data selections and templates without entering Edit mode. You can view information such as the name, description, type, status, and created and modified dates.

Click 

to open the **Data Selection** workspace.

*Chapter 10*

# Data Selections



## About Data Selections

A data selection is a saved description that specifies which data is to be analyzed or describes the criteria to use to create a subset of data for analysis. A data selection is not the physical subset of data. After you create a data selection, you can save it for future reuse.

When you define a data selection, you specify a subset of data from the mart (in other words, what to analyze). A data selection has the following characteristics:

- It describes the data that you want to analyze.
- It can be used with any analysis, including Early Warning analyses.
- It can be shared with other users.
- It can be stored to keep a subset of the mart persisted for later use.

You can work with data selections in the **Data Selections** view of the **Data Selection** workspace.

*Note:* Data selections in SAS Field Quality Analytics 6.1 are dynamic in nature and return the most current data unless you explicitly save the data. Any analysis, or child analysis, that is created on a dynamic data selection uses the latest data from the mart. It is possible that you might have created and run an analyses on a data selection and on other analyses after the data selection definition has changed. For more information about outdated data for analyses and data selections, see "Analysis Outdated by Definition" on page 80.

# Field Quality Analytics Data

## *Create a New Simple Data Selection*

Perform the following steps to create a new simple data selection:

1. Click  .

   The New Data Selection dialog box appears.

2. Select **Simple Data Selection** from the menu.
3. Provide a name for the data selection.
4. (Optional) Provide a description for the data selection.

   *Note:* The description must be fewer than 100 characters.

5. Select a data type from the menu.

   *Note:* The selection that you choose for the data type is used as the default value that appears in the data type menu the next time you create a new simple data selection.

6. (Optional) Apply a template to a data selection.

   *Note:* If the administrator has specified default product and event templates, they are selected, but they can be changed by the user.

   a. Click **Change Template**.

      The Apply Template dialog box appears.

   b. Select a product selection template, an event selection template, or both from the respective tab.

      *Note:* If you do not see a product selection template or an event selection template to choose from, you must first create it. For more information, see "Create a New Data Selection Template" on page 81.

   c. Click **OK**.

      The Apply Template dialog box closes.

7. Click **OK**.
8. Select a variable from the **Available Variables** list on the **Product Selections** tab or the **Event Selections** tab by navigating through the tree.
9. Click  .

The variable is added to the **Selected Variables** list.

10. Select variable values.

    a. Select a variable in the **Selected Variables** list.

       Variable values appear in the **Available** list.

       *Note:*

       - If variable values do not appear in a list, you might need to click **Select** or **Import** to select variable values, or select variable values through check boxes, radio buttons, or another method. If variable values do not appear in an **Available** list, skip the rest of the steps about selecting a variable value, and instead select variable values in the alternate method that appears.
       - SAS Field Quality Analytics does not validate variable values when importing them. If validation criteria are available, a **Validate** button is available and can be used if desired.
       - While importing a large set of values at one time (for example, 50,000 values or more), the system performance and stability might be negatively affected. If you want to import larger data (for example, 100,000 values or more), you can accomplish this by creating multiple simple data selections, where each simple data selection contains a chunk of the data that you want to import, and then combining them into a combined data selection.
       - If you attempt to both select values and import values, your last action (selecting or importing) overwrites your previous one. For example, if you import values after you manually select values, the process of importing values overwrites what you previously selected manually. The action of importing does not append values to what you just selected manually.
       - The number of values that are displayed for a related or extended attribute includes only the available values when the attribute was selected. Searching does not update the available values.

    b. Select the value or values that you want to specify in the **Available** variable values list.

       *Note:* You can use the Ctrl and Shift keys on your keyboard to select multiple variable values.

       If you enter values, they can be separated by tabs or new lines. Commas are not allowed. If you import values from a CSV or TXT file, multiple columns can exist on each line, separated by commas or tabs, but only the selected column will be imported. If values are imported or entered manually, it is recommended that you validate the values if a **Validate** button is available. If there is a large number of values, the validation process might take some time.

       *Note:* Whether you separate values by the tab character or new lines, the next time you view the values, they will be separated by a new line. SAS Field Quality Analytics does not store information about which method of separating values was used between each value, but instead separates all values with a new line.

    c. Select either **Include** or **Exclude**, depending on what you want to do with the selected variable values from the menu.

d. Click  .

The selected variable values are added to the **Selected** variable values list.

*Note:* You can select a value in the **Selected** variable values list, and then click  and  to reorder the relative position of values for your reference.

The relative position of values does not affect the data that is selected from the mart.

For information about entering a comment as a data selection attribute, see "Using Comment Variables as a Data Selection Attribute" on page 78.

11. Specify whether you want to store the data for the data selection. It is recommended that you only store data when you need it for analysis after the next mart refresh.

    For more information about whether you want to store data, see "Storing Filtered Data" on page 80.

12. If you specified that you want to store the data for the data selection, specify how long you want to keep the data.

13. (Optional) View summary information for the data selection.

    a. Click **View Summary**.

    A View Summary dialog box appears.

    b. Click **Close**.

14. (Optional) Save a data selection as a template. For information about saving a data selection as a template, see "Create a New Data Selection Template" on page 81.

15. Click **Save and Submit** or **Save**, depending on whether you specified to store data for this data selection and want to submit it.

*Note:*

- If the SAS Field Quality Analytics application experiences performance issues when creating a data selection with a large number of attributes or values, try creating multiple simple data selections, where each simple data selection contains a chunk of the data, and then combining them into a combined data selection.
- When an analysis is created using a data selection that is in Running status, the **Data as of** date and the status information in the data selection details section for that analysis can be incorrect. In such case, refer to the details in the analysis details section.

## Create a New Combined Data Selection

Perform the following steps to create a new combined data selection:

1. Click  .

   The New Data Selection dialog box appears.

2. Select **Combined Data Selection** from the menu.

3. Provide a name for the data selection.

4. (Optional) Provide a description for the data selection.

5. Click **OK**.
6. Select the items that you want to add to your combined data selection in the table.

   *Note:* You can use the Ctrl or Shift keys on your keyboard to select more than one item at once.
7. Click  .

   The items are added to the **Selected Items** list.
8. Specify whether you want to store the data for the data selection.

   For more information about whether you want to store data, see "Storing Filtered Data" on page 80.
9. If you specified that you want to store the data for the data selection, specify how long you want to keep the data.
10. (Optional) View summary information for the data selection.
    a. Click **View Summary**.

       The View Summary dialog box appears.
    b. Click **Close**.
11. Click **Save and Submit** or **Save**, depending on whether you specified to store data for this data selection and want to submit it.

*Note:* If two or more event types are combined in a data selection and have columns with the same name, the label and format for those columns should be configured identically. Otherwise the first match from configuration is used in the SAS Field Quality Analytics application. If column-level security is configured for these columns, it should also be defined identically. If security varies, then the behavior of the column-level security on these columns is unpredictable.

### *Open a Data Selection*

Perform the following steps to open a data selection:

1. Select a data selection in the table.
2. Click **Open**.

   *Note:* Alternatively, double-click a data selection to open it.

   The data selection opens in a new window.

*Note:* You can export the data selection values for variables that have a large number of values (more than 100 characters) by clicking the  in a corresponding **Export** column. Note that this column, and corresponding icon, are available only for variables with a large number of values.

You can also view information about a data selection before you open it by selecting the data selection in the table and expanding the **Properties** pane. The **Properties** pane contains more information about a data selection than what is displayed in the table.

*Note:* If the **Data as of** field in the **Properties** pane is blank, then data has not been stored for the selected data selection.

### Modify a Simple Data Selection

Perform the following steps to modify a simple data selection:

1. Select a simple data selection in the table.
2. Click  .

   The data selection appears in a window.
3. Select a variable from the **Available Variables** list on the **Product Selections** tab or the **Event Selections** tab by navigating through the tree.
4. Click  .

   The variable is added to the **Selected Variables** list.
5. Select variable values.
   a. Select a variable in the **Selected Variables** list.

      Variable values appear in the **Available** list.

      *Note:*

      - If variable values do not appear in a list, you might need to click **Select** or **Import** to select variable values, or select variable values through check boxes, radio buttons, or another method. If variable values do not appear in an **Available** list, skip the rest of the steps about selecting a variable value, and instead select variable values in the alternate method that appears.
      - SAS Field Quality Analytics does not validate variable values when importing them. If validation criteria is available, a **Validate** button is available and can be used if desired.
      - While importing a large set of values at one time (for example, 50,000 values or more), the system performance and stability might be negatively affected. If you want to import larger data (for example, 100,000 values or more), you can accomplish this by creating multiple simple data selections, where each simple data selection contains a chunk of the data that you want to import, and then combining them into a combined data selection.
      - If you attempt to both select values and import values, your last action (selecting or importing) overwrites your previous one. For example, if you import values after you manually select values, the process of importing values overwrites what you previously selected manually. The action of importing does not append values to what you just selected manually.

   b. Select the value or values that you want to specify in the **Available** list.

      *Note:* You can use the Ctrl and Shift keys on your keyboard to select multiple variable values.

      If you enter values, they can be separated by tabs or new lines. Commas are not allowed. If you import values from a CSV or TXT file, multiple columns can exist on each line, separated by commas or tabs, but only the selected column is imported. If values are imported or entered manually, it is recommended that you

validate the values if a **Validate** button is available. If there is a large number of values, the validation process might take some time.

*Note:* Whether you separate values by the tab character or new lines, the next time you view the values, they will be separated by a new line. SAS Field Quality Analytics does not store information about which method of separating values was used between each value, but instead separates all values with a new line.

c. Select either **Include** or **Exclude**, depending on what you want to do with the selected variable values from the menu.

d. Click  .

The selected variable values are added to the **Selected** variable values list.

*Note:* You can select a value in the **Selected** variable values list, and then click  and  to reorder the relative position of the values.

6. Specify whether you want to store the data for the data selection.

   For more information about whether you want to store data, see "Storing Filtered Data" on page 80.

7. If you specified that you want to store the data for the data selection, specify how long you want to keep the data.

8. (Optional) View summary information for the data selection.

   a. Click **View Summary**.

   The View Summary dialog box appears.

   b. Click **Close**.

9. (Optional) Save a data selection as a template. For information about saving a data selection as a template, see "Create a New Data Selection Template" on page 81.

10. Click **Save and Submit** or **Save**, depending on whether you specified to store data for this data selection and want to submit it.

*Note:* Although you can select a template to use for a data selection that you are creating, you cannot apply an existing template to an existing data selection.

### *Modify a Combined Data Selection*

Perform the following steps to modify a combined data selection:

1. Select a combined data selection in the table.

2. Click  .

   The data selection appears in a window.

3. Select items that you want to add in the **Available Items** list, and then click  .

4. Select items that you want to remove in the **Selected Items** list, and then click  .

5. Specify whether you want to store the data for the data selection.

For more information about whether you want to store data, see "Storing Filtered Data" on page 80.

6. If you specified that you want to store the data for the data selection, specify how long you want to keep the data.
7. (Optional) View summary information for the data selection.
   a. Click **View Summary**.

      The View Summary dialog box appears.

   b. Click **Close**.
8. Click **Save and Submit** or **Save**, depending on whether you specified to store data for this data selection and want to submit it.

### Delete a Data Selection

Perform the following steps to delete a data selection:

*Note:* Data selections can be deleted only if they are not currently being used by any analyses.

1. Select a data selection in the table.
2. Click  .

   A confirmation dialog box appears.
3. Click **Delete**.

### Copy a Data Selection

Perform the following steps to copy a data selection:

1. Select a data selection in the table.
2. Click  .

### Refresh a Data Selection

Click  to refresh your view of data selections.

### View the SAS Log

Perform the following steps to view the SAS log:

1. Select a data selection in the table.
2. Select **View SAS Log** from the **More** menu.

*Note:* A log is available only for data selections that stored their data and have been run.

### *Download the SAS Log*

Perform the following steps to download the SAS log:

1. Select a data selection in the table.
2. Select **Download SAS Log** from the **More** menu.

### *Share a Data Selection*

After a data selection is created, it is not accessible by other users or groups by default. To share a data selection with another SAS Field Quality Analytics user or group, the user that created the data selection must specify the SAS Field Quality Analytics users and groups that the data selection should be shared with.

The user that created a data selection can unshare it, delete it, or copy it. If a data selection is shared with you, you can create an analysis with it or copy it. After a data selection is shared with you, it appears as a data selection that has been shared with you in the table of data selections in the **Data Selection** workspace.

*Note:* If you share a data selection with a user, and that user creates an analysis using this shared data, then you will be unable to delete or unshare that data selection until this dependency is resolved.

Perform the following steps to share a data selection:

1. Select a data selection in the table.
2. Select **Manage Sharing** from the **More** menu.

   The Manage Sharing dialog box appears.
3. Select an item that you want to share in the **Available Items** list.
4. Click  .

   The item is added to the **Selected Items** list.
5. Click **OK**.

*Note:* If you share a data selection with another user, or a data selection is shared with you, the shared data selection can have the same name as a data selection that might have already been created. If you see multiple data selections by the same name because one data selection has been shared with you and you created a data selection with the same name already, check the data selection's ownership information to determine which is which.

### *Change Data Selection Ownership*

Perform the following steps to change data selection ownership:

1. Select a data selection in the table.
2. Select **Change Ownership** from the **More** menu.

   The Change Ownership dialog box appears.
3. Select a user in the table to switch ownership to.

*Note:* You can use the search text box to narrow the list of users in the table.

4. Click **OK**.

### Copy URL

Select **Copy URL** from the **More** menu to copy a URL.

### Sort Rows

For information about how to sort rows, see "Modify Your View of Columns and Rows" on page 177.

### Manage Columns

For information about how to manage columns, see "Modify Your View of Columns and Rows" on page 177.

### Search for a Data Selection

Perform the following steps to search for a data selection:

1. Type terms that you want to search for in the **Search** text box.


Items that match what you have typed so far are displayed in the table.

2. (Optional) Click **Save Search** to save your search terms for a future use.
   a. The Save Search dialog box appears.
   b. Provide a name for the search.
   c. Provide a description for the search.
   d. Click **Save**.

*Note:* To use a saved search, click  , and then select **Manage Saved Searches**.

The Manage Saved Searches dialog box appears. Select a saved search, and then click **OK**.

### Using Comment Variables as a Data Selection Attribute

You can use comments as data selection attributes on the **Event Selections** tab when creating a simple data selection.

The following operators can be used on comments:

- Contains any of the words
- Contains all of the words
- Contains any of the words (or their related words)
- Contains all of the words (or their related words)

- Select using query notation

All results are case insensitive, so it does not matter whether you use capitalization while entering your criteria.

The following are some examples:

Select **Contains any of the words** and enter this list of items (one per line):

```
Apple
Banana
Carrot Juice
```

Your data will include any comments that contain ‘Apple’ or ‘Banana’ or ‘Carrot Juice’. It will not include any comments that contain ‘Carrot’ but not ‘Carrot Juice’.

Select **Contains all of the words (or related words)** and enter this list of items (one per line):

```
Exploded
Pump
```

Your data will include any comments that contain ‘Exploded’ and ‘Pump’. It will also use your SAS Text Miner synonym list to include any comments that contain related words, such as ‘Explode’ and ‘Pump’ or ‘Blow Up’ and ‘Pump’.

Select the option **Select using query notation** and enter the following:

```
= 'Defect 90'
```

Your data will include any comments that are exactly ‘Defect 90’ (case insensitive).

The following example would find all comments that contain ‘trash’ but not ‘trashcan’:

```
Like '%trash%'
Not like '%trashcan%'
```

The following example would find all comments that contain the literal ‘%aaa’.

```
Like '%^%aaa%'
```

*Note:* The escape character ‘^’ is used to allow searching for a query special character, the ‘%’. If the string that you want to search contains a single quotation mark character, use two single quotation marks ('') to escape the single quotation mark character.

### *Use Comments with a Data Selection*

For information about using the comment manager with data selections, see “Using the Comment Manager” on page 178.

### *Limitations of Entering Data*

For numeric entries, the minimum value that can be entered is `-999999999999999`, and the maximum value that can be entered is `999999999999999`. You cannot enter a space character in numeric entries. When you enter an invalid value for a numeric entry, the **`NaN`** value is shown.

## Outdated Data

### Analysis Outdated by Definition

If an analysis has been run on an older data selection definition, when you open the analysis output, you are shown a message explaining that the analysis is outdated. A link is provided to help you determine the latest data selection details.

### Analysis Outdated by Data

If an analysis has been run on older data, you can compare the **Data as of** date of the analysis in the analysis details section and the warehouse refresh date shown in the status bar to determine the data that the analysis has used.

### Stored Data Selections Outdated by Data

If the filtered data of a data selection has been stored on an older data mart, you can compare the **Data as of** date of the data selection and the warehouse refresh date shown in the status bar to determine the data that the analysis has been using and any new analysis would use.

### Child Analysis on Outdated Analysis

If the analysis is outdated, any children run on the analysis are run on outdated data if the data selection has stored its data. If the data selection does not store its data, the child analysis is run on the current data and data selection definition, which might differ from the parent analysis.

## Storing Filtered Data

Storing filtered data impacts disk space and system performance, and therefore should be performed with care. Data selections should be stored only when there is reason to do so (for example, if you need to save data for future analyses). It is best to submit a job using stored data when the system is not being heavily used.

*Chapter 11*

# Data Selection Templates



## About Data Selection Templates

You can create a data selection template for data definitions that you anticipate using more than once in the future.

You can work with data selection templates in the **Data Selection Templates** view of the **Data Selection** workspace.

## Field Quality Analytics Data

### *Create a New Data Selection Template*

Perform the following steps to create a new data selection template:

1. Create a simple data selection and specify its variable values in the Simple Data Selection window, but do not save it.

*Note:* For more information about creating a simple data selection, see "Create a New Simple Data Selection" on page 70.

2. Click **Save as Template** after you have finished specifying the product and event selections when you are creating a simple data selection.

   The Save as Template dialog box appears.

3. Provide a name for the template.
4. (Optional) Provide a description for the template.

   *Note:* The description must be fewer than 100 characters.

5. Click **Save** to exit the Save as Template dialog box.
6. Click **Save** to exit the Simple Data Selection window.
7. Click **Data Selection Templates** to switch your view to the list of templates.

   Your newly created template appears in the table.

   *Note:* If your newly created template does not appear in the table, click  .

## Open a Data Selection Template

Perform the following steps to open a data selection template:

1. Select a data selection template in the table.
2. Click **Open**.

   *Note:* Alternatively, double-click a data selection template.

   The data selection template opens in a new window.

## Modify a Data Selection Template

You can modify a selected data selection template by clicking **Edit** in the **Properties** pane and modifying any fields that you are allowed to change in the dialog box that appears.

*Note:* You can only modify a data selection template if you have permission to do so.

## View the Data Selections Used by a Template

Perform the following steps to view the data selections used by a template:

1. Select a data selection template in the table.
2. Click **Open**.

   The data selection template opens in a new window.

3. Click **View Used By**.

   A dialog box appears that shows the data selections that are used by the template.

4. Click **OK** to exit the View Used By dialog box.

### *Export Data Selection Template Information*

Perform the following steps to export data selection template information:

1. Select a data selection template in the table.
2. Click **Open**.

   The data selection template opens in a new window.
3. Click  .

   *Note:* The **Export** column might not appear if there is no information to export.

   A dialog box appears.
4. Navigate to a directory to save the data selection template information, and then click **Save**.

### *Delete a Data Selection Template*

Perform the following steps to delete a data selection template:

1. Select a data selection template in the table.
2. Click  .

   A confirmation dialog box appears.
3. Click **Delete**.

### *Copy a Data Selection Template*

Perform the following steps to copy a data selection template:

1. Select a data selection template in the table.
2. Click  .

### *Refresh a Data Selection Template*

Click  to refresh your view of data selection templates.

### *Share a Data Selection Template*

Perform the following steps to share a data selection template:

1. Select a data selection template in the table.
2. Select **Manage Sharing** from the **More** menu.

   The Manage Sharing dialog box appears.
3. Select an item that you want to share in the **Available Items** list.

4. Click  .

   The item is added to the **Selected Items** list.

5. Click **OK**.

### Change Data Selection Template Ownership

Perform the following steps to change data selection template ownership:

1. Select a data selection template in the table.
2. Select **Change Ownership** from the **More** menu.

   The Change Ownership dialog box appears.

3. Select a user in the table to switch ownership to.

   *Note:* You can use the search text box to narrow the list of users in the table.

4. Click **OK**.

### Copy URL

Select **Copy URL** from the **More** menu to copy a URL.

### Sort Rows

For information about how to sort rows, see "Modify Your View of Columns and Rows" on page 177.

### Manage Columns

For information about how to manage columns, see "Modify Your View of Columns and Rows" on page 177.

### Search for a Data Selection Template

Perform the following steps to search for a data selection template:

1. Type terms that you want to search for in the **Search** text box.

   Items that match what you have typed so far are displayed in the table.

2. (Optional) Click **Save Search** to save your search terms for a future use.
   a. The Save Search dialog box appears.
   b. Provide a name for the search.
   c. Provide a description for the search.
   d. Click **Save**.

*Note:* To use a saved search, click  , and then select **Manage Saved Searches**.

The Manage Saved Searches dialog box appears. Select a saved search, and then click **OK**.

### *Use Comments with a Data Selection Template*

For information about using the comment manager with data selection templates, see "Using the Comment Manager" on page 178.

# Part 5

# Analyses

*Chapter 12*

# Overview of Analyses



## About Analyses

In the **Analysis** workspace, you can create and submit analyses, and you can interact with analysis results and export the output for use outside SAS Field Quality Analytics.

The following fourteen base analyses are available in SAS Field Quality Analytics.

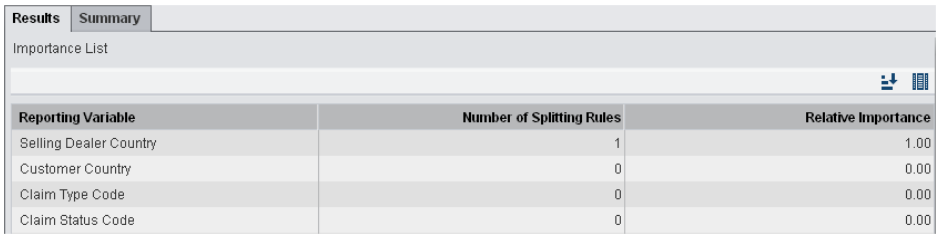
- “Decision Tree Analysis” on page 90
- “Details Table Analysis” on page 93
- “Event Forecasting Analysis” on page 95
- “Exposure Analysis” on page 102
- “Failure Relationships Analysis” on page 104
- “Geographic Analysis” on page 107
- “Pareto Analysis” on page 109
- “Reliability Analysis” on page 111
- “Statistical Drivers Analysis” on page 112
- “Summary Tables Analysis” on page 114

# The Base Analyses

## *Decision Tree Analysis*

A decision tree analysis can identify the combinations of attributes that drive failure rates. Individual attributes are scored and ranked based on their importance related to the issue that is being analyzed. All combinations of the attributes are analyzed via a decision tree. The terminal leaves of the decision tree are ranked. Terminal leaves can be selected in the leaf node bar chart and can be further explored through other analyses. Each terminal leaf represents a specific combination of attribute values. The information about the selected terminal leaf is linked and highlighted across the charts and tables. Decision trees can be zoomed to see more detail.

An importance list table can be found on the **Results** tab.

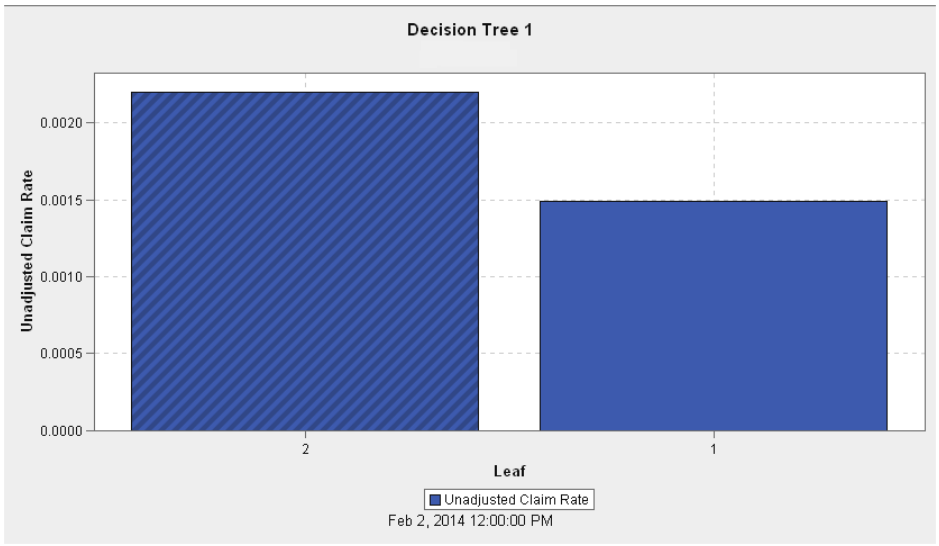


Results | Summary

Importance List

| Reporting Variable | Number of Splitting Rules | Relative Importance |
|---|---|---|
| Selling Dealer Country | 1 | 1.00 |
| Customer Country | 0 | 0.00 |
| Claim Type Code | 0 | 0.00 |
| Claim Status Code | 0 | 0.00 |

A leaf node chart can be found on the **Results** tab.

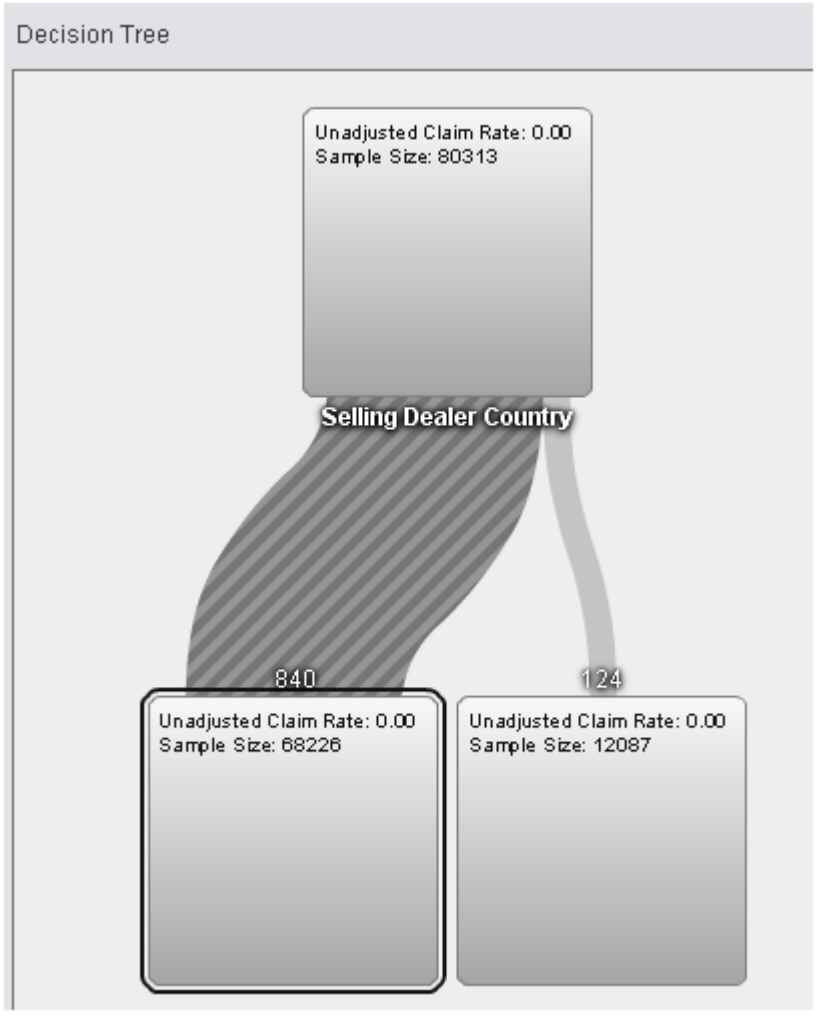



Node details can be found on the **Results** tab.

Node Details

| Leaf | Unadjusted Clai... | Sample Size | Unadjusted Total Cla... | Leaf | Reporting Variable | Relation | Value |
|---|---|---|---|---|---|---|---|
| 2 | 0.00 | 68226 | 150 | 2 | Selling Dealer Co.. | ISMISSING | . |
| . | 0.00 | 80313 | 168 | 2 | Selling Dealer Co.. | = | 840 |
| 1 | 0.00 | 12087 | 18 | | | | |

A decision tree can be found on the **Results** tab.




*Note:* To zoom in or out on the decision tree, rotate the trackball on your mouse.

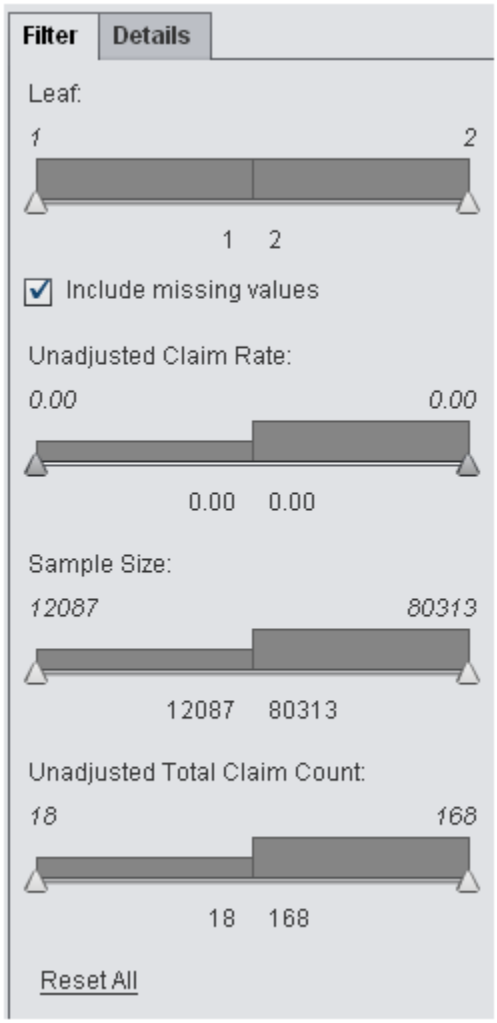
A summary table can be found on the **Summary** tab.

Number of items: 12 / 12

| Selling Dealer Country | Customer Country | Claim Type Code | Claim Status Code | Sample Size | Unadjusted Claim Rate | Unadjusted Total Claim Count |
|---|---|---|---|---|---|---|
| 124 | 124 | C1 | Adjusted | 444 | 0.00 | 0 |
| 124 | 124 | C1 | Approved | 444 | 0.01 | 3 |
| 124 | 124 | C1 | Denied | 444 | 0.00 | 0 |
| 124 | 840 | C1 | Adjusted | 3585 | 0.00 | 2 |
| 124 | 840 | C1 | Approved | 3585 | 0.00 | 13 |
| 124 | 840 | C1 | Denied | 3585 | 0.00 | 0 |
| 840 | 124 | C1 | Adjusted | 2200 | 0.00 | 2 |
| 840 | 124 | C1 | Approved | 2200 | 0.00 | 10 |
| 840 | 124 | C1 | Denied | 2200 | 0.00 | 1 |
| 840 | 840 | C1 | Adjusted | 20542 | 0.00 | 20 |
| 840 | 840 | C1 | Approved | 20542 | 0.01 | 112 |
| 840 | 840 | C1 | Denied | 20542 | 0.00 | 5 |

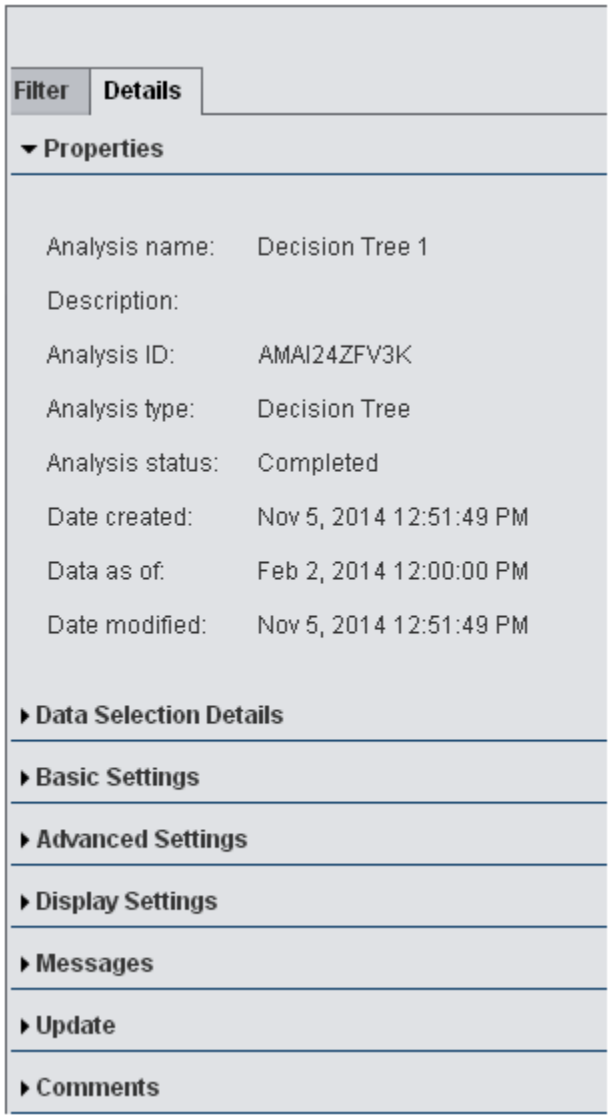
You can filter information by using sliders or selecting values on the **Filter** tab.

*Note:* To see the **Filter** tab, you might need to first expand the pane by clicking  .



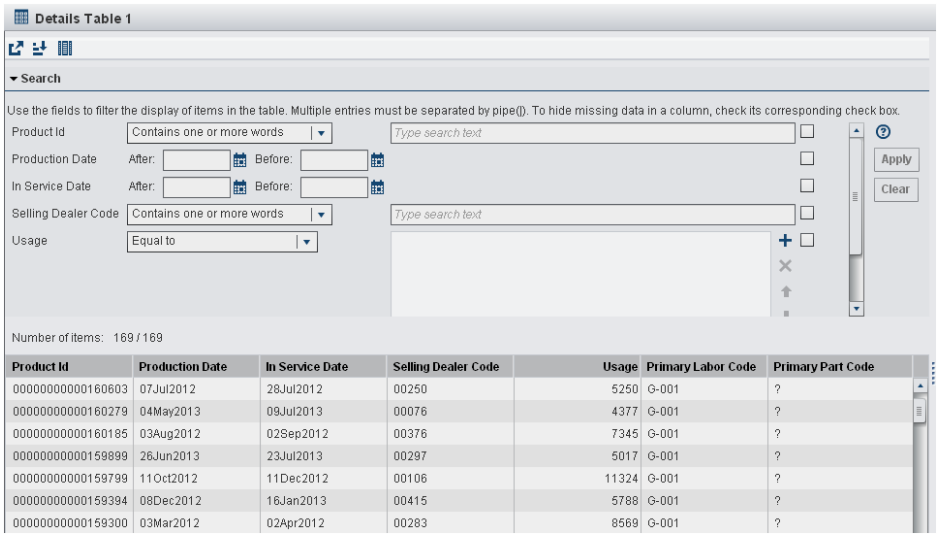

You can also view information about the decision tree analysis on the **Details** tab.

*Note:* To see the **Details** tab, you might need to first expand the pane by clicking  .



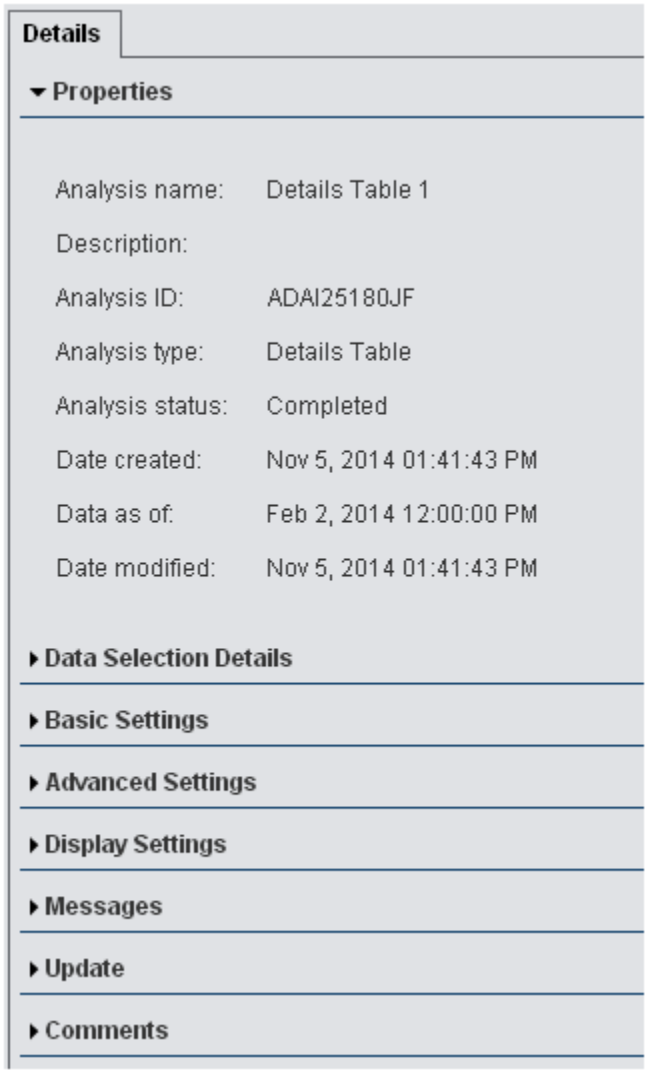

### *Details Table Analysis*

The details table analysis enables you to view and download detailed product or event records. If you have included one or more comment fields in the table, you can select a specific comment and find comments that are similar to the selected comment. In addition, you can perform keyword searches on comment fields and on other character or numeric fields to retrieve specified records only.




You can also view information about the details table analysis on the **Details** tab.

*Note:* To see the **Details** tab, you might need to first expand the pane by clicking  .



## *Event Forecasting Analysis*

### *Overview*

An event forecasting analysis can be used to perform a short-term forecast of relevant variables of interest. This analysis can be used to answer important questions, such as "How many claims are expected for the next three months for a specific class of products and a specific labor code or part number?"

The results of an event forecasting analysis can be used for manufacturer's planning activities. The short-term planning related to parts inventory or labor can be facilitated using the short-term forecasts.

An event forecasting analysis generates forecasts for the next 12 calendar months for event count or event cost related to a particular warranty issue or concern (for example, a labor code or a part number). An event forecasting analysis takes the following factors into account:

- historic event rates associated with a warranty issue or concern.
- projected event rates for the warranty issue or concern based on a parametric reliability analysis.
- the current age base of the population of products that are being investigated and how the age base of the population will change over future time periods. (The analysis can also consider future sales estimates that you specify.)

The event forecasting analysis in SAS Field Quality Analytics 6.1 has been enhanced to include the following key features:

- repairable system models
- non-repairable system models
- seasonal models
- user feedback on the model fit
- BY group processing
- options to make it easier to specify future sales

### *Repairable System Models*

For most products sold with a warranty, such as automobiles or washing machines, the failing product is repaired and put back into usage. Such a product unit is called a repairable system. As a repairable system ages, it accumulates a history of repair events and cost of repair.

SAS Field Quality Analytics 6.1 has implemented parametric models based on the Poisson Process and a nonparametric estimate of the Mean Cumulative Function to forecast claims for repairable systems. The following models are supported:

**Parametric Models** — The following is a brief introduction to the repairable system models based on the Poisson Process.

Let **`N(t)`** be the number of events up to time **`t`**, and let **`N(a,b)`** be the number of events in the interval **`(a,b]`**. Then, for a Poisson process:

- **`N(0) = 0`**.
- **`N(a,b) and N(c,d) are statistically independent if a < b <= c < d`**.

- **N(a,b) is a Poisson random variable with mean M(a,b) = M(b) – M(a) where M(t) is the mean number of failures up to time t. M(0) = 0.**

Poisson processes are characterized by their cumulative mean function **M(t)**, or equivalently by their intensity, rate, or rate of occurrence of failure (ROCOF) function $\lambda(t) = \frac{d}{dt}\mathrm{M}(t)$, so that

$$\mathrm{M}(a,b) = \mathrm{M}(b) - \mathrm{M}(a) = \int_a^b \lambda(t)dt$$

Poisson processes are parameterized through their mean and rate functions. The RELIABILITY procedure provides the POISSON process models shown in the following table:

***Table 12.1*** *Models and Parameters for Recurrent Events Data*

| Model | Intensity Function | Mean Function |
|---|---|---|
| Homogeneous | $\exp(\eta)$ | $\exp(\eta)t$ |
| Log-linear | $\exp(\eta + \beta t)$ | $\frac{\exp(\eta)}{\beta}[\exp(\beta t) - 1]$ |
| Power | $\frac{\beta}{\eta}\left(\frac{t}{\eta}\right)^{\beta-1}$ | $\left(\frac{t}{\eta}\right)^{\beta}$ |

*Note:* $\eta$ is the intercept, and $\beta$ is the shape parameter.

The following functions are displayed for the corresponding model type:

- A recurrence function is displayed for Repeat Event model types.
- A probability density function is displayed for Single Event model types.
- A cumulative function is displayed for Repeat Event model types.
- A distribution function is displayed for Single Event model types.

**Non Parametric Models** — The analysis enables you to specify the nonparametric estimate of mean cumulative function for the number of repairs for a population of repairable system. This estimate is based on Nelson (1995).

Nelson, W. 1995. “Confidence Limits for Recurrence Data—Applied to Cost or Number of Product Repairs.” *Technometrics* 37: 147–157.

### *Non-repairable System Models*

Event Forecasting of non-repairable systems is facilitated by the supporting following distributions:

- Exponential distribution
- Weibull distribution

- Lognormal distribution
- Log-logistic distribution

***Table 12.2*** *Non-repairable System Models*

| Distribution | PDF | CDF |
|---|---|---|
| Exponential | $\frac{1}{\alpha} exp\left(-\frac{t}{\alpha}\right)$ | $1 - exp\left(-\frac{t}{\alpha}\right)$ |
| Weibull | $(\beta / \alpha^{\beta}) (t^{(\beta - 1)} \exp(- (t/\alpha)^{\beta})$ | $1 - \exp(- (t/\alpha)^{\beta})$ |
| Lognormal | $\frac{1}{\beta t} \rho_{nor}\left(\frac{\log(t) - \alpha}{\beta}\right)$ | $\phi_{nor}\left(\frac{\log(t) - \alpha}{\beta}\right)$ |
| Log-logistic | $\frac{1}{\beta t} \rho_{logis}\left(\frac{lot(t) - \alpha}{\beta}\right) = \frac{\exp\left(\frac{\log(t) - \alpha}{\beta}\right)}{1 + exp\left(\frac{\log(t) - \alpha}{\beta}\right)}$ | $\phi_{logis}\left(\frac{\log(t) - \alpha}{\beta}\right) = \frac{1}{\beta t} \frac{\exp\left(\frac{\log(t) - \alpha}{\beta}\right)}{\left[1 + \exp\left(\frac{\log(t) - \alpha}{\beta}\right)\right]^2}$ |

***Table 12.3*** *Non-repairable System Models (continued)*

| Distribution | Location | Shape | Scale |
|---|---|---|---|
| Exponential | | | $\alpha$ |
| Weibull | | $\beta$ | $\alpha$ |
| Lognormal | $\alpha$ | | $\beta$ |
| Log-logistic | $\alpha$ | | $\beta$ |

SAS Field Quality Analytics also supports a nonparametric product-limit estimate (Kaplan-Meier estimate) for non-repairable systems.

### *Seasonal Models*

For many products, failure rate varies seasonally over time.

Event forecasting implements seasonal models based on trend and seasonal component models; that is, the seasonal model recurrence rate (probability density) is assumed to be of the form $\lambda(t)S(t)$. Here, $\lambda(t)$ is a recurrence rate (probability density) for a

Repairable (Non-Repairable) system model and $S(t)$ is a Fourier cos / sin series seasonal model. The trend component might be any one of the supported repairable or non-repairable system models.

### User Feedback on the Model Fit

The following information about the model fit is provided using tables and graphs.

- trend and seasonal parameter tables
- a cumulative function (repairable systems) or CDF (non-repairable systems) graph
- if applicable, a recurrence rate (repairable systems) or PDF (non-repairable systems) graph
- a seasonal function graph
- a model fit statistics table — MAE and RMSE

Trend model parameters do not exist for nonparametric models. A nonparametric recurrence rate or probability density estimate is not shown.

### BY Group Processing

A single variable (product or claim table based) might be selected as a BY group variable for the analysis.

The system restricts the maximum number of BY group levels that can be processed in any single analysis to 20. If the number of levels is more than 20, the group variable is ignored.

### Multiple Options to Specify Future Sales

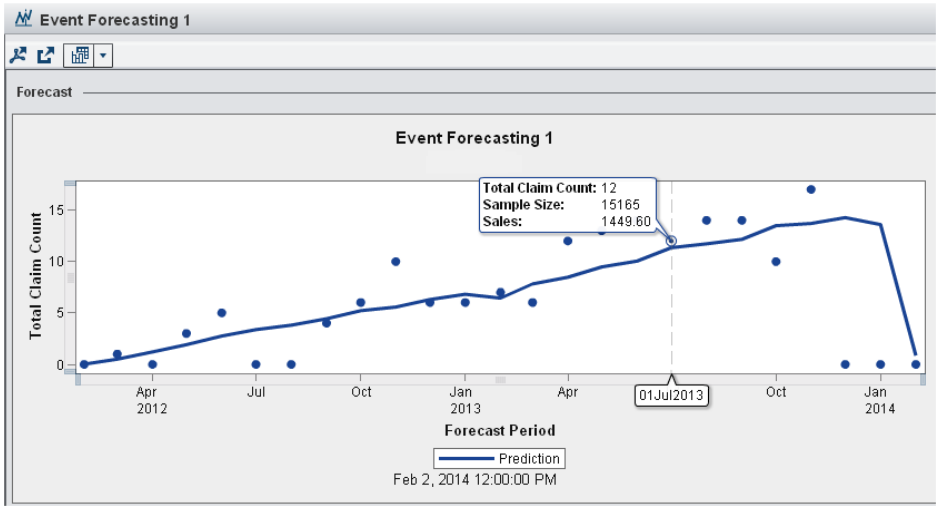
Event forecasting analysis offers multiple options to specify future sales. These include the following:

- user-specified values.
- average of last N time periods.
- repeat of the last N time periods. This option allows the past sale seasonality trends to be accounted for in the future.

When a BY group is specified, the sales forecasts are apportioned appropriately based on historic data.

### Results

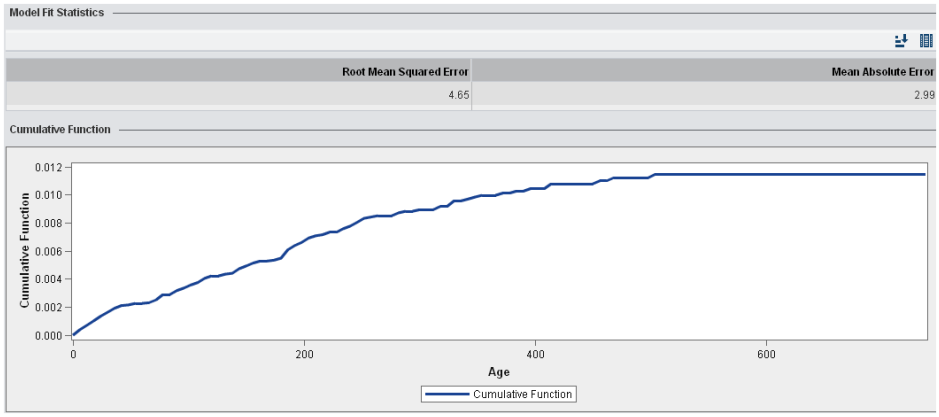
This section provides results output examples. The following is an example of a forecast period by total claim count.




If you scroll down in the results, you can see a table with forecast data. You can select a row in the table to see the corresponding point highlighted in the graph, or select a point in the graph to see the corresponding row highlighted in the table.

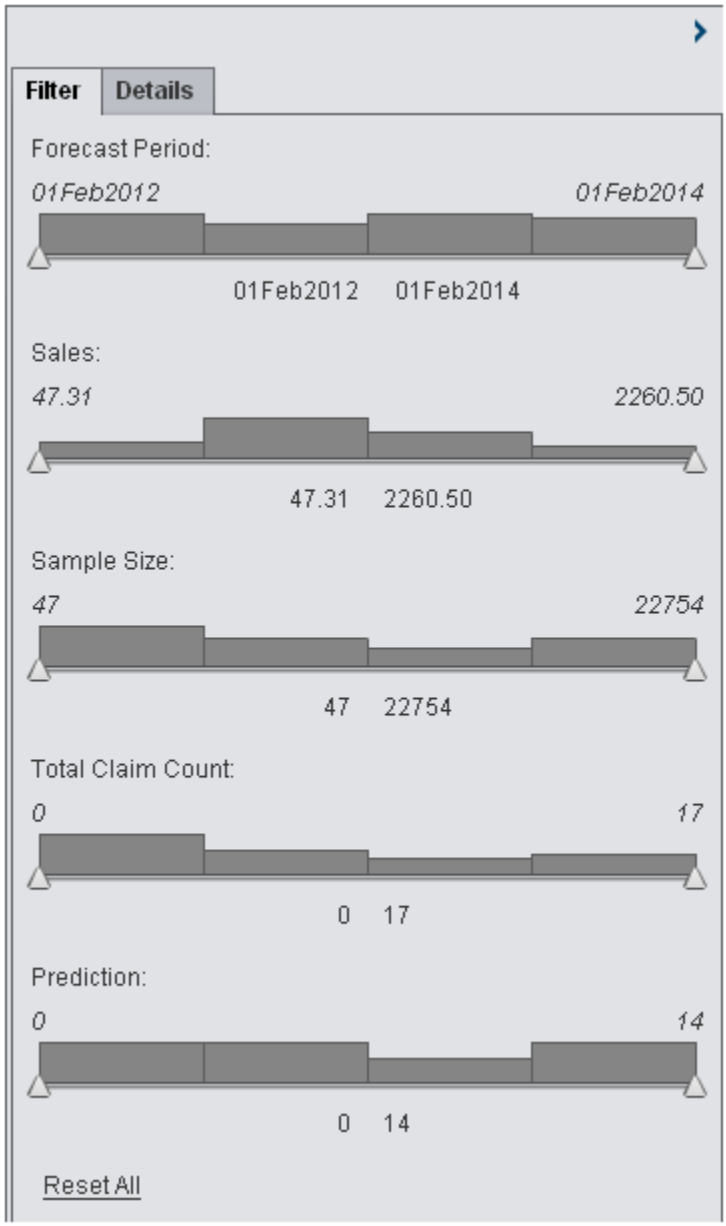
| Forecast Period | Sales | Sample Size | Total Claim Count | Prediction |
|---|---|---|---|---|
| 01Feb2012 | 47.31 | 47 | 0 | 0 |
| 01Mar2012 | 529.51 | 576 | 1 | 1 |
| 01Apr2012 | 645.05 | 1221 | 0 | 1 |
| 01May2012 | 844.81 | 2066 | 3 | 2 |

If you scroll down further in the results, you can see model fit statistics and a cumulative function.

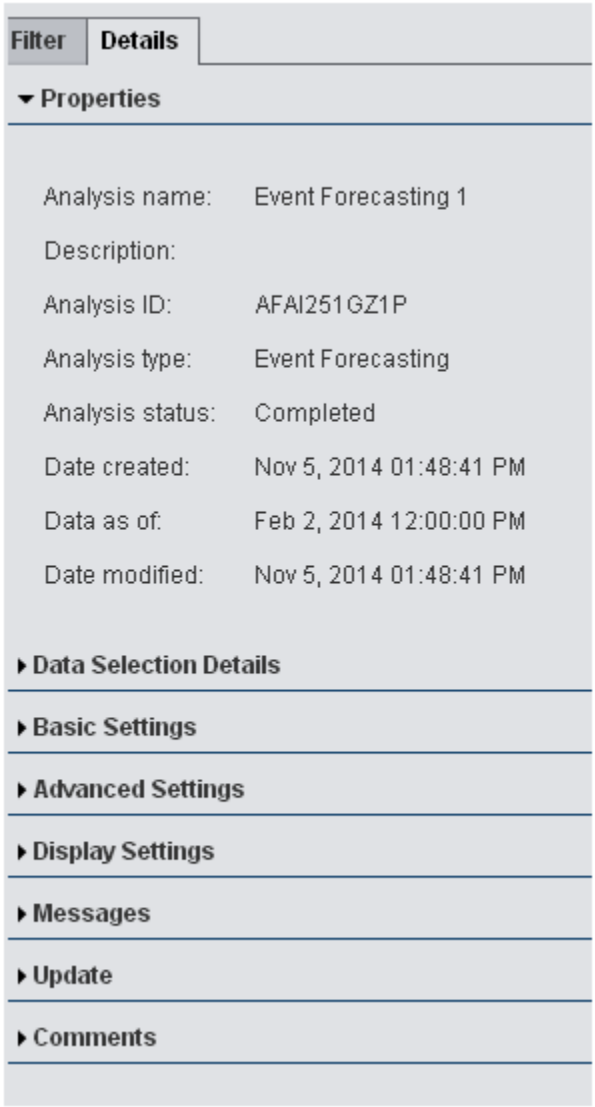



You can filter event forecasting results by sliding the triangles at the end of each category to the left or the right on the **Filter** tab.

*Note:* To see the **Filter** tab, you might need to click the  .




Additional information can be found on the **Details** tab.




*Note:*

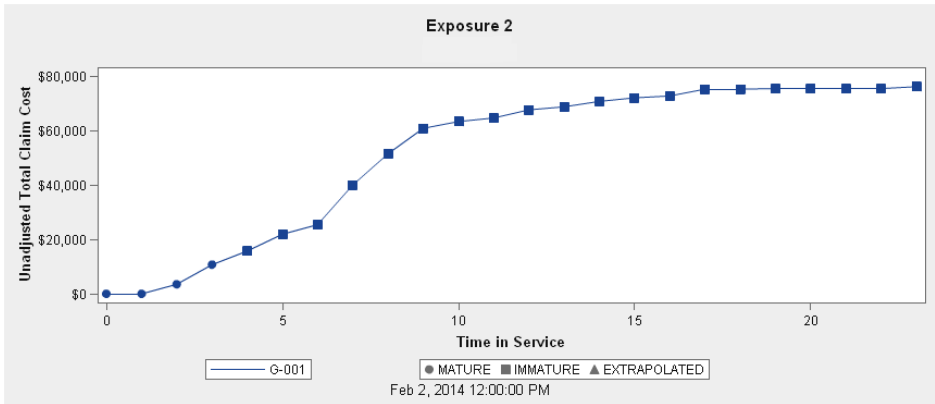
- Reference lines and actual values do not appear in the legend.
- The event forecasting filter is applied only for the forecast result table and forecast graph.
- Slider filters are provided only for the main forecasting results graph. The trend or seasonal model graphs have check box-based filters to see model details for a specific by group value.
- To determine the currency details for event forecasting output for claim cost prediction, the prediction column and extended forecast need to be looked at together with the analysis variable, which is the total claim cost. The currency format for the two columns indicates the currency.
- In the event forecasting output model parameter table, the **Status** column in the results includes information about a code sent from a procedure, and a description of what this code means. For example, for the value **`0: Algorithm converged`**, "0" is the code sent by the procedure, and this code means that the algorithm converged.

## Exposure Analysis

An exposure analysis enables you to view how warranty event activity varies by product exposure or time in service.

The exposure analysis plots time in service (for example, binned days in service) on the X-axis versus a quantitative value, an analysis variable, on the Y-axis. In addition, you can specify a group variable to stratify the exposure analysis in order to visually compare warranty activity at different time-in-service values. Finally, you can view either incremental or cumulative calculated values of the analysis variable for different time-in-service periods.

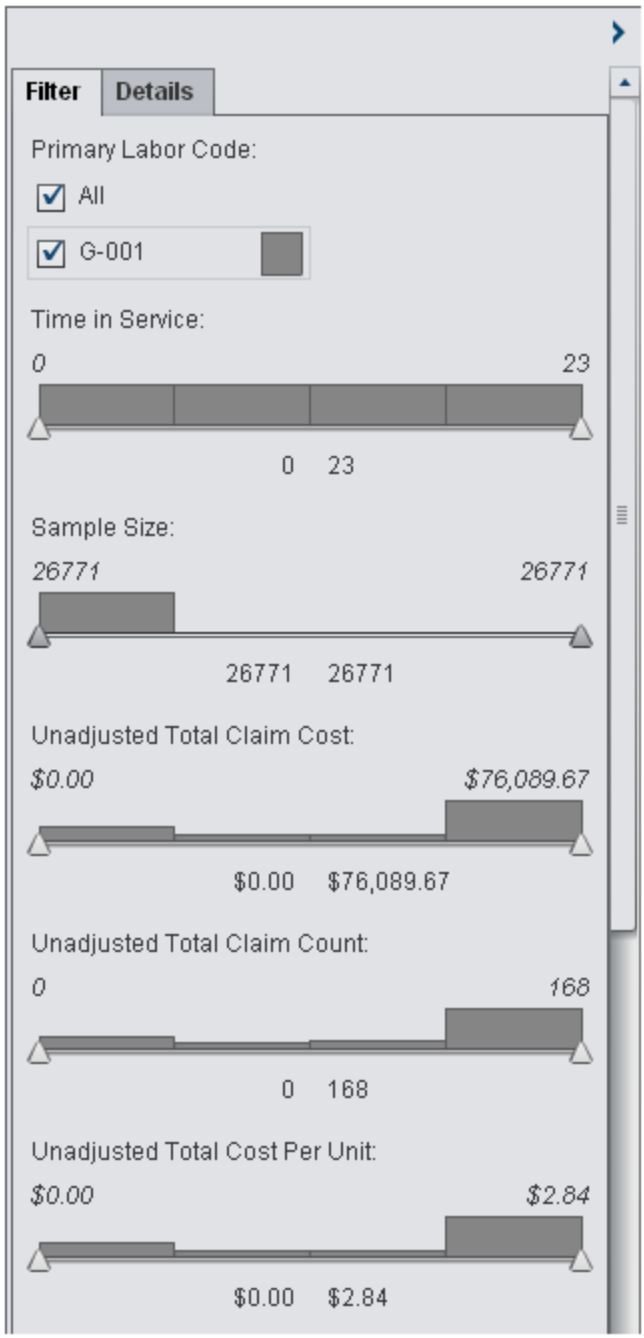
An exposure analysis can help you assess whether event activity can be attributed to the amount of time in service a unit has accrued.



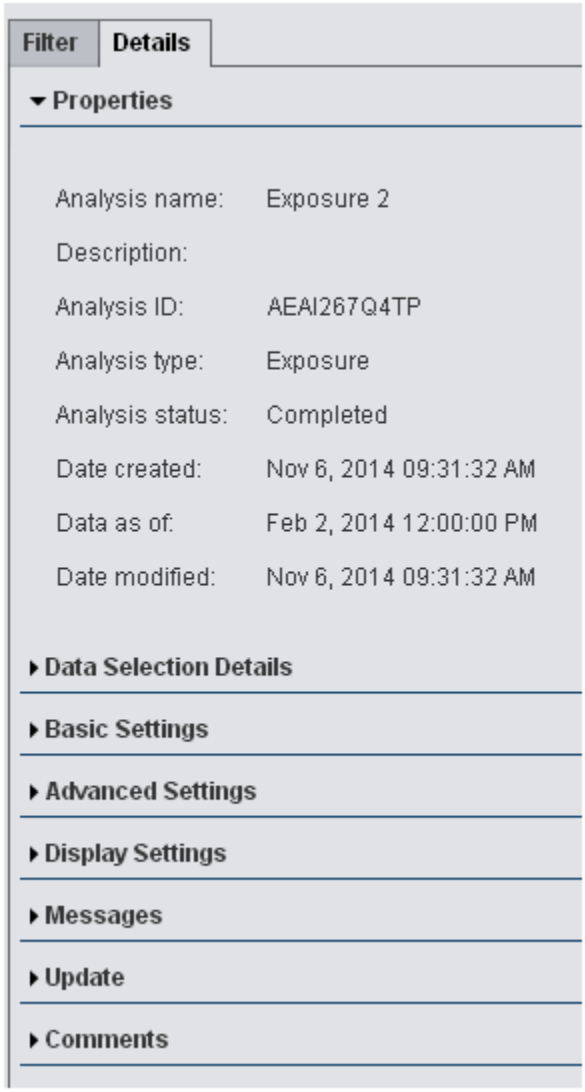

| Primary Lab.. | Time in Ser... | Sample Size | Unadjusted ... | Unadjusted ... | Unadjusted ... | Unadjusted ... | Maximum A... | Average Ag... | Immature |
|---|---|---|---|---|---|---|---|---|---|
| G-001 | 0 | 26771 | $0.00 | 0 | $0.00 | 0.00 | 672 | 246.10 | No |
| G-001 | 1 | 26771 | $46.71 | 1 | $0.00 | 0.00 | 672 | 246.10 | No |
| G-001 | 2 | 26771 | $3,494.88 | 14 | $0.13 | 0.00 | 672 | 246.10 | No |
| G-001 | 3 | 26771 | $10,742.75 | 36 | $0.40 | 0.00 | 672 | 246.10 | No |
| G-001 | 4 | 26771 | $15,696.47 | 55 | $0.59 | 0.00 | 672 | 246.10 | Yes |
| G-001 | 5 | 26771 | $21,874.37 | 70 | $0.82 | 0.00 | 672 | 246.10 | Yes |
| G-001 | 6 | 26771 | $25,432.49 | 86 | $0.95 | 0.00 | 672 | 246.10 | Yes |
| G-001 | 7 | 26771 | $39,990.75 | 99 | $1.49 | 0.00 | 672 | 246.10 | Yes |
| G-001 | 8 | 26771 | $51,507.21 | 121 | $1.92 | 0.00 | 672 | 246.10 | Yes |
| G-001 | 9 | 26771 | $60,787.81 | 135 | $2.27 | 0.01 | 672 | 246.10 | Yes |

You can filter exposure results by sliding the triangles at the end of each category to the left or the right on the **Filter** tab.

*Note:* To see the **Filter** tab, you might need to click the  .




Additional information can be found on the **Details** tab.




### *Failure Relationships Analysis*

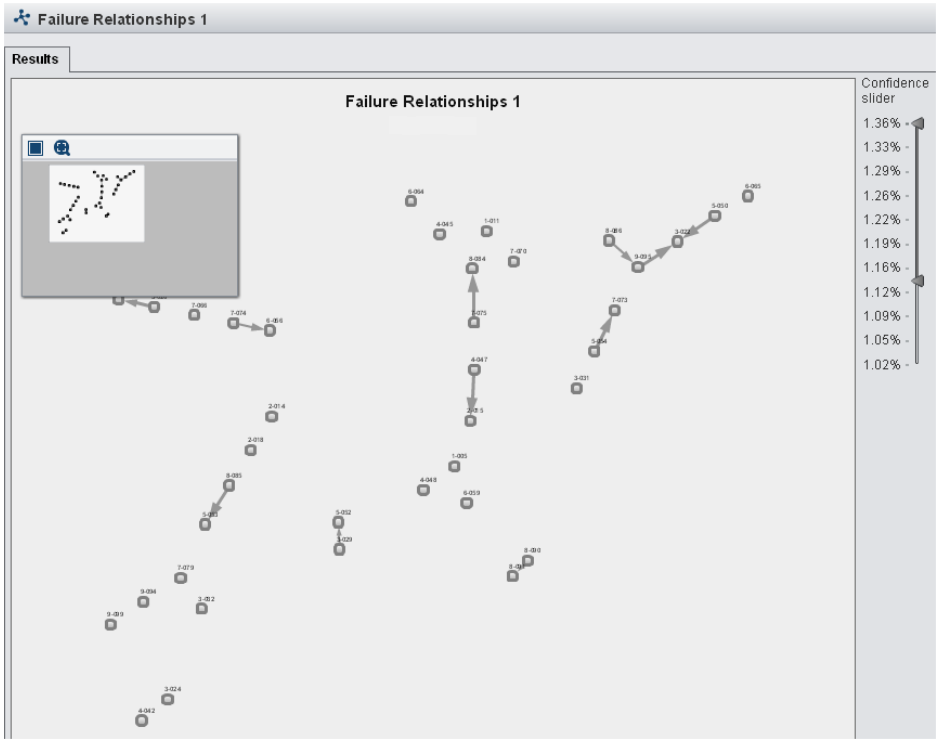
A failure relationships analysis illustrates the relationship between types of failures. Understanding such relationships helps you understand which failures occur together and what their relationship is over time.

A failure relationships analysis uses association and sequence analysis to identify relationships. An association analysis is the identification of items that occur together for a given unit. A sequence analysis takes into account the ordering or timing of the relationship.

For example, consider that for a set of vehicles, 17 claims have a C-006 labor code and, within two months, an I-004 labor code. If a unit has a C-006 labor code and an I-004 labor code, an association rule could be **C-006 ==> I-004**. If the C-006 labor code is followed within two months by an I-004 labor code, the inter-occurrence time would be 2 months.

The results for a failure relationships analysis are useful for understanding potential causes of frequent failures, as well as for better understanding the collateral damage caused by a failure.

The relationships are represented as lines (links) between the labor codes and the parts.



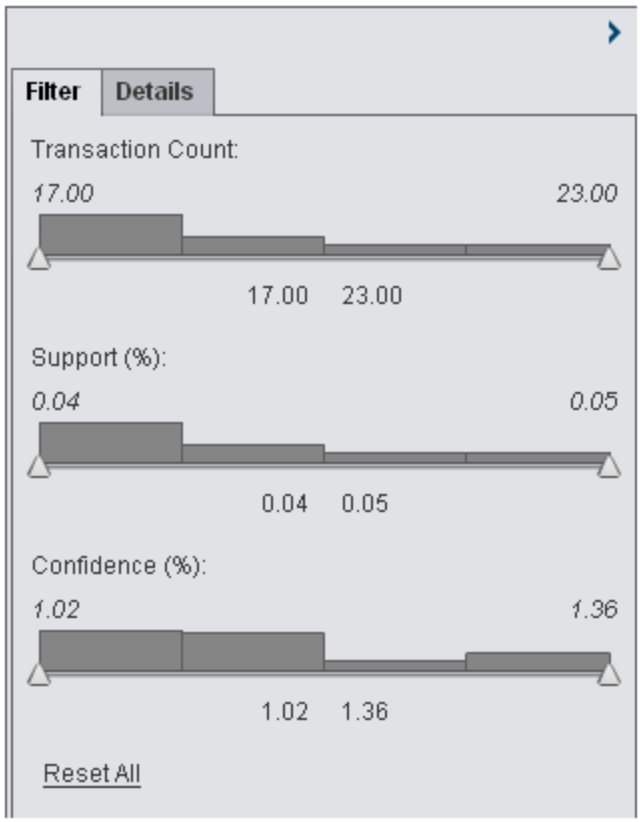

*Note:* To zoom in, rotate the track-ball on the mouse. For additional options, select a node, and then right-click the node to display a menu.

The results for a failure relationships analysis provide statistical information for each rule to help you measure the significance of each rule.

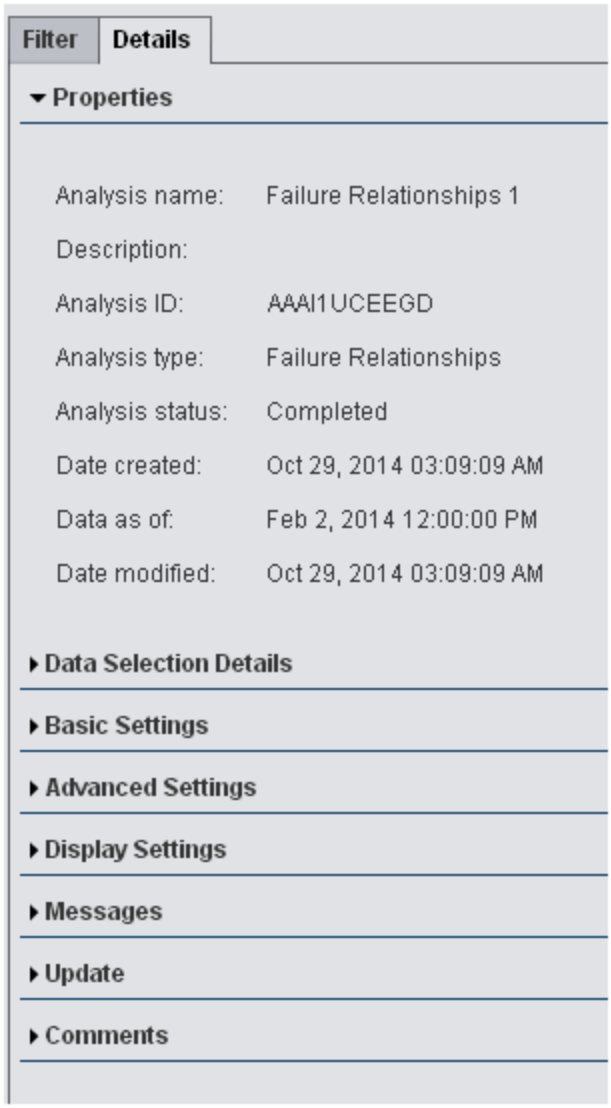
| Rule | Transaction Count | Support (%) | Confidence (%) | Inter-occurrence Ti... | Total Rule Cost (Re... | Average Rule Cost (Re... |
|---|---|---|---|---|---|---|
| 3-026 ==> 3-027 | 23.00 | 0.05 | 1.36 | 3 months | $17,814.39 | $774.54 |
| 7-075 ==> 8-084 | 22.00 | 0.05 | 1.35 | 3 months | $37,966.09 | $1,725.73 |
| 5-054 ==> 7-073 | 22.00 | 0.05 | 1.33 | 3 months | $22,635.92 | $1,028.91 |
| 9-095 ==> 3-022 | 22.00 | 0.05 | 1.29 | 3 months | $21,748.85 | $988.58 |
| 4-047 ==> 2-015 | 21.00 | 0.05 | 1.20 | 3 months | $32,484.92 | $1,546.90 |
| 5-050 ==> 3-022 | 21.00 | 0.05 | 1.22 | 3 months | $18,246.18 | $868.87 |
| 8-085 ==> 5-053 | 21.00 | 0.05 | 1.28 | 3 months | $19,655.53 | $935.98 |
| 8-086 ==> 9-095 | 20.00 | 0.05 | 1.19 | 3 months | $20,252.94 | $1,012.65 |
| 7-070 ==> 8-084 | 19.00 | 0.04 | 1.11 | 3 months | $34,648.20 | $1,823.59 |

You can filter failure relationship results by sliding the triangles at the end of each category to the left or the right on the **Filter** tab.

*Note:* To see the **Filter** tab, you might need to click the  .



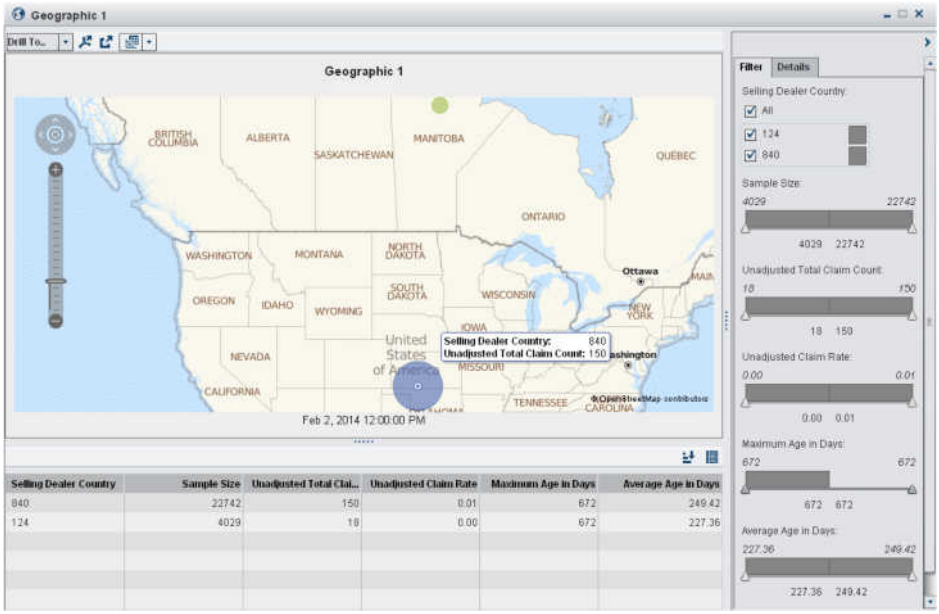

Additional information can be found on the **Details** tab.




*Note:* Failure relationships output cannot be opened if column-level security is applied to the Confidence column. We do not recommend applying column-level security to the Confidence column. Data security should either be applied to both RULE and RULEID variables at same time, or it should not be applied to either. In other words, data security should not be applied to one, but not the other.

### *Geographic Analysis*

For many products, warranty problems are related to location. It is often beneficial to look at how warranty events are distributed geographically. Using SAS Field Quality Analytics, you can perform a geographic analysis by plotting a quantitative value, such as total claim cost, claim count, or claim rate on a geographic map of the United States, Canada, and Mexico by state or province. SAS Field Quality Analytics provides various options for customizing geographic mapping.

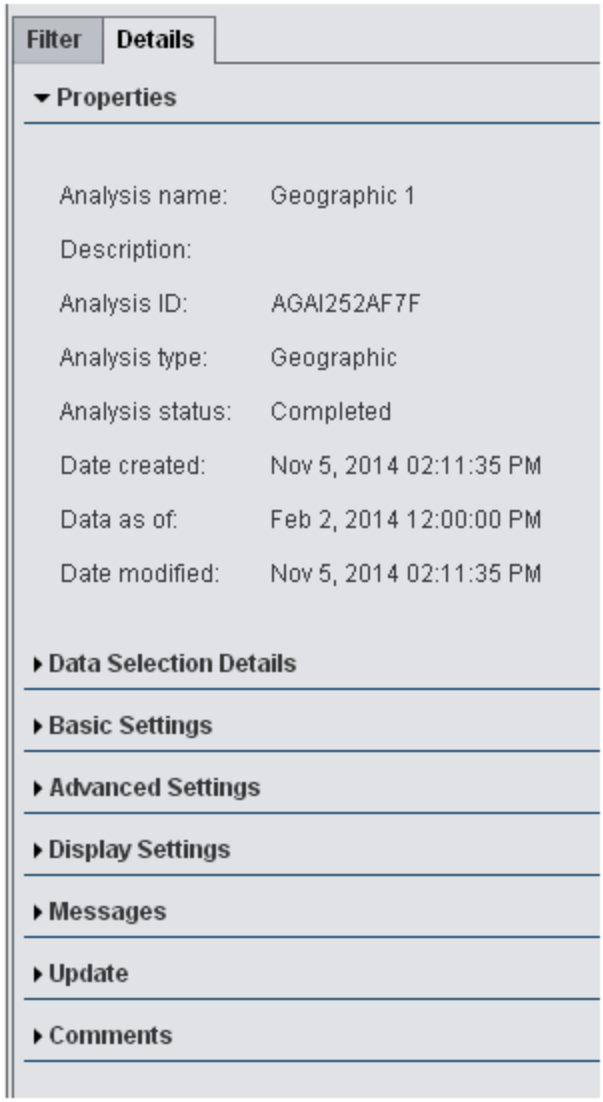



To change your view of a region, you can zoom in or zoom out by clicking the slider and dragging it upward or downward while holding the mouse button down. You can also zoom in or out by rotating the track ball on the mouse, or clicking  , or  . To move north, south, east, or west, click the up, down, right, or left arrow. You can also click the map, hold the mouse button down, and move the mouse up, down, right, or left to change your view.

To reset your view to the default geographic view, click  .

You can filter geographic results by sliding the triangles at the end of each category to the left or the right on the **Filter** tab.

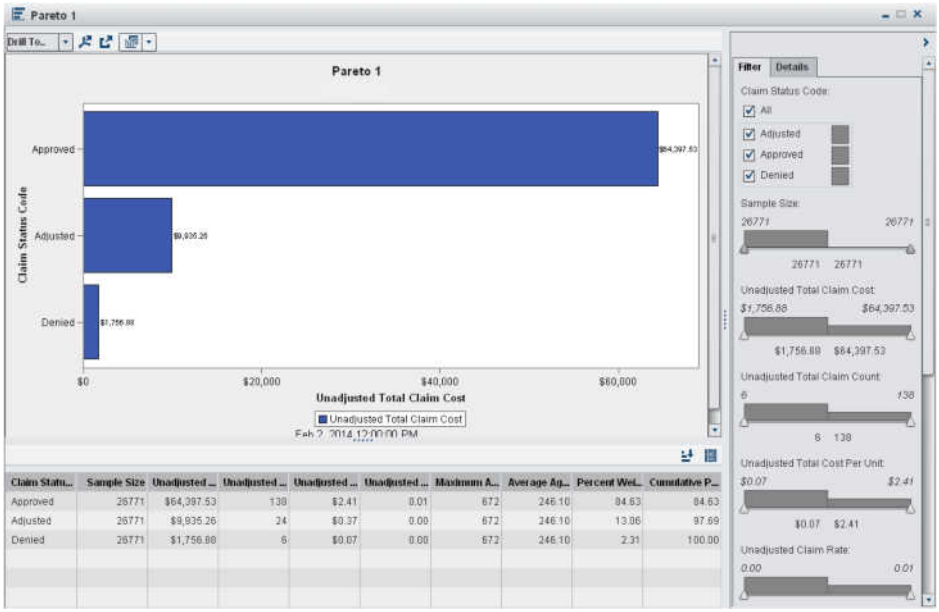
Additional information can be found on the **Details** tab.



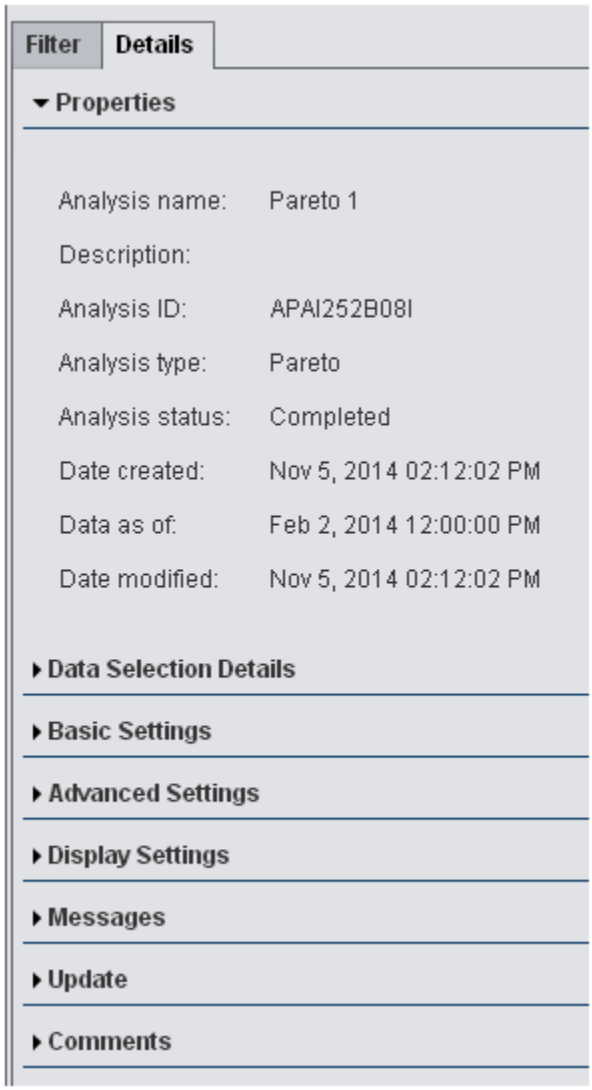

### *Pareto Analysis*

A Pareto chart is a bar chart that displays the classification of quality-related problems arranged in decreasing order of importance. The bars indicate the value of a metric of importance, such as claim count, claim rate, and so on. Pareto charts are used to determine which subset of problems should be examined first, or which problem areas deserve the most attention.

Pareto charts can be used to display warranty counts, warranty count rates, warranty costs, and other information. In addition, comparative charts can be created to compare the Pareto frequencies across levels of grouping variables. For example, you can view the top 10 problems for a specific product, and then compare how those problems are distributed across two plants and across the time period when the product is produced. Pareto charts often provide a good first step in performing warranty data analysis. They are also often generated for management reporting.




Additional information can be found on the **Details** tab.



You can select a minimum sample size to include in the Pareto analysis. The minimum sample size specification operates within time-in-service intervals, within values of the reporting and group variables.

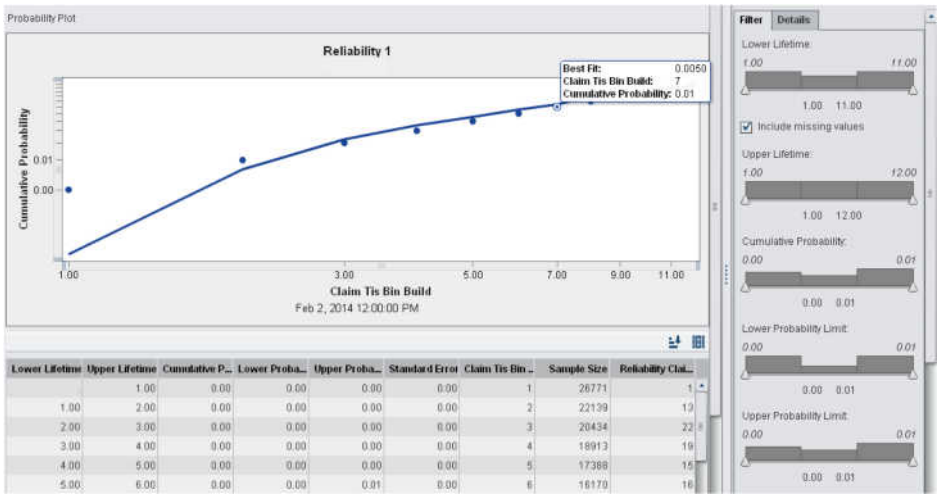
For example, assume that you perform a Pareto analysis using the month in which a product was assembled as the group variable. Within each assembly month, there are several month-in-service intervals. For each month-in-service interval (for each product assembly month), SAS Field Quality Analytics counts the number of units at risk within that interval. If the number of units at risk is below the specified minimum sample size, then that month-in-service interval is excluded from the analysis for the value of the month in which the product was assembled.

You can analyze a subset of a Pareto analysis. To analyze a subset, select a bar, right-click the bar, and then select **Analyze Subset** from the menu that appears. For more information about analyzing a subset of a Pareto analysis, see "Analyze a Subset of an Analysis" on page 157.

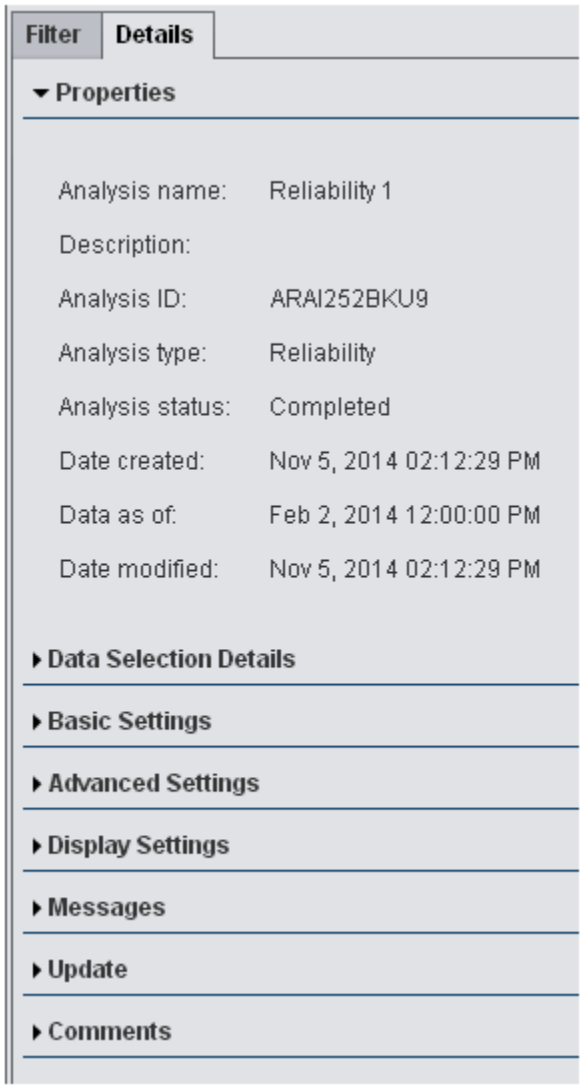
You can analyze Pareto analysis results separately. To analyze Pareto analysis results separately, select the bars that you want to analyze, right-click on one of the selected bars, and then select **Analyze Separately** from the menu that appears. For more information about analyzing Pareto analysis results separately, see "Analyze Results Separately" on page 158.

## *Reliability Analysis*

A reliability analysis is used to answer questions about the durability of a product and to characterize how a product functions in the field. Product life can be defined by time or by usage (for example, by months or by mileage), and the reliability analysis can be generated in terms of either dimension.




Additional information can be found on the **Details** tab.



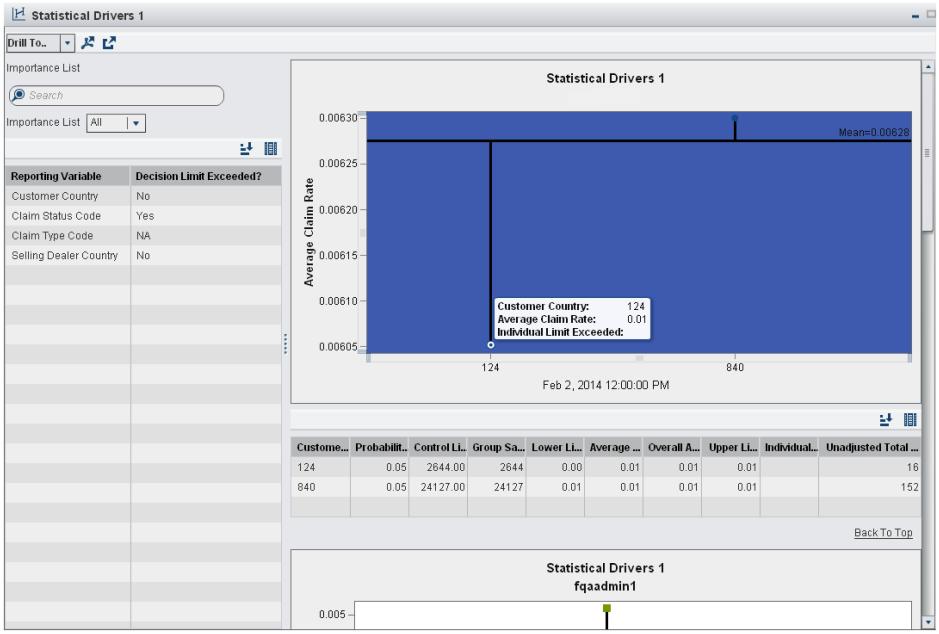

For a specific product, data about items that failed and data about items that did not fail are used to perform a parametric reliability analysis and develop distributions that predict the time at which a first failure (or first occurrence of an event) is likely to occur. A lifetime distribution (for example, Weibull, lognormal, and exponential) is fitted to the event and product information. From the fitted distribution, several types of information can be generated, based on your requests. For example, the analysis can generate a table of projected values, B-life values, and other plots (for example, hazard, failure, and cumulative failure). In addition, you can specify a group variable to stratify the analysis for comparison purposes.

### *Statistical Drivers Analysis*

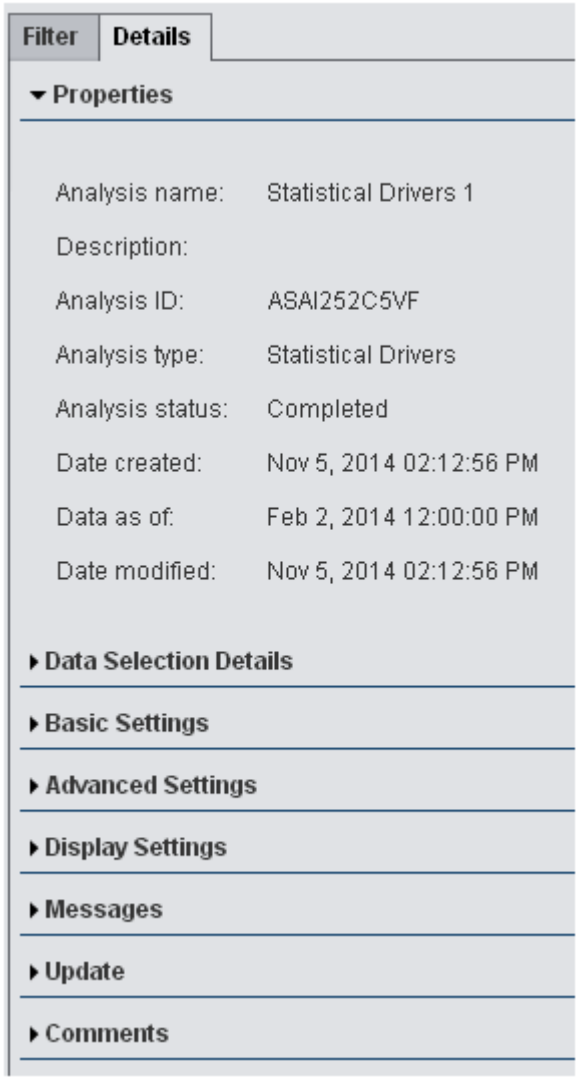
A statistical drivers analysis enables you to identify factors with values with statistically significant differences in event activities. This enables you to determine which factors might influence the occurrence of events.

A factor is deemed significant if events do not randomly occur across the values of that factor (that is, events occur disproportionately across the different values of the variable). The analysis determines significance by performing an analysis of means (ANOM) on each variable that you select. For each variable that you select, the process

flags any value for which the event rate differs significantly from the event rates of the other values.

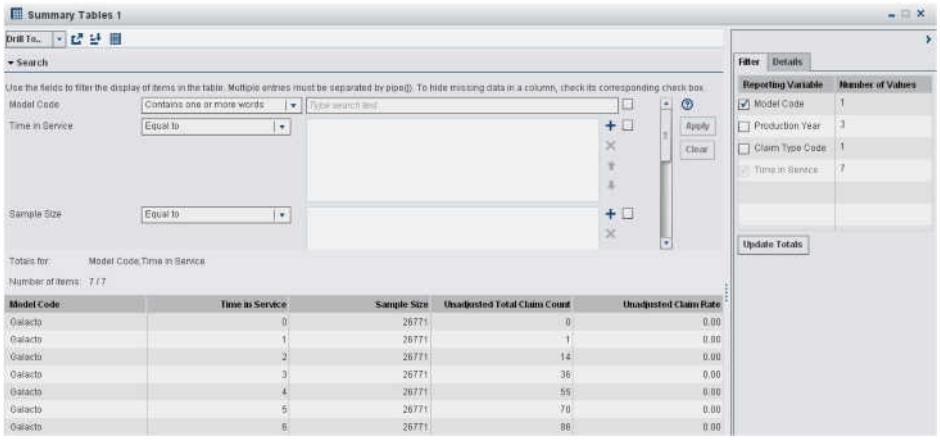



Additional information can be found on the **Details** tab.

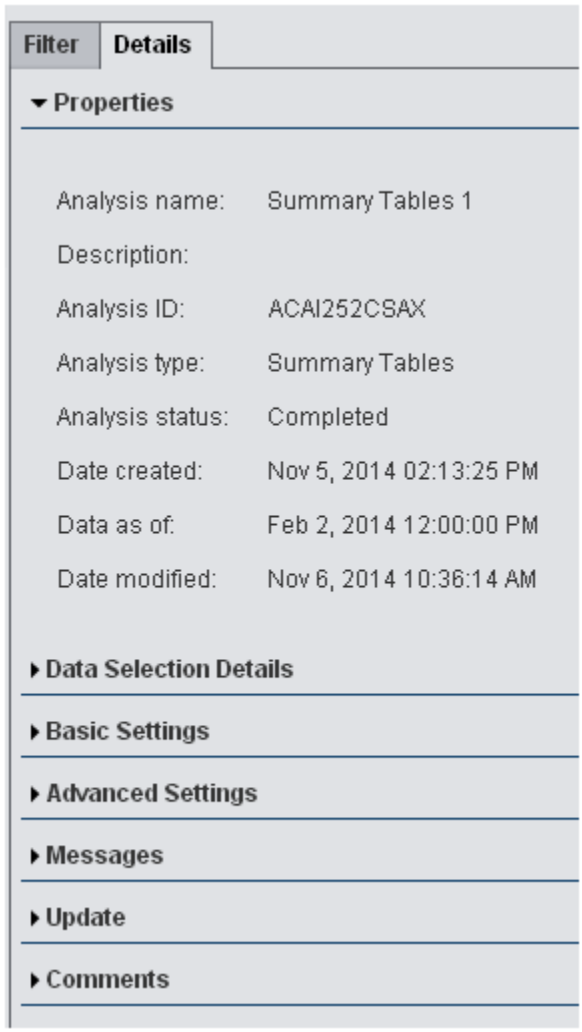



### *Summary Tables Analysis*

A summary tables analysis summarizes data within groups. It is useful as a first step in performing warranty data analysis and is often generated for management reports. A summary table contains quantitative values such as claim count and claim rate for the desired grouping of reporting variables. The tabular output for a summary tables analysis enables you to access as many as three reporting variables from one analysis.




Additional information can be found on the **Details** tab.




### *Text Mining Analysis*

In SAS Field Quality Analytics, a text mining analysis helps you understand what comment fields are describing without having to read every word. A text mining analysis allows users to identify groups of events that contain similar comments within a subset

of data. A text mining analysis is useful for reducing the manual effort of reading through numerous comments and for increasing the reliability of finding patterns within comments. It compares groups of events that contain similar comments across different values or qualitative attributes such as model, plant, repairing dealer, and supplier. This is useful for identifying attributes whose values are strongly correlated to particular groups of events having similar comments.

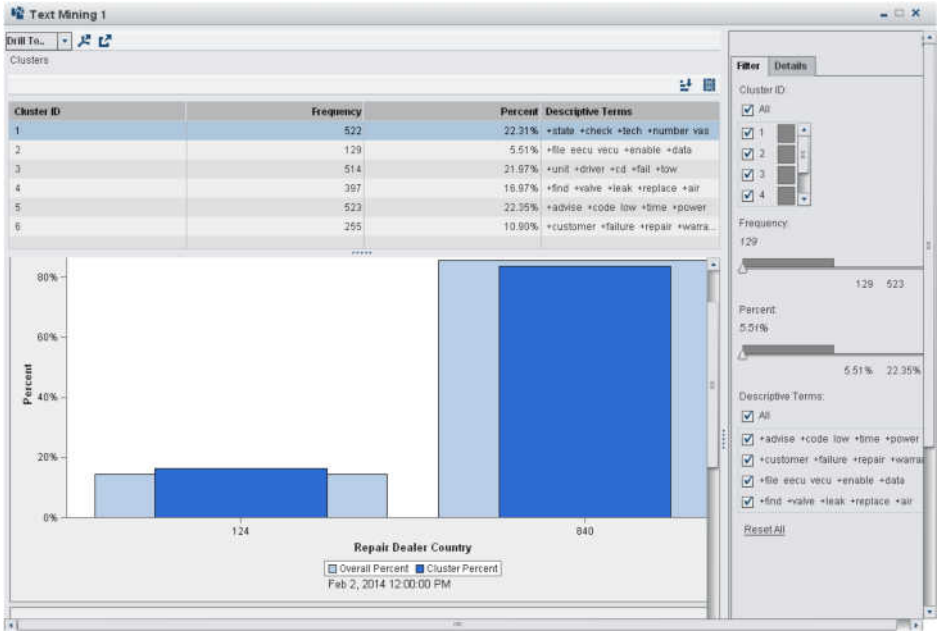
The text mining process involves text parsing which breaks the comment fields into terms. Text parsing can remove low-information terms, such as “a,” “an,” and “the.” It can identify a term’s part of speech, such as whether “on” is used as a preposition versus as an adjective. Text parsing can also find the root form of a word for a group of similar words, or it can specify synonyms. After the comment fields have been parsed and transformed into a numerical representation, clustering is performed. Clustering is the process of dividing terms into mutually exclusive groups so that the observations for each group are as close as possible to one another and different groups are as far as possible from one another. Clustering can reveal the central themes and key concepts that are emphasized by the subset of data.

A text mining analysis creates a clusters table, cluster profile bar charts, and a claim details table.

The clusters table shows the frequency, percentage of total, and descriptive terms for each cluster of text that was created. The descriptive terms help summarize the claims contained in the cluster.

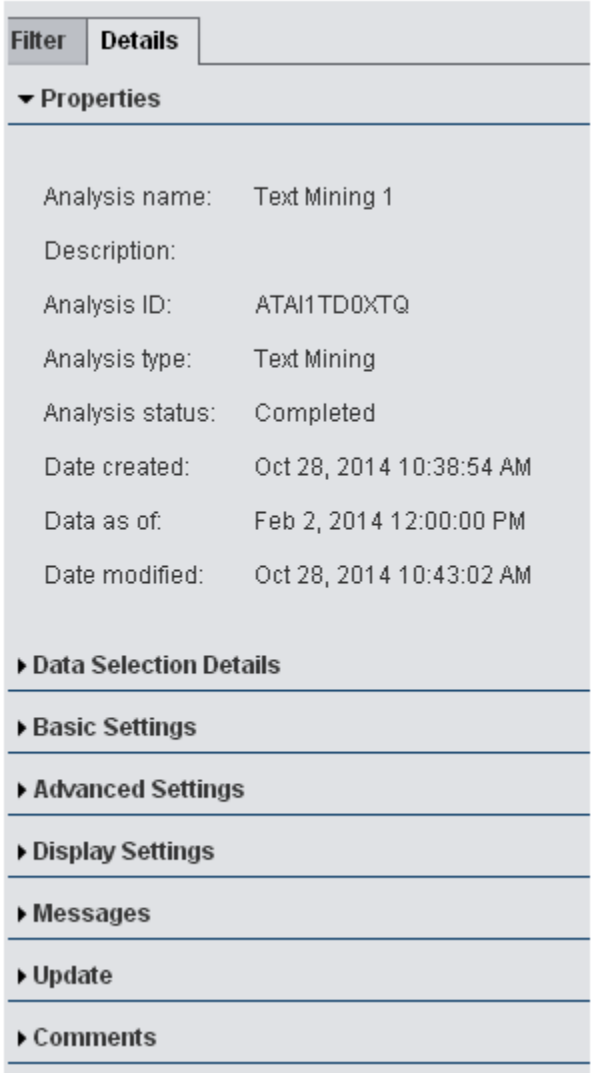
The cluster profile bar charts show the reporting variables (if any) that significantly differentiated the selected cluster from the others. A reporting variable has a significant relationship with a cluster when the distribution of that variable’s values on events within the cluster differs significantly from the distribution of that variable’s values across all events.

The claim details table displays the individual event records, including comments, associated with the selected cluster. It shows the reporting variables and the analysis variable (comment field) for the events that make up the selected cluster. You can find this table by scrolling down below the bar charts.



The descriptive terms in the text mining analysis cluster output are separated by a double space. The plus sign for a descriptive term means that the term is a representative term for additional terms. Quotation mark characters are used around multi-terms.

Additional information can be found on the **Details** tab.



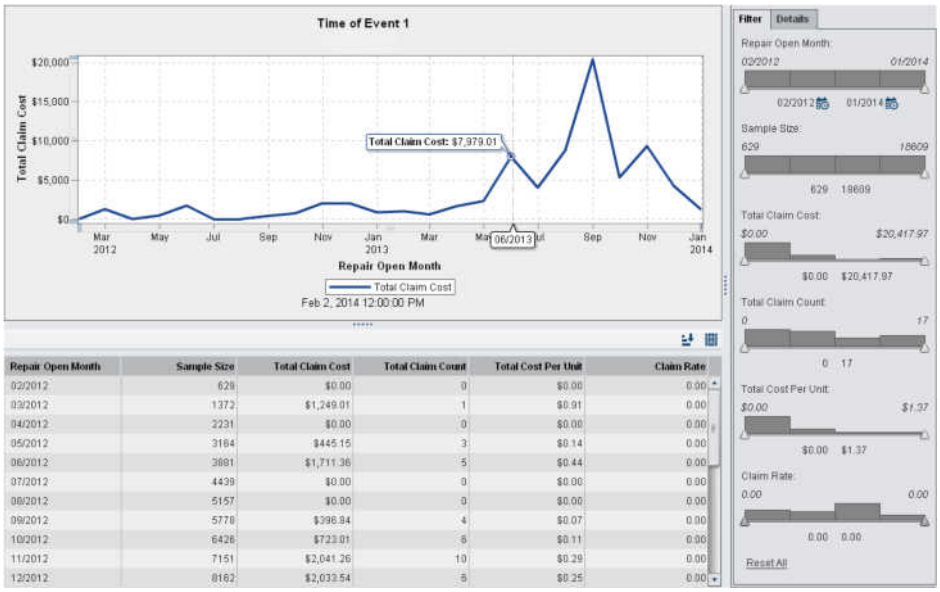

### *Time of Event Analysis*

The time of event analysis enables you to view how a quantitative value, such as total event count or cost, varies with respect to calendar points in time. It plots a calculated quantitative count on the Y-axis and past calendar periods (for example, months) on the X-axis. The calendar periods can represent times when claims are made, times when claims are paid, or any other calendar date associated with claims. In addition, you can specify a group variable in order to stratify the analysis by the values of some categorical variable for comparison purposes.

The time of event analysis can be used to monitor claims activity by calendar periods.

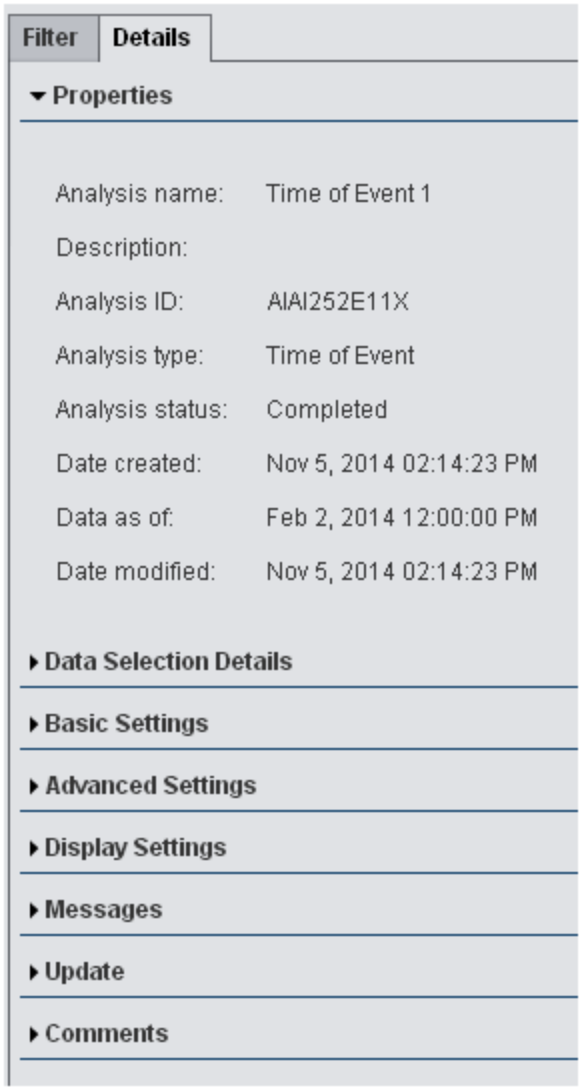
You can filter the results by sliding the triangles at the end of each category to the left or the right on the **Filter** tab.

*Note:* To see the **Filter** tab, you might need to click the  .




| Repair Open Month | Sample Size | Total Claim Cost | Total Claim Count | Total Cost Per Unit | Claim Rate |
|---|---|---|---|---|---|
| 02/2012 | 629 | $0.00 | 0 | $0.00 | 0.00 |
| 03/2012 | 1372 | $1,249.01 | 1 | $0.91 | 0.00 |
| 04/2012 | 2231 | $0.00 | 0 | $0.00 | 0.00 |
| 05/2012 | 3184 | $445.15 | 3 | $0.14 | 0.00 |
| 06/2012 | 3881 | $1,711.36 | 5 | $0.44 | 0.00 |
| 07/2012 | 4439 | $0.00 | 0 | $0.00 | 0.00 |
| 08/2012 | 5157 | $0.00 | 0 | $0.00 | 0.00 |
| 09/2012 | 5778 | $396.94 | 4 | $0.07 | 0.00 |
| 10/2012 | 6426 | $723.01 | 6 | $0.11 | 0.00 |
| 11/2012 | 7151 | $2,041.26 | 10 | $0.29 | 0.00 |
| 12/2012 | 8162 | $2,032.54 | 8 | $0.25 | 0.00 |

Additional information can be found on the **Details** tab.



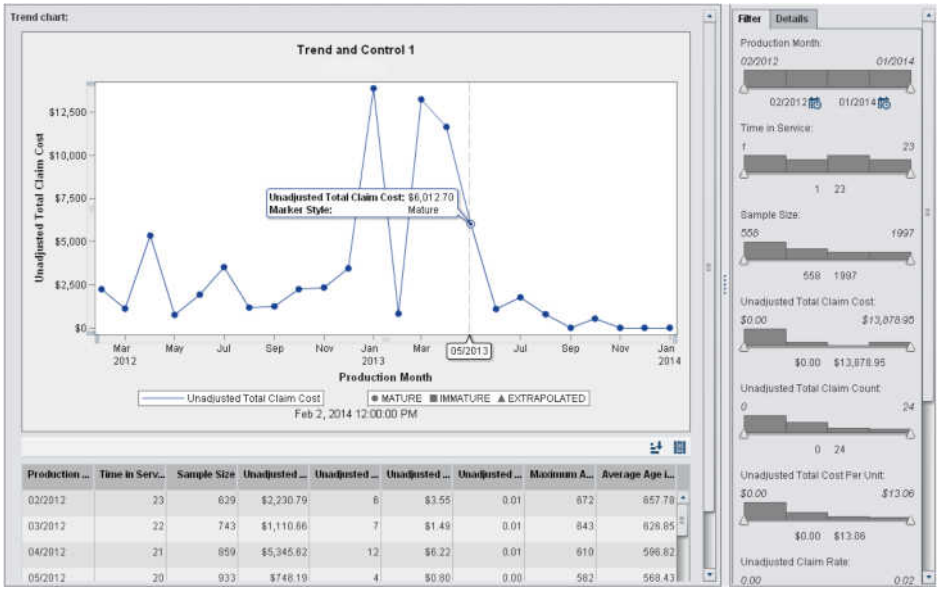

## *Trend and Control Analysis*

The trend and control analysis enables you to view warranty event activity from the time-of-build perspective. Specifically, this analysis enables you to plot an analysis variable (such as total event count or cost, event rate, or event cost per unit) versus a reporting variable that is related to a production time period (such as month of production or week of production). Also, a group variable can be specified to stratify the analysis.

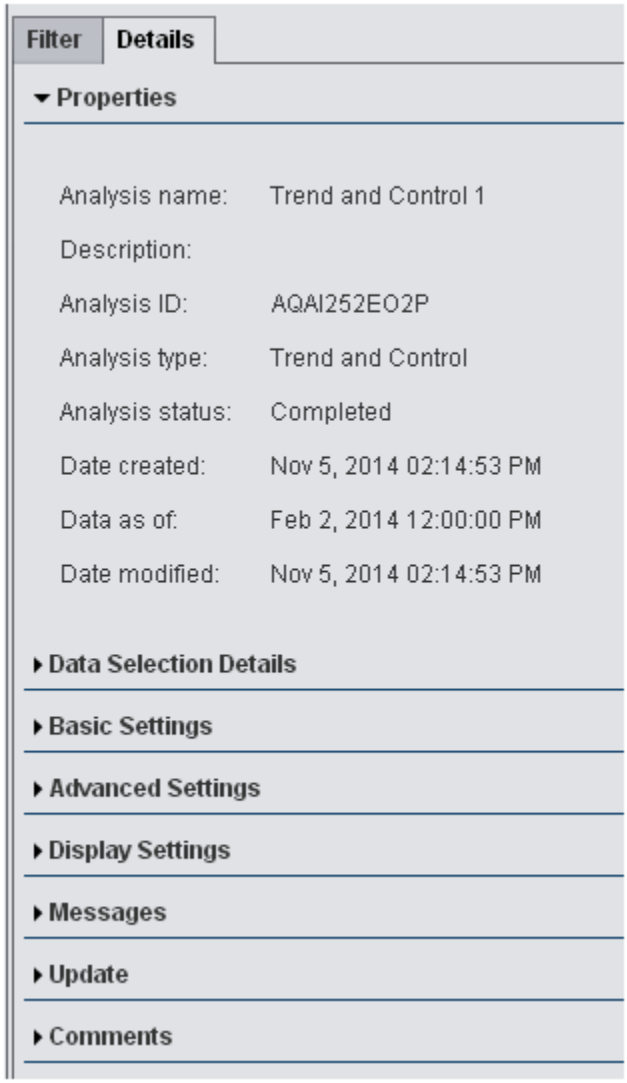
In addition, control charts for individual measurement and moving range can be requested. The analysis performs tests based on Western Electric Rules for detecting out-of-control or nonrandom conditions on the control charts.

You can filter the results by sliding the triangles at the end of each category to the left or the right on the **Filter** tab.

*Note:* To see the **Filter** tab, you might need to click the  .




Additional information can be found on the **Details** tab.



## *Trend by Exposure Analysis*

The trend by exposure analysis is used to see trends in event activity across production periods for different time-in-service periods or usage intervals.

The trend by exposure output helps you understand when event activity might be correlated to certain production periods and time-in-service periods or usage intervals.

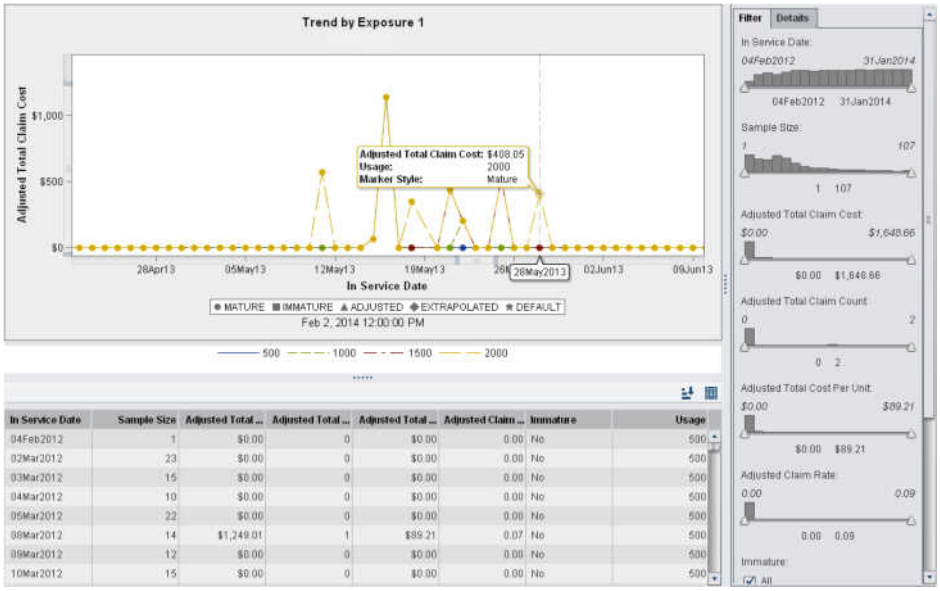
The trend by exposure output includes a chart showing a quantitative value such as claim rate, claim count, or claim cost on the Y-axis versus a production period such as month of production or week of production on the X-axis.

A separate line is generated for each of the time-in-service periods or usage intervals that are selected by the user to display. The output can show either incremental or cumulative calculated quantitative values.

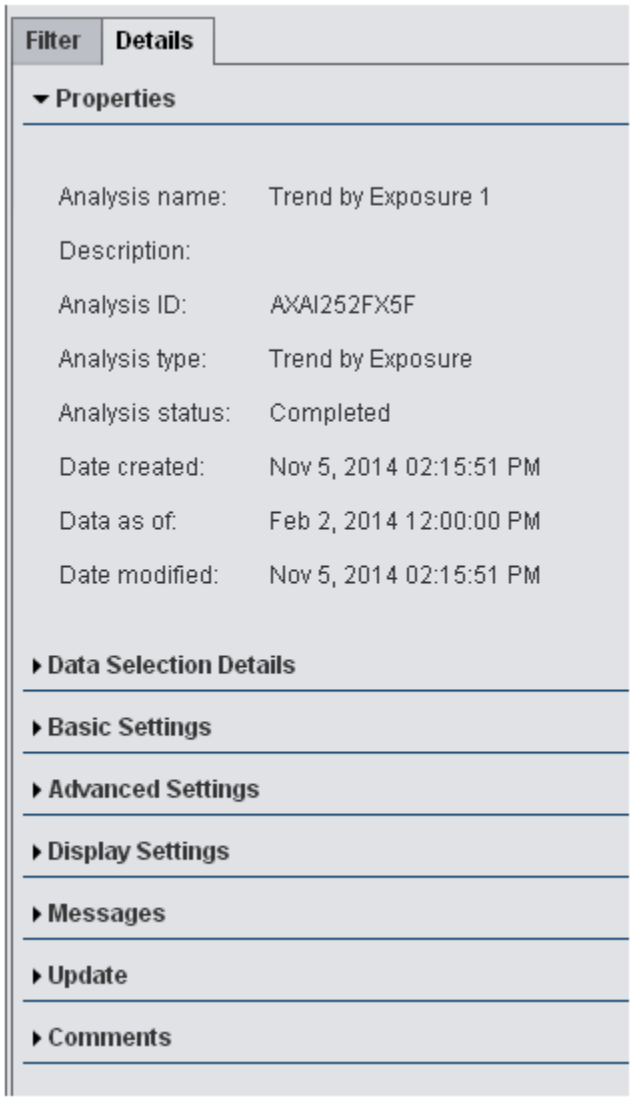
The trend by exposure output also includes a results table showing the quantitative values calculated for each time-in-service period or usage interval for all production periods analyzed.

You can filter the results by sliding the triangles at the end of each category to the left or the right on the **Filter** tab.

*Note:* To see the **Filter** tab, you might need to click the  .




Additional information can be found on the **Details** tab.


Filter
Details
Properties
Analysis name: Trend by Exposure 1
Description:
Analysis ID: AXAI252FX5F
Analysis type: Trend by Exposure
Analysis status: Completed
Date created: Nov 5, 2014 02:15:51 PM
Data as of: Feb 2, 2014 12:00:00 PM
Date modified: Nov 5, 2014 02:15:51 PM
Data Selection Details
Basic Settings
Advanced Settings
Display Settings
Messages
Update
Comments

*Chapter 13*

# Working with Analyses

# About Working with Analyses

You can create, modify, view, and save results for an analysis in the **Analysis** workspace:


You can use the following types of analyses to help you investigate a field quality issue:

| Analysis | Example |
|---|---|
| Decision Tree | Identifies the combinations of attributes that drive failure rates. |
| Details Table | Enables you to view and download detailed product or event records. |
| Event Forecasting | Enables you to calculate the magnitude of future warranty issues so that you can make projections about upcoming performance problems and make plans for handling resulting claims. |
| Exposure | Enables you to view how warranty event activity varies by product exposure or time in service |
| Failure Relationships | Identifies the relationship between types of failures, such as labor codes and part numbers. |
| Geographic | Plots a quantitative value, such as total claim cost, claim count, or claim rate on a geographic map of the United States, Canada, and Mexico by state or province to look at how warranty events are distributed geographically. |
| Pareto | Displays the classification of quality-related problems arranged in decreasing order of importance to determine which subset of problems should be examined first, or which problem areas deserve the most attention.<br>*Note:* The number of bars that can be created in a Pareto analysis can range from 1 to 25. |
| Reliability | Used to answer questions about the durability of a product and to characterize how a product functions in the field throughout its life. |

| Analysis | Example |
|---|---|
| Statistical Drivers | Enables you to identify factors with statistically significant differences of values in event activities. |
| Summary Tables | Creates tabular output that enables you to access as many as three reporting variables from one analysis. |
| Text Mining | Identifies trends and business opportunities, and generates meaningful insights into warranty issues more efficiently than using structured data alone. |
| Time of Event | Enables you to view how a quantitative value, such as total event count or cost, varies with respect to calendar points in time. |
| Trend and Control | Enables you to view warranty event activity from the time-of-build perspective. |
| Trend by Exposure | Enables you to visualize how warranty event activity varies across production periods at various time-in-service values. |

The following section explains how you can create a new analysis.

# Create a New Analysis

### *Create a New Analysis*

Perform the following steps to create a new analysis in the **Analysis** workspace:

1. Click  .

   The New Analysis dialog box appears.

2. Click **Select** to make a data selection.

   The Select Data Selection dialog box appears.

3. Select a data selection in the table, and then click **OK**.

   *Note:* If there are no data selections to choose from in the table, you will first need to create a data selection before you can create an analysis. For more information about creating a data selection, see "About Data Selections" on page 69.

4. Select an analysis from the **Available Analyses** list, and then click  .

   The analysis is added to the **Selected Analyses** list.

5. Click **OK**.

6. Follow the instructions in one of the following, depending on the type of analysis that you selected:

   - "Decision Tree Analysis" on page 126
   - "Details Table Analysis" on page 128
   - "Event Forecasting Analysis" on page 129
   - "Exposure Analysis" on page 131

### *Decision Tree Analysis*

Perform the following steps to create a decision tree analysis in the Decision Tree window:

1. Provide an analysis name.
2. Specify a description for the analysis.
3. Select a data type from the menu.
4. Select a reporting variable.
   a. Click **Select**.

      The Select Reporting Variables dialog box appears.

   b. Select a variable in the **Available Variables** list.

   c. Click  .

      The selected variable is added to the **Selected Variables** list.

      *Note:*

      - You can use  or  to reorder the relative position of a selected variable after you select that variable in the list.
      - The  button can be used to move all items in the **Available Variables** list to the **Selected Variables** list if the **Available Variables** list contains 25 items or fewer. To select more than 25 items at a time, you can select the first item in the**Available Variables** list that you want to move, hold down Shift on the keyboard, select the last item in the **Available Variables** list that you want to select, and then click the  button.

   d. Click **OK**.
5. Select a time-in-service point of view from the menu.
6. Select a calculation method from the menu.

7. If you selected **Adjusted** or **Extrapolated** as the calculation method, specify whether you want to apply usage profiles.
8. If you selected to apply usage profiles, select the usage type from the menu.
9. If you selected to apply usage profiles, select a warranty program usage limitation from the menu.
10. Specify whether you want to include pre-delivery claims.
11. Select the maximum exposure:
    a. Click **Select**.

       The Select Maximum Exposure dialog box appears.

    b. Select a variable from the list.
    c. Click **OK**.
12. Select the maturity level:
    a. Click **Select**.

       The Select Maturity Level dialog box appears.

    b. Select a variable from the list.
    c. Click **OK**.
13. Select a minimum sample size type from the menu.
14. If you specified a minimum sample size type, provide the minimum sample size.
15. Specify whether you want to use claim submit lag.
16. Select the maximum number of branches from the menu.
17. Select the maximum depth of the tree from the menu.
18. Select an alpha level from the menu.
19. Select a title from the menu.
20. If you selected **Custom text** as the title, provide the text that you want as the title in the text box.
21. Select a subtitle from the menu.
22. If you selected **Custom text** as the subtitle, provide the text that you want as the subtitle in the text box.
23. Select a footnote from the menu.
24. If you selected **Custom text** as the footnote, provide the text that you want as the footnote in the text box.
25. Select the value to display from the menu.
26. Specify the method of notification.
27. Specify whether you want the analysis to automatically update.
28. If you selected **Between these dates** as the automatically update value, select a start date and an end date by clicking  .
29. Click **Save and Submit** or **Save**, depending on whether you want to run the analysis now.

### Details Table Analysis

Perform the following steps to create a details table analysis:

1. Provide an analysis name.
2. Specify a description for the analysis.
3. Select the data type from the menu.
4. Specify a reporting variable:
   a. Click **Select**.

      The Select Reporting Variables dialog box appears.

   b. Select a variable in the **Available Variables** list.

   c. Click  .

      The variable is added to the **Selected Variables** list.

      *Note:*

      - You can use  or  to reorder the relative position of a selected variable after you select that variable in the list.
      - The  button can be used to move all items in the **Available Variables** list to the **Selected Variables** list if the **Available Variables** list contains 25 items or fewer. To select more than 25 items at a time, you can select the first item in the**Available Variables** list that you want to move, hold down Shift on the keyboard, select the last item in the **Available Variables** list that you want to select, and then click the  button.

   d. Click **OK**.
5. Specify whether to include unmatched rows.
6. If you selected a comment variable as a reporting variable, specify whether you want to find similar comments, and the language of the comments.

   *Note:*

   - If you use a comment reporting variable, and choose to find similar comments, you should find similar comments in the results before you apply a filter, such as sorting by a column. This is because the action of finding similar comments sorts the data by similarity, and any pre-existing filters are removed.
   - If you use a comment reporting variable, and choose to find similar comments, you should select more than one reporting variable.
7. Specify whether you want to include pre-delivery claims.
8. Select the claims per unit to include from the menu.
9. Select the maximum exposure:
   a. Click **Select**.

      The Select Maximum Exposure dialog box appears.

b. Select a variable from the list.

c. Click **OK**.

10. Select the maturity level:

    a. Click **Select**.

       The Select Maturity Level dialog box appears.

    b. Select a variable from the list.

    c. Click **OK**.

11. Select a value to display.

12. Specify the manner of notification.

13. Specify whether you want the analysis to automatically update.

14. If you selected **Between these dates** as the automatically update value, select a start date and an end date by clicking  .

15. Click **Save and Submit** or **Save**, depending on whether you want to run the analysis now.

After you run a details table analysis, you can filter your view of the results by searching for specified criteria. For more information about searching for a specified criteria, see "Search Analysis Results" on page 161.

### *Event Forecasting Analysis*

Perform the following steps to create an event forecasting analysis in the Event Forecasting window:

1. Provide an analysis name.
2. Specify a description for the analysis.
3. Select a group variable from the menu.

   *Note:* The event forecasting analysis works best when you forecast claims for a specific component, or a specific failure mode (labor code). An analysis that uses extensively filtered data, or an analysis run with a group variable, which can be composed of claims arising from multiple parts or failure modes, is not a good candidate for an event forecasting analysis. The default setting for the group variable conveys this intention. However, you can use another group variable (model year, for example), select a specific labor code, or part, and run the analysis.

4. Select an analysis variable from the menu.

   *Note:* Cost per claim and cost per unit are not available as analysis variables.

5. Select a forecast interval length from the menu.
6. Select a forecast model type from the menu.

   If you specify the model type as **Single Event**, then the model-to-fit options from the menu will be **Nonparametric**, **Exponential**, **Loglogistic**, **Lognormal**, and **Weibull**.

   If you specify the model type as **Repeat Event**, then the model-to-fit options from the menu will be **Nonparametric**, **Homogeneous**, **Loglinear**, and **Power**.

7. Select a model to fit from the menu.

8. Select a maximum time-in-service length from the menu.
9. Select a usage type from the menu.
10. Specify a warranty program usage limitation from the menu.
11. Select a censor date source from the menu.
12. If you specified **Manually entered** as the censor date source, select a censor date by clicking  .
13. Specify whether you want to create a model only.
14. If you did not specify to create a model only, provide the following information:
    a. Select the number of forecast intervals.

       *Note:* The number of forecast intervals can range from 1 to 520.

    b. Select the sales forecast source from the menu.
    c. Select the sales forecast calculation from the menu if you specified **System—calculated** as the sales forecast source.
    d. Specify the prior sales periods to use if you specified **System-calculated** as the sales forecast source.

       *Note:* The number of prior sales periods to use can range from 1 to 520.

    e. Provide the sales amounts if you specified **Manually entered** as the sales forecast source.
    f. Specify whether you want to add a service contract time period.
    g. If you specified that you want to add a service contract time period, select the service contract time length from the menu.
    h. Specify whether you want to add a service contract usage period.
    i. If you specified that you want to add a service contract usage period, select the service contract usage length from the menu.
15. Specify a confidence coefficient.

    *Note:* The number of forecast intervals can range from 0.5 to 0.99.
16. Specify whether you want to use claim submit lag.
17. Specify whether to apply a seasonal adjustment.
18. If you specified that you want to apply a seasonal adjustment, select the minimum number of years of data that is required for the seasonal adjustment.

    *Note:* The minimum number of years of data that are required for a seasonal adjustment can range from 1 to 20.
19. Select a title from the menu.
20. If you selected **Custom text** as the title, provide the text that you want as the title in the text box.
21. Select a subtitle from the menu.
22. If you selected **Custom text** as the subtitle, provide the text that you want as the subtitle in the text box.
23. Select a footnote from the menu.
24. If you selected **Custom text** as the footnote, provide the text that you want as the footnote in the text box.

25. Specify whether you want to include the model type and model to fit on the forecast chart.

    *Note:* If you include the model to fit on the forecast chart, the legends below the graph are for the model fit. Actual points are shown using a scatter plot, where the same color is used for lines. The legend references only the fit line.

26. Select the value to display.
27. Select the method of notification from the menu.
28. Specify whether you want the analysis to automatically update.
29. If you selected **Between these dates** as the automatically update value, select a start date and an end date by clicking  .
30. Click **Save and Submit** or **Save**, depending on whether you want to run the analysis now.

### *Exposure Analysis*

Perform the following steps to create an exposure analysis in the Exposure window:

1. Provide an analysis name.
2. Specify a description for the analysis.
3. Select a group variable.
   a. Click **Select**.

      The Select Group Variable dialog box appears.

   b. Select a variable in the table.
   c. Click **OK**.
4. Select an analysis variable.
   a. Click **Select**.

      The Select Analysis Variable dialog box appears.

   b. Select a variable in the table.
   c. Click **OK**.
5. Select an exposure type from the menu.
6. If you selected **Time in service** as the exposure type, specify the time in service point of view by selecting from the menu.
7. If you selected **Time in service** as the exposure type, select a calculation method from the menu.
8. If you selected **Time in service** as the exposure type, select a summary type from the menu.
9. If you selected **Time in service** as the exposure type, and you selected **Adjusted** or **Extrapolated** as the calculation method, specify whether you want to apply usage profiles.
10. If you specified to apply usage profiles, or if you selected **Usage** as the exposure type, select the usage type.

11. If you specified to apply usage profiles, select the warranty program usage limitation from the menu.
12. If you selected **Usage** as the exposure type, specify a bin increment.

    *Note:* The bin increment can range from 1 to 1000000000.
13. Specify whether you want to include pre-delivery claims.
14. Select the claims per unit to include from the menu.
15. Specify the maximum exposure.
    a. Click **Select**.

       The Select Maximum Exposure window appears.
    b. Select a variable from the list.
    c. Click **OK**.
16. Specify the maturity level.
    a. Click **Select**.

       The Select Maturity Level window appears.
    b. Select a variable from the list.
    c. Click **OK**.
17. Select the minimum sample size type from the menu.
18. If you selected a minimum sample size type, provide a minimum sample size.

    *Note:* As a percentage, the minimum sample size can range from 1 to 100. As a count, the minimum sample size can range from 1 to 1000000000.
19. Specify whether you want to use a claim submit lag.
20. Select a title from the menu.
21. If you selected **Custom text** as the title, provide the text that you want as the title in the text box.
22. Select a subtitle from the menu.
23. If you selected **Custom text** as the subtitle, provide the text that you want as the subtitle in the text box.
24. Select a footnote from the menu.
25. If you selected **Custom text** as the footnote, provide the text that you want as the footnote in the text box.
26. Specify whether you want to display grid lines.
27. Specify whether you want to display a horizontal reference line.
28. If you specified that you want to display a horizontal reference line, provide the value.

    *Note:* The horizontal reference line value can range from –1000000000 to 1000000000.
29. If you specified that you want to display a horizontal reference line, specify whether you want to display a horizontal reference line label.
30. If you specified that you want to display a horizontal reference line label, provide the value.

31. Specify whether you want to display a vertical reference line.
32. If you specified that you want to display a vertical reference line, provide the value.

    *Note:* The vertical reference line value can range from –1000000000 to 1000000000.
33. If you specified that you want to display a vertical reference line, specify whether you want to display a vertical reference line label.
34. If you specified that you want to display a vertical reference line label, provide the value.
35. Select a value to display from the menu.
36. Select the method of notification from the menu.
37. Specify whether you want the analysis to automatically update.
38. If you selected **Between these dates** as the automatically update value, select a start date and an end date by clicking  .
39. Click **Save and Submit** or **Save**, depending on whether you want to run the analysis now.

*Note:* When this analysis is executed with the exposure type as usage, independent of usage as mileage or hours, the output table for this analysis does not contain the units for the usage.

### *Failure Relationships Analysis*

Perform the following steps to create a failure relationships analysis in the Failure Relationships window:

1. Provide an analysis name.
2. Specify a description for the analysis.
3. Select a reporting variable from the menu.
4. Select a cost variable from the menu.
5. Select the nature of rules from the menu.
6. If **Between all possible variable values** is not selected as the nature of rules, specify reporting variable values:
   a. Click **Select**.

      The Select Reporting Variable Values dialog box appears.

   b. Select a reporting variable value from the **Available Items** list.

   c. Click  .

      The item is added to the **Selected Items** list.

      *Note:* You can reorder the relative position of the selected items by using  and  after you select an item in the **Selected Items** list.

   d. Click **OK**.
7. Specify whether to perform repeat repairs only.

8. Select the maximum inter-occurrence time from the menu.
   a. Click **Select**.

      The Select Maximum Inter-Occurrence Time window appears.

   b. Select a variable from the list.
   c. Click **OK**.
9. Select a time-in-service point of view from the menu.
10. Select the maximum age of the product from the menu.
11. Select a usage type from the menu.
12. Select the warranty program usage limitation from the menu.
13. Specify whether to include a rule progression table.

    *Note:* If you specify to include a rule progression table, the rule progression chart button is visible if you select a single row in the results table. The rule progression chart button is not visible if you select multiple rows in the results table or if you do not specify to include a rule progression table in the analysis.
14. Specify whether you want to include pre-delivery claims.
15. Select the maximum exposure from the menu:
    a. Click **Select**.

       The Select Maximum Exposure window appears.

    b. Select a variable from the list.
    c. Click **OK**.
16. Select the maturity level from the menu.
    a. Click **Select**.

       The Select Maturity Level window appears.

    b. Select a variable from the list.
    c. Click **OK**.
17. Specify the rule size.
    a. Click **Select**.

       The Select Rule Size dialog box appears.

    b. Select an available rule size in the **Available Rule Sizes** list.
    c. Click  .

       The available rule size is moved to the **Selected Rule Sizes** list.

    d. Click **OK**.
18. Specify whether to apply rule strength criteria.
19. If you specified to apply rule strength criteria, select the minimum support type from the menu.
20. If you specified to apply rule strength criteria, and you selected the minimum support type as a percentage, select the minimum support from the menu:
    a. Click **Select**.

The Select Minimum Support window appears.

b. Select a variable from the list.

c. Click **OK**.

If you specified to apply rule strength criteria, and you selected the minimum support type as a count, specify the minimum support.

*Note:* As a count, the minimum support can range from 1 to 1000000.

21. If you specified to apply rule strength criteria, specify the minimum confidence from the menu:

    a. Click **Select**.

    The Select Minimum Confidence window appears.

    b. Select a variable from the list.

    c. Click **OK**.

22. If you specified to apply rule strength criteria, specify the minimum lift.

    *Note:* The minimum lift can range from 0 to 1000000.

23. If you specified to apply rule strength criteria, specify the minimum total rule cost.

    *Note:* The minimum total rule cost can range from 0 to 1000000.

24. If you did not specify to apply rule strength criteria, select the number of rules to display.

25. Select a title from the menu.

26. If you selected **Custom text** as the title, provide the text that you want as the title in the text box.

27. Select a subtitle from the menu.

28. If you selected **Custom text** as the subtitle, provide the text that you want as the subtitle in the text box.

29. Select a footnote from the menu.

30. If you selected **Custom text** as the footnote, provide the text that you want as the footnote in the text box.

31. Select the value to display.

32. Select the method of notification from the menu.

33. Specify whether you want the analysis to automatically update.

34. If you selected **Between these dates** as the automatically update value, select a start date and an end date by clicking  .

35. Click **Save and Submit** or **Save**, depending on whether you want to run the analysis now.

## *Geographic Analysis*

Perform the following steps to create a geographic analysis in the Geographic window:

1. Provide an analysis name.
2. Specify a description for the analysis.

3. Select a reporting variable from the menu.
4. Select an analysis variable.
   a. Click **Select**.

      The Select Analysis Variable dialog box appears.

   b. Select a variable in the table.
   c. Click **OK**.
5. Specify the time-in-service point of view from the menu.
6. Select a calculation method from the menu.
7. If you selected **Adjusted** or **Extrapolated** as the calculation method, specify whether you want to apply usage profiles.
8. If you specified that you want to apply usage profiles, select a usage type from the menu.
9. If you specified that you want to apply usage profiles, select the warranty program usage limitation from the menu.
10. Specify whether you want to include pre-delivery claims.
11. Select the claims per unit to include from the menu.
12. Specify the maximum exposure:
    a. Click **Select**.

       The Select Maximum Exposure window appears.

    b. Select a variable from the list.
    c. Click **OK**.
13. Specify the maturity level.
    a. Click **Select**.

       The Select Maturity Level window appears.

    b. Select a variable from the list.
    c. Click **OK**.
14. Select the minimum sample size type from the menu.
15. If you selected a minimum sample size type, provide a minimum sample size.

    *Note:* As a percentage, the minimum sample size can range from 1 to 100. As a count, the minimum sample size can range from 1 to 1000000000.
16. Specify whether you want to use claim submit lag.
17. Select a title from the menu.
18. If you selected **Custom text** as the title, provide the text that you want as the title in the text box.
19. Select a subtitle from the menu.
20. If you selected **Custom text** as the subtitle, provide the text that you want as the subtitle in the text box.
21. Select a footnote from the menu.
22. If you selected **Custom text** as the footnote, provide the text that you want as the footnote in the text box.

23. Select a value to display from the menu.
24. Select the method of notification from the menu.
25. Specify whether you want the analysis to automatically update.
26. If you selected **Between these dates** as the automatically update value, select a start date and an end date by clicking  .
27. Click **Save and Submit** or **Save**, depending on whether you want to run the analysis now.

## *Pareto Analysis*

Perform the following steps to create a Pareto analysis in the Pareto window:

1. Provide an analysis name.
2. Specify a description for the analysis.
3. Select a reporting variable.
   a. Click **Select**.

      The Select Reporting Variable dialog box appears.

   b. Select a variable in the table.
   c. Click **OK**.
4. Select a group variable.

   *Note:* The reporting variable and the group variable should not be the same.

   a. Click **Select**.

      The Select Group Variable dialog box appears.

   b. Select a variable in the table.
   c. Click **OK**.
5. Select an analysis variable.
   a. Click **Select**.

      The Select Analysis Variable dialog box appears.

   b. Select a variable in the table.
   c. Click **OK**.
6. Specify the time-in-service point of view from the menu.
7. Specify the calculation method from the menu.
8. If you selected a calculation method of **Adjusted** or **Extrapolated**, specify whether you want to apply usage profiles.
9. If you specified to apply usage profiles, select a usage type from the menu.
10. If you specified to apply usage profiles, select the warranty program usage limitation from the menu.
11. Specify whether you want to include pre-delivery claims.
12. Select the claims per unity to include from the menu.
13. Specify the maximum exposure.

a. Click **Select**.

   The Select Maximum Exposure dialog box appears.

b. Select a variable from the list.

c. Click **OK**.

14. Specify the maturity level.

    a. Click **Select**.

       The Select Maturity Level dialog box appears.

    b. Select a variable from the list.

    c. Click **OK**.

15. Select the minimum sample size type from the menu.

16. If you specified a minimum sample size type, specify a minimum sample size.

    *Note:* As a percentage, the minimum sample size can range from 1 to 100. As a count, the minimum sample size can range from 1 to 1000000000.

17. Specify whether to use a claim submit lag.

18. Select a title from the menu.

19. If you selected **Custom text** as the title, provide the text that you want as the title in the text box.

20. Select a subtitle from the menu.

21. If you selected **Custom text** as the subtitle, provide the text that you want as the subtitle in the text box.

22. Select a footnote from the menu.

23. If you selected **Custom text** as the footnote, provide the text that you want as the footnote in the text box.

24. Specify the number of bars that you want to display.

    *Note:* The number of bars can range from 1 to 25.

25. Select the value to display from the menu.

26. Select the method of notification from the menu.

27. Specify whether you want the analysis to automatically update.

28. If you selected **Between these dates** as the automatically update value, select a start date and an end date by clicking  .

29. Click **Save and Submit** or **Save**, depending on whether you want to run the analysis now.

## *Reliability Analysis*

Perform the following steps to create a reliability analysis in the Reliability window:

1. Provide an analysis name.
2. Specify a description for the analysis.
3. Specify a group variable.

a. Click **Select**.

   The Select Group Variable dialog box appears.

b. Select a variable in the list.

c. Click **OK**.

4. Select a reliability variable from the menu.
5. If you selected **Time in service** as the reliability variable, select a time in service point of view from the menu.
6. If you selected **Time in service** as the reliability variable, select the warranty program time length from the menu.
7. If you selected **Time in service** as the reliability variable, specify whether to apply usage profiles.
8. If you specified to apply usage profiles, or you selected **Usage** as the reliability variable, select a usage type from the menu.
9. If you specified to apply usage profiles, and you selected **Time in service** as the reliability variable, select the warranty program usage limitation from the menu.
10. If you specified **Usage** as the reliability variable, specify a bin increment.

    *Note:* The bin increment can range from 1 to 1000000000.

11. Select a model to fit from the menu.
12. Select a fit type from the menu.
13. Specify a confidence coefficient.

    *Note:* The confidence coefficient can range from 0.01 to 1.

14. Select a minimum sample size type from the menu.
15. If you specified a minimum sample size type, provide a minimum sample size.

    *Note:* As a percentage, the minimum sample size can range from 1 to 100. As a count, the minimum sample size can range from 1 to 1000000000.

16. Specify whether to use claim submit lag.
17. Select a title from the menu.
18. If you selected **Custom text** as the title, provide the text that you want as the title in the text box.
19. Select a subtitle from the menu.
20. If you selected **Custom text** as the subtitle, provide the text that you want as the subtitle in the text box.
21. Select a footnote from the menu.
22. If you selected **Custom text** as the footnote, provide the text that you want as the footnote in the text box.
23. Specify whether you want to display grid lines.
24. Specify whether you want to display a failure probability plot.
25. Specify whether you want to display a hazard plot.
26. Specify whether you want to display a cumulative failure distribution plot.
27. Specify whether you want to display a B-life table.

28. Specify whether you want to display a projected value table.
29. Select the value that you want to display.
30. Specify the manner of notification.
31. Specify whether you want the analysis to automatically update.
32. If you selected **Between these dates** as the automatically update value, select a start date and an end date by clicking  .
33. Click **Save and Submit** or **Save**, depending on whether you want to run the analysis now.

### *Statistical Drivers Analysis*

Perform the following steps to create a statistical drivers analysis in the Statistical Drivers window:

1. Provide an analysis name.
2. Specify a description for the analysis.
3. Select a data type from the menu.
4. Select a reporting variable.
   a. Click **Select**.

      The Select Reporting Variables dialog box appears.

   b. Select a variable in the **Available Variables** list.

   c. Click  .

      The selected variable is added to the **Selected Variables** list.

      *Note:*

      - You can use  or  to reorder the relative position of a selected variable after you select that variable in the list.
      - The  button can be used to move all items in the **Available Variables** list to the **Selected Variables** list if the **Available Variables** list contains 25 items or fewer. To select more than 25 items at a time, you can select the first item in the**Available Variables** list that you want to move, hold down Shift on the keyboard, select the last item in the **Available Variables** list that you want to select, and then click the  button.

   d. Click **OK**.
5. Select a time-in-service point of view from the menu.
6. Select a calculation method from the menu.
7. If you selected **Adjusted** or **Extrapolated** as the calculation method, specify whether you want to apply usage profiles.
8. If you selected to apply usage profiles, select a usage type from the menu.

9. If you selected to apply usage profiles, select a warranty program usage limitation from the menu.
10. Specify whether you want to include pre-delivery claims.
11. Select the maximum exposure from the menu:
    a. Click **Select**.

       The Select Maximum Exposure dialog box appears.

    b. Select a variable in the list.
    c. Click **OK**.
12. Select the maturity level from the menu.
    a. Click **Select**.

       The Select Maturity Level dialog box appears.

    b. Select a variable in the list.
    c. Click **OK**.
13. Select a minimum sample size type from the menu.
14. If you specified a minimum sample size type, provide the minimum sample size.

    *Note:* As a percentage, the minimum sample size can range from 1 to 100. As a count, the minimum sample size can range from 1 to 1000000000.
15. Specify whether you want to use a claim submit lag.
16. Select an alpha level from the menu.
17. Select a title from the menu.
18. If you selected **Custom text** as the title, provide the text that you want as the title in the text box.
19. Select a subtitle from the menu.
20. If you selected **Custom text** as the subtitle, provide the text that you want as the subtitle in the text box.
21. Select a footnote from the menu.
22. If you selected **Custom text** as the footnote, provide the text that you want as the footnote in the text box.
23. Specify whether you want to display grid lines.
24. Select the value to display from the menu.
25. Select the method of notification from the menu.
26. Specify whether you want the analysis to automatically update.
27. If you selected **Between these dates** as the automatically update value, select a start date and an end date by clicking  .
28. Click **Save and Submit** or **Save**, depending on whether you want to run the analysis now.

### *Summary Tables Analysis*

Perform the following steps to create a summary tables analysis:

1. Provide an analysis name.
2. Specify a description for the analysis.
3. Select a data type from the menu.
4. Specify a reporting variable.
   a. Click **Select**.

      The Select Reporting Variables dialog box appears.

   b. Select a variable in the **Available Variables** list.
   c. Click  .

      The variable is added to the **Selected Variables** list.

      *Note:*

      - You can use  or  to reorder the relative position of a selected variable after you select that variable in the list.
      - The  button can be used to move all items in the **Available Variables** list to the **Selected Variables** list if the **Available Variables** list contains 25 items or fewer. To select more than 25 items at a time, you can select the first item in the**Available Variables** list that you want to move, hold down Shift on the keyboard, select the last item in the **Available Variables** list that you want to select, and then click the  button.

   d. Click **OK**.
5. Specify an analysis variable.
   a. Click **Select**.

      The Select Analysis Variable dialog box appears.

   b. Select a variable in the **Variable** list.
   c. Click **OK**.
6. Specify whether you want to use an exposure type.
7. If you specified that you want to use an exposure type, select the exposure type from the menu.
8. If you selected **Time in service** as the exposure type, select a time in service point of view from the menu.
9. If you selected **Time in service** as the exposure type, select the calculation method from the menu.
10. If you selected **Time in service** as the exposure type, and **Adjusted** or **Unadjusted** as the calculation method, select the summary type from the menu.
11. If you selected **Time in service** as the exposure type, and **Adjusted** or **Extrapolated** as the calculation method, specify whether to apply usage profiles.
12. If you specified to apply usage profiles, select the usage type from the menu.
13. If you specified to apply usage profiles, select the warranty program usage limitation from the menu.

14. If you specified **Usage** as the exposure type, specify a bin increment.

    *Note:* The bin increment can range from 1 to 1000000000.

15. Provide or select the bins to display, depending on whether you selected **Usage** or **Time in service** as the exposure type.
16. Specify whether you want to include pre-delivery claims.
17. Select the claims per unit to include from the menu.
18. Select the maximum exposure from the menu.
    a. Click **Select**.

       The Select Maximum Exposure dialog box appears.

    b. Select a variable in the list.
    c. Click **OK**.
19. Select the maturity level from the menu.
    a. Click **Select**.

       The Select Maturity Level dialog box appears.

    b. Select a variable in the list.
    c. Click **OK**.
20. Select the minimum sample size type from the menu.
21. If you specified a minimum sample size type, specify a minimum sample size.

    *Note:* As a percentage, the minimum sample size can range from 1 to 100. As a count, the minimum sample size can range from 1 to 1000000000.

22. Specify whether to use a claim submit lag.
23. Select the value to display.
24. Specify the manner of notification.
25. Specify whether you want the analysis to automatically update.
26. If you selected **Between these dates** as the automatically update value, select a start date and an end date by clicking  .
27. Click **Save and Submit** or **Save**, depending on whether you want to run the analysis now.

After you run a summary tables analysis, you can filter your view of the results by searching for specified criteria. For more information about searching for a specified criteria, see "Search Analysis Results" on page 161.

*Note:* When this analysis is executed with the exposure type as usage, independent of usage as mileage or hours, the output table for this analysis does not contain the units for the usage.

### *Text Mining Analysis*

Perform the following steps to create a text mining analysis in the Text Mining window:

1. Provide an analysis name.
2. Specify a description for the analysis.

3. Select a reporting variable.
   a. Click **Select**.

      The Select Reporting Variables dialog box appears.
   b. Select a variable in the **Available Variables** list.
   c. Click  .

      The selected variable is added to the **Selected Variables** list.

      *Note:*

      - You can use  or  to reorder the relative position of a selected variable after you select that variable in the list.
      - The  button can be used to move all items in the **Available Variables** list to the **Selected Variables** list if the **Available Variables** list contains 25 items or fewer. To select more than 25 items at a time, you can select the first item in the**Available Variables** list that you want to move, hold down Shift on the keyboard, select the last item in the **Available Variables** list that you want to select, and then click the  button.
   d. Click **OK**.
4. Select an analysis variable from the menu.
5. Select a time-in-service point of view from the menu.
6. Select the language of comments from the menu.
7. Specify whether you want to include pre-delivery claims.
8. Select the claims per unit to include from the menu.
9. Select the maximum exposure from the menu.
   a. Click **Select**.

      The Select Maximum Exposure dialog box appears.
   b. Select a variable in the list.
   c. Click **OK**.
10. Select the maturity level from the menu.
    a. Click **Select**.

       The Select Maturity Level dialog box appears.
    b. Select a variable in the list.
    c. Click **OK**.
11. Specify the minimum number of documents that are required to include a term.

    *Note:* The minimum number of documents that are required to include a term can range from 1 to 10.
12. Specify the number of clusters.

    *Note:* The number of clusters can range from 1 to 50.
13. Specify whether to find the maximum or exact number of clusters.

14. Specify the number of descriptive terms for each cluster.

    *Note:* The number of descriptive terms for each cluster can range from 1 to 25.

15. Select a title from the menu.
16. If you selected **Custom text** as the title, provide the text that you want as the title in the text box.
17. Select a subtitle from the menu.
18. If you selected **Custom text** as the subtitle, provide the text that you want as the subtitle in the text box.
19. Select a footnote from the menu.
20. If you selected **Custom text** as the footnote, provide the text that you want as the footnote in the text box.
21. Select the value to display from the menu.
22. Select the method of notification from the menu.
23. Specify whether you want the analysis to automatically update.
24. If you selected **Between these dates** as the automatically update value, select a start date and an end date by clicking  .
25. Click **Save and Submit** or **Save**, depending on whether you want to run the analysis now.

*Note:* If the text mining analysis is taking too long to run, try increasing the available memory to 16 gigabytes (GB) or more for better performance.

### *Time of Event Analysis*

Perform the following steps to create a time of event analysis in the Time of Event window:

1. Provide an analysis name.
2. Specify a description for the analysis.
3. Select a reporting variable from the menu.
4. Select a group variable.
   a. Click **Select**.

      The Select Group Variable dialog box appears.

   b. Select a variable in the table.
   c. Click **OK**.
5. Select an analysis variable.
   a. Click **Select**.

      The Select Analysis Variable dialog box appears.

   b. Select a variable in the table.
   c. Click **OK**.
6. Specify the time-in-service point of view from the menu.
7. Specify the warranty program time length.

8. Specify whether you want to apply usage profiles.
9. If you specified to apply usage profiles, select a usage type from the menu.
10. If you specified to apply usage profiles, select the warranty program usage limitation from the menu.
11. Specify whether you want to include pre-delivery claims.
12. Select a title from the menu.
13. If you selected **Custom text** as the title, provide the text that you want as the title in the text box.
14. Select a subtitle from the menu.
15. If you selected **Custom text** as the subtitle, provide the text that you want as the subtitle in the text box.
16. Select a footnote from the menu.
17. If you selected **Custom text** as the footnote, provide the text that you want as the footnote in the text box.
18. Specify whether you want to display grid lines.
19. Specify whether you want to display a horizontal reference line.
20. If you specified that you want to display a horizontal reference line, provide the value for the horizontal reference line.

    *Note:* The horizontal reference line value can range from –1000000000 to 1000000000.
21. If you specified that you want to display a horizontal reference line, specify whether you want to display a horizontal reference line label.
22. If you specified that you want to display a horizontal reference line label, provide the value for the horizontal reference line label.
23. Specify whether you want to display a vertical reference line.
24. If you specified that you want to display a vertical reference line, provide the value for the vertical reference line by selecting  .
25. If you specified that you want to display a vertical reference line, specify whether you want to display a vertical reference line label.
26. If you specified that you want to display a vertical reference line label, provide the value for the vertical reference line label.
27. Select a value to display from the menu.
28. Select the method of notification from the menu.
29. Specify whether you want the analysis to automatically update.
30. If you selected **Between these dates** as the automatically update value, select a start date and an end date by clicking  .
31. Click **Save and Submit** or **Save**, depending on whether you want to run the analysis now.

### *Trend and Control Analysis*

Perform the following steps to create a trend and control analysis in the Trend and Control window:

1. Provide an analysis name.
2. Specify a description for the analysis.
3. Select a reporting variable from the menu.
4. Select a group variable.
   a. Click **Select**.

      The Select Group Variable dialog box appears.

   b. Select a variable in the table.
   c. Click **OK**.
5. Select an analysis variable.
   a. Click **Select**.

      The Select Analysis Variable dialog box appears.

   b. Select a variable in the table.
   c. Click **OK**.
6. Select a control limits type from the menu.
7. If you selected **Manually Enter the Limits** as the value for the control limits type, provide a lower control limit and an upper control limit.

   *Note:* The value of the lower control limit can range from –1000000000 to 1000000000. The value of the upper control limit can range from –1000000000 to 1000000000. However, the upper control limit value must be greater than the lower control limit value.
8. Specify the time-in-service point of view by selecting from the menu.
9. Select a calculation method from the menu.
10. If you selected **Adjusted** or **Extrapolated** as the calculation method, specify whether you want to apply usage profiles.
11. If you specified to apply usage profiles, select a usage type from the menu.
12. If you specified to apply usage profiles, select the warranty program usage limitation from the menu.
13. Specify whether you want to include pre-delivery claims.
14. Select the claims per unit to include from the menu.
15. Specify the maximum exposure.
    a. Click **Select**.

       The Select Maximum Exposure window appears.

    b. Select a variable from the list.
    c. Click **OK**.
16. Specify the maturity level.

a. Click **Select**.

   The Select Maturity Level window appears.

b. Select a variable from the list.

c. Click **OK**.

17. Select the minimum sample size type from the menu.
18. If you selected a minimum sample size type, provide a minimum sample size.

    *Note:* As a percentage, the minimum sample size can range from 1 to 100. As a count, the minimum sample size can range from 1 to 1000000000.

19. Specify whether you want to use a claim submit lag.
20. Select a title from the menu.
21. If you selected **Custom text** as the title, provide the text that you want as the title in the text box.
22. Select a subtitle from the menu.
23. If you selected **Custom text** as the subtitle, provide the text that you want as the subtitle in the text box.
24. Select a footnote from the menu.
25. If you selected **Custom text** as the footnote, provide the text that you want as the footnote in the text box.
26. Specify whether you want to display control charts.
27. Specify whether you want to display grid lines.
28. Specify whether you want to display a horizontal reference line.
29. If you specified that you want to display a horizontal reference line, provide the value.

    *Note:* The horizontal reference line value can range from –1000000000 to 1000000000.

30. If you specified that you want to display a horizontal reference line, specify whether you want to display a horizontal reference line label.
31. If you specified that you want to display a horizontal reference line label, provide the value.
32. Specify whether you want to display a vertical reference line.
33. If you specified that you want to display a vertical reference line, provide the value using  .
34. If you specified that you want to display a vertical reference line, specify whether you want to display a vertical reference line label.
35. If you specified that you want to display a vertical reference line label, provide the value.
36. Select the value to display.
37. Select the method of notification from the menu.
38. Specify whether you want the analysis to automatically update.
39. If you selected **Between these dates** as the automatically update value, select a start date and an end date by clicking  .

40. Click **Save and Submit** or **Save**, depending on whether you want to run the analysis now.

### *Trend by Exposure Analysis*

Perform the following steps to create a trend by exposure analysis in the Trend by Exposure window:

1. Provide an analysis name.
2. Specify a description for the analysis.
3. Select a reporting variable from the menu.
4. Select an analysis variable.
   a. Click **Select**.

      The Select Analysis Variable dialog box appears.

   b. Select a variable in the table.
   c. Click **OK**.
5. Select an exposure type from the menu.
6. If you selected **Time in service** as the exposure type, specify the time in service point of view from the menu.
7. If you selected **Time in service** as the exposure type, select a calculation method from the menu.
8. If you selected **Time in service** as the exposure type, and you selected **Adjusted** or **Unadjusted** as the calculation method, select a summary type from the menu.
9. If you selected **Time in service** as the exposure type, and if you selected **Adjusted** or **Extrapolated** as the calculation method, specify whether you want to apply usage profiles.
10. If you specified to apply usage profiles, select a usage type from the menu.
11. If you specified to apply usage profiles, select the warranty program usage limitation from the menu.
12. If you selected **`Usage`** as the exposure type, specify a bin increment.

    *Note:* The bin increment value can range from 1 to 1000000000.
13. Select or specify the bins to display.
14. Specify whether you want to include pre-delivery claims.
15. Select the claims per unit to include from the menu.
16. Specify the maturity level:
    a. Click **Select**.

       The Select Maturity Level window appears.

    b. Select a variable from the list.
    c. Click **OK**.
17. Select the minimum sample size type from the menu.
18. If you selected a minimum sample size type, provide the minimum sample size.

*Note:* As a percentage, the minimum sample size value can range from 1 to 100. As a count, the minimum sample size value can range from 1 to 1000000000.

19. Specify whether to use a claim submit lag.
20. Select a title from the menu.
21. If you selected **Custom text** as the title, provide the text that you want as the title in the text box.
22. Select a subtitle from the menu.
23. If you selected **Custom text** as the subtitle, provide the text that you want as the subtitle in the text box.
24. Select a footnote from the menu.
25. If you selected **Custom text** as the footnote, provide the text that you want as the footnote in the text box.
26. Specify whether you want to display grid lines.
27. Specify whether you want to display a horizontal reference line.
28. If you specified that you want to display a horizontal reference line, provide the value.

    *Note:* The horizontal reference line value can range from –1000000000 to 1000000000.
29. If you specified that you want to display a horizontal reference line, specify whether you want to display a horizontal reference line label.
30. If you specified that you want to display a horizontal reference line label, provide the value.
31. Specify whether you want to display a vertical reference line.
32. If you specified that you want to display a vertical reference line, provide the value using  .
33. If you specified that you want to display a vertical reference line, specify whether you want to display a vertical reference line label.
34. If you specified that you want to display a vertical reference line label, provide the value.
35. Select the value to display.
36. Select the method of notification from the menu.
37. Specify whether you want the analysis to automatically update.
38. If you selected **Between these dates** as the automatically update value, select a start date and an end date by clicking  .
39. Click **Save and Submit** or **Save**, depending on whether you want to run the analysis now.

*Note:* When this analysis is executed with the exposure type as **Usage**, independent of usage as mileage or hours, the output table for this analysis does not contain the units for the usage.

## Open an Analysis

Perform the following steps to open an analysis:

1. Select an analysis in the table.
2. Click **Open**.

*Note:* You can also open an analysis by double-clicking it.

If the data selection that was used to run an analysis has been modified, you are notified by a message when opening a completed analysis to see the results. This message occurs whether the change to the data selection is small, such as a change to the data selection's name, or is significant. For more information about outdated data, see "Outdated Data" on page 80.

The number of analyses that can be opened at the same time is limited by the following factors:

- browser memory
- which types of analyses you have selected to see output for (some analysis output renders more graphs)
- how much data is associated in analysis output (type of data selection)
- the filter conditions that are applied on analysis output

Descriptions are included in results output only when the user has selected the **Display description columns** display option. This optimizes the performance of SAS Field Quality Analytics. Descriptions are displayed as they exist in the data mart and are not localized. This makes all results output consistent. Descriptions are included in the tables only and are not displayed on graphs. Descriptions are additional information, so they cannot be searched or sorted on. The results might contain multiple code and description columns. The description columns that are shown can be controlled by selecting  , and the descriptions that are exported can be controlled in export dialog boxes.

*Note:* If you cannot view an Enterprise Analytic analysis from the HUB, try switching the filter to **All Types**. You might not be able to view an Enterprise Analytic analysis from the HUB if the filter is set to **All Applicable Types**.

## Modify an Analysis

Perform the following steps to modify an analysis:

1. Select an analysis in the table.
2. Click  .

   The selected analysis appears in a window.
3. Modify any fields that you are allowed to change.
4. Click **Save and Submit** or **Save**, depending on whether you want to run the analysis now.

## Delete an Analysis

Perform the following steps to delete an analysis:

1. Select an analysis in the table.
2. Click  .

   A confirmation dialog box appears.
3. Click **Delete**.

## Copy an Analysis

Creating a copy of an analysis can be useful if you want to make changes to an analysis, and then compare the results from the altered analysis to the original analysis.

Perform the following steps to copy an analysis:

1. Select an analysis in the table.
2. Click  .

   A copy of the analysis appears in the table.

## Move an Analysis

Perform the following steps to move an analysis:

1. Select an analysis in the table.
2. Click  .

   The Move Analysis dialog box appears.
3. Select a location to move the analysis to.
4. Click **OK**.

## Refresh Analyses

Click  to refresh your view of analyses.

## Change Your View of Analyses

Click the triangle in the Switch View icon (  ), and select **Hierarchy** or **List**.

*Note:* You can select multiple analyses in **List** view, but not in **Hierarchy** view.

For more information about modifying your view of analyses, see "Modify Your View of Columns and Rows" on page 177.

## Run an Analysis

Perform the following steps to run an analysis:

1. Select an analysis in the table that you want to run.
2. Click  .

*Note:* An analysis that was created using the  button in an opened alert group in the **Early Warning** workspace will not run when you click  .

## Replace a Data Selection

Perform the following steps to replace a data selection:

1. Select a data selection in the table.
2. Click  .

   The Select Data Selection window appears.
3. Select a data selection in the table.
4. Click **OK**.

## Copy and Analyze in a Project

Perform the following steps to copy an analysis and analyze it in a project:

1. Select an analysis that has been shared with you in the **Shared With Me** folder.
2. Click  .

   The Copy and Analyze in Project dialog box appears.

3. Select a project from the menu.
4. Provide a data selection name.
5. Provide a data selection description.
6. Click  and select an expiration date.
7. Click **OK**.

## Import a File

Perform the following steps to import a file:

1. Click  .

   A Select File to Upload dialog box appears.
2. Navigate to the directory that contains the file that you want to upload.
3. Select the file.
4. Click **Open**.

## Share an Analysis

After an analysis is created, it is not accessible by other users or groups by default. To share an analysis with another SAS Field Quality Analytics user or group, the user that created the analysis must specify the SAS Field Quality Analytics users and groups that the analysis should be shared with.

The user that created an analysis can unshare it, delete it, move it across projects, or copy it. If an analysis is shared with you, you can copy and analyze it, view its output, and view definition information. After an analysis is shared, it will appear in a shared folder and be visible to the user or group that it was shared with. When you share an analysis, only that analysis is shared; its parent or children are not shared. You can view output of a shared analysis, but you cannot run it. You need a copy of an analysis before you can share an analysis that was shared with you.

*Note:*

- If you want to reuse a data selection with a shared analysis, it is recommended that you share the data selection while sharing the analysis. For information about sharing a data selection, see "Share a Data Selection" on page 77.
- A shared analysis cannot be accessed through the HUB.

Perform the following steps to share an analysis:

1. Select an analysis in the table.

   *Note:* You can only manage sharing for a single analysis at a time.
2. Select **Manage Sharing** from the **More** menu ( 

).

   The Manage Sharing dialog box appears.

3. Select an item in the **Available Items** list.
4. Click  .

   The item is added to the **Selected Items** list.
5. Click **OK**.

## Change Ownership

Perform the following steps to change ownership of an analysis:

1. Select an analysis in the table.
2. Select **Change Ownership** from the **More** menu ( 

).

   The Change Ownership dialog box appears.
3. Select an item in the table.
4. Click **OK**.

## Promote a Data Selection

Perform the following steps to promote a data selection:

1. Select a data selection in the table to promote (for example, a data selection that was used to analyze a subset).
2. Select **Promote as Data Selection** from the **More** menu ( 

).

   The Promote as Data Selection dialog box appears.
3. Provide a data selection name.
4. Provide a data selection description.
5. Click **OK**.

## Copy URL

You can copy the URL of an analysis to send it to another user in an e-mail.

Perform the following steps to copy the URL of an analysis:

1. Select an analysis in the table.
2. Select **Copy URL** from the **More** menu ( 

).
3. Paste the URL into an e-mail using Ctrl + v on your keyboard, or right-click and select **Paste** from the menu that appears.

*Note:* You can also save the URL by pasting it into a file, such as Microsoft Word, to save it.

After you send the e-mail, the recipient can open the analysis by clicking on the link that you sent.

## View the SAS Log

Perform the following steps to view the SAS log:

1. Select an analysis in the table.
2. Select **View SAS Log** from the **More** menu ( 

).

   The SAS log appears in a new window.

## Download the SAS Log

Perform the following steps to download the SAS log:

1. Select an analysis in the table.
2. Select **Download SAS Log** from the **More** menu ( 

).

   A dialog box appears.
3. Click **Open** or **Save**.

## Add to Portlet

Perform the following steps to add an analysis to the portlet:

1. Select an analysis in the table.
2. Select **Add to Portlet** from the **More** menu ( 

).

## Sort Rows

For information about how to sort rows, see "Modify Your View of Columns and Rows" on page 177.

*Note:* The Sort button ( 
) does not work in **Hierarchy** view. To use the Sort button ( 
), first switch to **List** view.

# Manage Columns

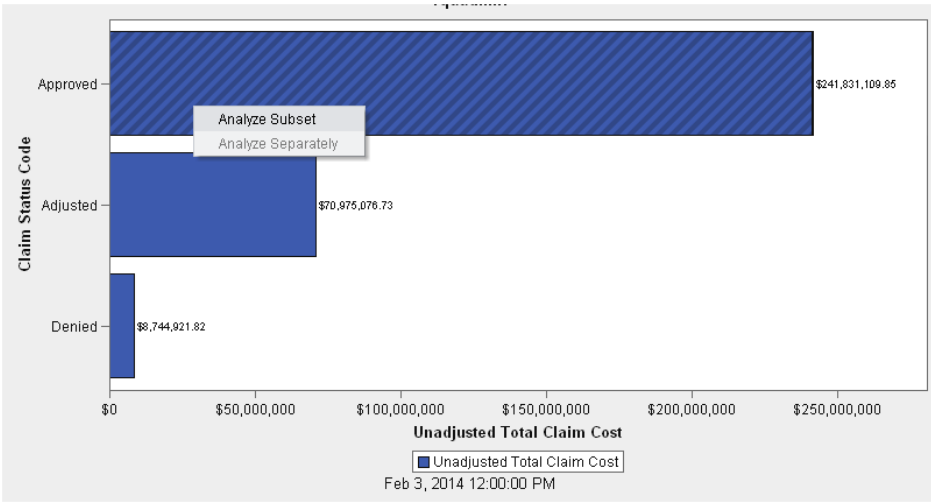
For information about how to manage columns, see "Modify Your View of Columns and Rows" on page 177.

# Analyze a Subset of an Analysis

Perform the following steps to analyze a subset of an analysis:

1. Open an analysis. For example, open a Pareto analysis.
2. Select a bar in the graph.
3. Right-click the bar and then select **Analyze Subset** from the menu that appears.

   *Note:* You can also select **Analyze Subset** from the **Drill To** menu.




   The New Subset Analysis window appears.

4. Select an analysis from the **Available Analysis** list.
5. Click 

   The analysis is added to the **Selected Analysis** list.

6. Click **OK**.

   A window for the new analysis appears.

7. Specify the options that you want to select for the new analysis. For more information about analysis options, see "Create a New Analysis" on page 125.
8. When you have finished specifying options, click **Save and Submit** or **Save**, depending on whether you want to run the analysis now.

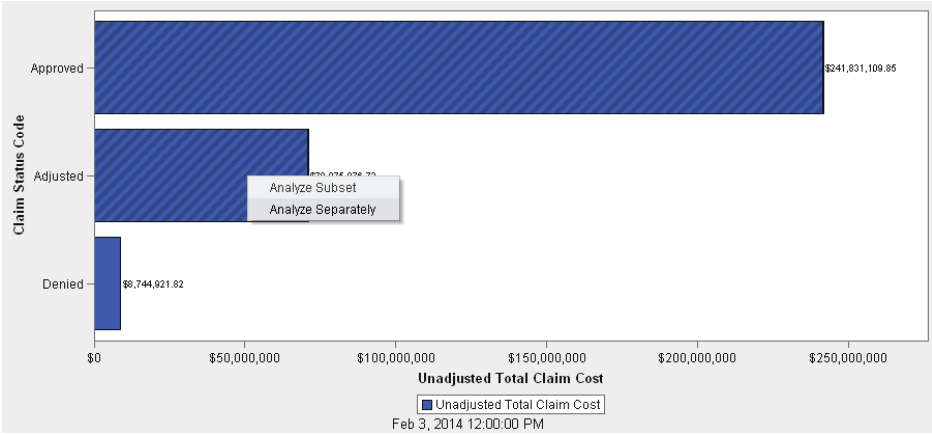
# Analyze Results Separately

Perform the following steps to analyze results separately:

1. Open an analysis. For example, open a Pareto analysis.
2. Select more than one bar in the graph.

   *Note:* You can use the Ctrl key on your keyboard to select more than one bar at a time.
3. Right-click one of the selected bars and then select **Analyze Separately** from the menu that appears.

   *Note:* You can also select **Analyze Separately** from the **Drill To** menu.




   The New Separate Subset Analysis window appears.

   Choose the type and the number of analyses that you want to perform. To differentiate among the subset groups that will be created, a unique number will be appended to each.
4. Select an analysis from the **Available Analysis** list.
5. Click 

   The analysis is added to the **Selected Analysis** list.

   Each point, legend line, or row that you have selected is analyzed as a separate subset group of a data selection, and the analyses that you submit apply to each new subgroup.

   For example, if you have selected two data points and one analysis, then two new subset groups will be created, and each subset group will be analyzed by each analysis that you have selected. This will yield a total of two submitted analyses.
6. Click **OK**.

   A window for the new analysis appears.
7. Specify the options that you want to select for the new analysis. For more information about analysis options, see "Create a New Analysis" on page 125.
8. When you have finished specifying options, click **Save and Submit** or **Save**, depending on whether you want to run the analysis now.

# Save an Analysis as a PDF Document

Perform the following steps to save an analysis as a PDF document:

1. Open an analysis.
2. Click  .

   The Export Analysis to PDF dialog box appears.
3. Provide the title of the analysis that you want to export.
4. Select the orientation of the analysis.
5. Specify whether you want to export both graphs and tables, just graphs, or just tables.
6. Select the type of analysis information that you want to include.
7. Specify the items to include in the table:
   a. Select an item that you want to include in the **Available Items** list.
   b. Click  .

      The column is added to the **Selected Items** list.

      *Note:* You can use  and  to reorder the relative position of the items.
   c. (Optional) To remove an item, select the item in the **Selected Items** list, and then click  .

      The column is added to the **Available Items** list.
8. Specify the rows that you want to include in the table.
9. Specify whether you want to keep all the selected columns in one table, or whether you want to create multiple tables by providing a maximum number of columns per table.

   *Note:* You might need to expand the **Advanced Options** to see this option.
10. Click **OK**.

    A dialog box appears.
11. Specify whether you want to open or save the file.

*Note:*

- Exported results for a text mining analysis include information for the selected cluster.
- A Marker Style column is included in the exported results for an Exposure Analysis, a Trend and Control Analysis, and a Trend by Exposure Analysis. This column provides information about data points with different styles. The Marker Style column has the possible values of MATURE, IMMATURE, or EXTRAPOLATED.

- If you select to view the graph only in the results, you might have difficulty exporting analysis results. Before exporting information about an analysis, be sure to select a view that includes table information.
- You cannot export a details table or summary tables analysis to PDF.
- If you have trouble exporting or saving an analysis, try disabling the pop-up blocker in your browser.

## Save an Analysis in Microsoft Excel or CSV Format

Perform the following steps to save an analysis in Microsoft Excel or CSV format:

1. Open an analysis.
2. Click  .

   The Export to File dialog box appears.
3. Specify whether you want to export data into Microsoft Excel or into a CSV format.

   *Note:* You cannot export a details table or summary tables analysis to Microsoft Excel.
4. If you specified to export data into a CSV file, select the separator (delimiter) character, the quotation marks character, the escape character, the export date or date-time field, whether to apply the format on numeric or character data, and what to use as a header.

   *Note:* If you want to open an exported CSV file in Microsoft Excel, use the comma or semi-colon character as the delimiter, and the double quotation mark character as the quotation marks character and the escape character. A quotation marks character is only required if your data contains the specified delimiter character, and an escape character is only required if your data contains a quotation marks character. The quotation marks and escape characters are helpful when parsing a CSV file if it contains special characters (separator and quotation mark).
5. If you specified to export data into a Microsoft Excel file, select the type of analysis information that you want to include.
6. Specify the columns to include in the table:
   a. Select a column that you want to include in the **Available Items** list.
   b. Click  .

      The column is added to the **Selected Items** list.

      *Note:* You can use  and  to reorder the relative position of the columns.
   c. (Optional) To remove a column, select the column in the **Selected Items** list, and then click  .

      The column is added to the **Available Items** list.
7. If you specified to export data into Microsoft Excel, specify the following options:

a. Specify the rows that you want to include in the table.

b. Specify whether you want to keep the first few columns fixed in all of the tables that are created.

*Note:* You might need to expand the **Advanced Options** menu to see this option.

c. If you specified that you want to keep the first few columns fixed in all of the tables, provide the number of columns to be fixed.

8. Click **OK**.

A dialog box appears.

9. Specify whether you want to open or save the file.

*Note:*

- If you select to view the graph only in the results, you might have difficulty exporting analysis results. Before exporting information about an analysis, be sure to select a view that includes table information.
- If you have trouble exporting or saving an analysis, try disabling the pop-up blocker in your browser.

## Change Your View of Analysis Results

Perform the following steps to change your view of analysis results.

1. Open an analysis.
2. Click the arrow in the **Select View** menu (  ).
3. Select one of the following options:
   - View Graph and Table
   - View Graph Only
   - View Table Only

## Search Analysis Results

After you run an analysis, you can perform a search on the results to limit your view of information to that which matches only specified criteria.

*Note:* Search is not available for all analysis types.

Perform the following steps to search the results of an analysis.

1. Open an analysis in the **Analysis** workspace.
2. Expand the **Search** menu.
3. Select a value in the menu next to a variable.
4. Provide text next to the corresponding value that you selected.

5. Click **Apply**.

   The results in the table update with what matches your search.

   *Note:* Select a check box next to a search field to hide missing values from the search results.

   Click **Clear** to remove your search terms.

You can use the pipe character ( | ) on your keyboard as a logical OR in a search. The following are some examples of how you can use the pipe character for character and numeric search values:

Assume that you want to search for "I am in | I was in". The following illustrates how each variable value selection will process this character search:

- **Contains one or more words** — This will search for text that contains the words 'I', 'am', 'in', or 'was'. It is equal to "I | am | in | was".
- **Contains all the words** — This will search for text that contains 'I', 'am', 'in', and 'was'.
- **Contains the exact phrase** — This will search for text that contains "I am in" or "I was in".
- **Start with one or more words** — This will search for text that starts with the words 'I', 'am', 'in', or 'was'.
- **Start with the exact phrase** — This will search for text that begins with "I am in" or "I was in".
- **Ends with one or more words** — This will search for text that ends with the words 'I', 'am', 'in', or 'was'.
- **Ends with the exact phrase** — This will search for text that ends with the words "I am in" or "I was in".
- **Not containing any words** — This will search for text that does not contain the words 'I', 'am', 'in', and 'was'.

Assume that you want to search for "50 | 100". The following illustrates how each variable value selection will process this numeric search:

- **Equal to** — This will search for the values 50 and 100.

  *Note:* When you use the **Equal to** operator, search results will not be accurate when a column has formatted decimal values. This is because the values that are shown in such columns are rounded up according to the format set by the administrator, while the search on a paginated output screen happens by design on the server-side raw values. So, for example, the value 6.33 that is shown on the output screen in fact could be 6.333333 in the data set where this search will look for a match. Therefore, when searching on decimal columns, it is recommended that you use the **Less Than** or **Greater Than** operators, or both of them in conjunction, to arrive at the desired result.

- **Greater Than** — This search will find results that are greater than 50.
- **Less Than** — This search will find results that are less than 100.
- **Greater Than or Equal to** — This search will find results that are greater than or equal to 50.
- **Less Than or Equal to** — This search will find results that are less than or equal to 100.
- **Not Equal to** — This search will find results that are not equal to 50 or 100.

- **Not Greater Than** — This search will find results that are less than 50.
- **Not Less Than** — This search will find results that are greater than 50.
- **Not Greater Than or Equal to** — This search will find results that are less than or equal to 50.
- **Not Less Than or Equal to** — This search will find results that are greater than or equal to 50.

Date and datetime searches will return results depending on the dates that are given for before and after.

# Precision and Accuracy in Results and Exported Output

Loss of precision can in some rare occasions cause a small difference in the number of rows that are displayed in a results table and the number of rows that are exported into a PDF, MS Excel, or CSV format. This can occur if you move one of the numeric filter sliders for an output column that has values beyond 15 digits, excluding the decimal point. A difference can occur if the slider is placed so that some rows that actually fall within the range specified by the sliders are excluded due to rounding.

To avoid any mismatch between results in a table and exported results, we recommend that you manually enter numeric values having fewer than 15 digits (excluding the decimal point) by clicking on the filter low or high values instead of sliding the numeric filters, in case the slider shows the output to contain numbers up to 15 digits.

# Part 6

# Reports

*Chapter 14*

# Overview of the Report Library Workspace



## About the Report Library Workspace

The **Report Library** workspace enables you to manage all the reports that summarize your business data and to provide both technical and non-technical users access to that information. You can include reports that you create in other applications, such as SAS Visual Analytics or SAS Web Report Studio. In addition to reports, you can provide informative resources, like PDF files and other documents, that you might find useful.

Reports and files are organized in a folder structure, and you can manage access to these folders so that users see only those reports for which they are authorized. Users can collaborate freely by sharing reports with other users or groups of users and by adding comments about a report that other users can view and respond to.

## Tasks You Can Perform in the Report Library Workspace

The **Report Library** workspace enables you to perform the following actions:

- view reports and files
- view properties of reports
- manage report library properties
- navigate the folder hierarchy
- refresh the contents of folders
- delete folders
- create folders
- create reports in SAS Web Report Studio
- create reports in SAS Visual Analytics
- open reports and files

- delete reports
- import files
- delete imported files
- search the **Report Library** workspace
- share reports and files
- add a comment
- respond to a topic
- search comments

*Chapter 15*

# Managing Reports



## Accessing the Report Library Workspace

### *Viewing Reports and Files*

Reports and related files are displayed when you click the **Report Library** workspace.

The **Report Library** workspace consists of the following sections:

- the **Quality Analytic Reports** section, which provides a folder structure that organizes the reports and files in the workspace. Use the toolbar options to navigate the folder structure and perform tasks such as creating and searching folders.
- a work area that provides a list of the reports and files in the selected folder. Use the toolbar options to create reports by launching SAS Web Report Studio and SAS Visual Analytics directly from the workspace. You can also use the toolbar to perform other tasks, such as importing or sharing files and documents.
- the **Properties** pane, which displays information about the selected report or file.
- the **Sharing** pane, which enables you to share a report or file with other users or groups of users.
- the **Comments** pane, which enables you to add comments for the selected report or file.

### Viewing Properties for Reports

For each report or file that is listed, the following information is provided:

**Name**
the name of the report or file.

**Type**
the type of the file, such as **`SAS report`** or **`Document`**.

**Date Modified**
the date on which the report or file was last changed. If the report or file was never changed, then the **Date Modified** value is the same as the **Date Created** value.

You can display additional properties for a report or change which properties are displayed by clicking  . The additional properties include the following:

**Description**
the description for the report or file.

**Location**
the location of the metadata folder where the report or file is stored.

**Date Created**
the date on which the report or file was created.

### Manage the Report Library Properties

The **Report Library** workspace enables you to select the properties that you want to see in a report. To select the properties:

1. Click  . The Manage window appears.
2. Select the properties that you want to include in the list. The **Name** property is always included.
3. To change the order of a property in the list, highlight the property, and click **Move Up** or **Move Down**.
4. Click **OK**.

## Access and Authorization for the Report Library Workspace

The reports and files that you work with in the **Report Library** workspace are stored in the metadata folder structure. The actions that a user can perform in the workspace are specified by the access permissions that the user has to the folders. By default, access permissions that are set on a folder are inherited by any subfolders unless an administrator overrides the access setting for the subfolders.

For reports and files that are stored in the **Report Library** workspace, the following folder indicates the base folder for the workspace: **`SAS Folders/Products/SAS Quality Analytic Suite/Quality Analytic Reports`**.

In addition to access to the folder structure, users also require appropriate role membership and capabilities in order to work with reports in SAS Web Report Studio and SAS Visual Analytics.

## Working with Folders

You can organize reports, documents, and other files with the folder structure that is available in the **Quality Analytic Reports** section of the **Report Library** workspace.

You can perform the following actions with folders from the toolbar:

Navigate back through the folder navigation history
: As you navigate between folders, history information is maintained. To move back through the folder navigation history, click  .

Navigate up the folder hierarchy
: To navigate from a folder up one level in the folder hierarchy, click  .

Refresh the contents of folders
: To refresh the folder structure and the contents of the folders, click  .

Delete folders
: To delete a folder, select the folder in the tree, and then click  .

  *Note:* You can delete a folder only if it is empty. If the folder contains reports or other files, you must delete them before you can delete the folder.

Create folders
: To create a new folder, select the folder where you want the new folder to be located, and click  . Enter the folder name, and press Enter to add the folder to the folder structure.

Rename folders
: Right-click a folder, select **Rename** from the pop-up menu, and enter the new name.

Copy folders
: Right-click a folder and select **Copy** from the pop-up menu. Then right-click a folder, and select **Paste** from the pop-up menu.

Move folders
: Right-click a folder and select **Move** from the pop-up menu. Navigate the folder hierarchy in the Choose a Location dialog box that appears, and select a folder. Click **OK**.

## Working with Reports and Files

You can take the data sets that are generated with your analytical tools and use them as the basis for reports, providing users with meaningful views into your business data. In addition to the reports, you can also include other documents and files in the **Report Library** workspace.

You can perform the following actions with reports and files from the toolbar:

Create reports in SAS Web Report Studio

To create a report with SAS Web Report Studio, click  , and then select **New WRS Report**. SAS Web Report Studio is launched in the browser. Use the functions that are provided by SAS Web Report Studio to create and save your report.

*Note:* You might need to click  to see the report in the list.

Create reports in SAS Visual Analytics

To create a report with SAS Visual Analytics, click  , and then select **New VA Report**. SAS Visual Analytics is launched in the browser. Use the functions that are provided by SAS Visual Analytics to create and save your report.

*Note:* You might need to click  to see the report in the list.

Open reports and files

To open a report or file, select the report or file in the list, and click  . A report is opened in the application in which it was created. A file is treated as a download by the browser and is opened with the appropriate platform-specific tool.

Delete reports

To delete a report, select the report in the list, and click  .

Import files

To import a file, such as a presentation file or a PDF file, click  and then select **Import**. Select the file by navigating to its location, enter an optional description, and specify the metadata folder location for the file. Click **Upload** to add the file to the workspace.

*Note:* You might need to click  to see the file in the list.

Delete imported files

To delete a file that you previously imported, select the file from the list, click  , and then select **Delete Import**.

## Searching the Report Library Workspace

You can search the workspace for reports, folders, or other items. To search the workspace:

1. Click  on the toolbar to open the Search window.
2. In the **Name** field, enter search text for the name of the item. This text can be the complete name of the item or simply partial text. When you enter partial text, all items whose name contains the partial text are included in the results.

   *Note:* If you leave the **Name** field empty, all items are returned in the results.

   (Optional) If you want the search to examine the description and keywords that are associated with the items, select the **Include description and keywords** check box.

3. (Optional) Narrow the search to specific item types by selecting **Choose Types** from the **Type** menu. In the Choose Types window, select the types of items to search for, and click **OK**. By default, all item types are included.
4. Specify the scope of the search by indicating the root folder for the search in the **Location** menu. By default, the folder that is currently selected when you click is specified.

   (Optional) To include subfolders in the search, click the **Search all subfolders** check box.
5. Indicate the date criteria for the search:
   - Select **Date created** to search according to the date on which an item was created.
   - Select **Date modified** to search according to the date on which an item was last changed.

   (Optional) Specify a date range for the search by selecting a value from the **Date range** menu.
6. Click **Search**. The items that meet the search criteria are displayed in a list.

   *Note:* From this list view, you can delete folders or reports by clicking . You can delete documents and files that were imported only by using the **Delete Import** option on the workspace toolbar.

# Sharing Reports and Files

Reports, documents, and other items that you store in the **Report Library** workspace are organized in folders. These items inherit the access permissions of the folder in which they are stored. Typically, any user or group of users with access to the folder can view items within the folder.

When you share an item with users or groups of users, you restrict access to that item to only those users or groups, regardless of the permissions of the folder. For example, consider a scenario where User1 and User2 have access to the folder **`Region1`**, which contains several files, including a report called Region1_Report.srx. If you share Region1_Report.srx with User1, the report is included in the list of files for the **`Region1`** folder when User1 views the folder. However, because Region1_Report.srx is shared only with User1, the report is not included in the list of files when User2 views the **`Region1`** folder.

*Note:* System administrators have access to all items, regardless of whether the items are shared with them.

To share a report or file with another user or with a group of users:

1. Select the report or file from the list, and click .
2. In the Share window, select the user or group of users that you want to share the item with, and then click .

   TIP You can filter the list to show only users or only groups. To locate a specific user or group, enter text in the **Search** field.
3. Click **OK**.

# Working with Comments

You can use the **Comments** pane to add related information for a report or file in the **Report Library** workspace. Users can create comments and collaborate with other users by responding to comments. Related comments are organized by topic, and each topic serves as a thread to track discussion.

## *Add a Comment*

To add a comment for a report or file:

1. Select the report or file from the list.
2. Create a new topic for your comment by entering text in the **Enter a topic name** field.
3. Enter text in the **Enter a comment** field.
4. (Optional) Click to attach a file to the comment. Use the file selection window to add the file. Repeat this step to attach more files.
5. Click **Post** to save the comment.

*Note:* You can change your comment after you save it by clicking **Edit** in the comment. You can edit only comments that you created.

## *Respond to a Topic*

To respond to a topic for a report or file:

1. Select the report or file from the list.
2. Expand the topic thread where you want to add the comment.
3. Enter text in the **Respond to topic** field.
4. (Optional) Click to attach a file to the comment. Use the file selection window to add the file. Repeat this step to attach more files.
5. Click **Post** to save the comment.

## *Search Comments*

To search the comments for a report or file:

1. Select the report or file from the list.
2. Enter your search text in the **Search within comments** box at the top of the **Comments** pane, and press Enter.

   All topics and comments that contains the search text are listed, and the search text is highlighted.
3. To clear the search results and display all comments again, click in the search box.

# Part 7

# Appendix

*Appendix 1*

# Common Tasks



## About Performing General Tasks

This appendix contains a collection of general tasks that you might want to perform in SAS Field Quality Analytics.

## Modify Your View of Columns and Rows

You can modify your view of tabular information in many workspaces by changing the order of columns, hiding columns from view, or sorting rows.

You can modify your view of columns in the following ways:

- **Move a column**. Click the column heading and drag it to the column position that you want the column to move to.
- **Move multiple columns**. Click  on the toolbar. The Sort dialog box appears.

  Select a column, and then click  , or select multiple columns and click  .

  Next, you can change the sort order and direction by selecting a column and clicking

or to reorder a column's relative position to other selected columns. Click **OK** when you have finished modifying column order.

*Note:* To remove a column from selection, select it and then click , or select multiple columns and then click if you want to remove all the selected columns at once.

- **Hide or display a column**. Click in the toolbar. The Manage Columns dialog box appears. To hide a column by moving it to the **Available columns** list, or display a column by moving it to the **Displayed columns** list, select a column in a list, and then click or , , or . You can change the relative column position of displayed columns with or . Click **OK** when you have finished modifying which columns you want to view.

To modify your view of rows by sorting them in ascending or descending order, click the column heading that you want to sort rows by. If columns are sorted in ascending order, click the column heading again to sort in descending order.

*Note:* You can also sort rows by clicking a cell in the **Sort Direction** column in the Sort dialog box.

# Refresh View

Click .

Your view of data in the selected workspace is refreshed.

# Using the Comment Manager

## *About the Comment Manager*

You can use the Comment Manager to enter or search for comments associated with an item in a workspace.

## *View Comments for an Item Using the Comment Manager*

Perform the following steps to view comments for an item using the Comment Manager:

1. Navigate to an item that you want to view comments for.
2. Select the item in the table.
3. Expand the Comments heading in the **Properties** pane.
   a. Position the mouse pointer just below the Comments heading, where the mouse pointer icon turns into a double vertical arrow.

b. Click the mouse and drag the mouse upward while holding down the mouse button.

*Note:* You might want to expand the **Properties** pane to the left and then scroll down after you expand the Comments heading for a better view of the Comment Manager.

4. Type comments that you want to search for in the **Search** box.

### *Add Comments to an Item Using the Comment Manager*

Perform the following steps to add comments for an item using the Comment Manager:

1. Navigate to an item that you want to add comments for.
2. Select the item in the table.
3. Expand the Comments heading in the **Properties** pane.

   *Note:* You might want to expand the **Properties** pane for a better view of the Comment Manager.
4. Provide a topic name in the **Enter a topic name** field.

   *Note:* If a topic already exists, and you want to add a comment to a pre-existing topic, you can skip this step.
5. Type in your comments in the **Enter a comment** field for the topic that you want to associate your comment with.
6. (Optional) Add an attachment.
   a. Click  .

      A dialog box appears.
   b. Navigate to the file that you want to attach, and select it.
   c. Click **Open**.
7. Click **Post** to add your comment.

### *Edit Comments Using the Comment Manager*

Perform the following steps to edit a comment using the Comment Manager:

1. Navigate to an item that you want to edit comments for.
2. Select the item in the table.
3. Expand the Comments heading in the **Properties** pane.

   *Note:* You might want to expand the **Properties** pane for a better view of the Comment Manager.
4. Navigate to the comment that you want to edit.
5. Click **Edit**.
6. Modify the comment.
7. Click **Post**.

### Delete a Comment Using the Comment Manager

Perform the following steps to delete a comment using the Comment Manager:

1. Navigate to an item that you want to delete comments for.
2. Select the item in the table.
3. Expand the Comments heading in the **Properties** pane.

   *Note:* You might want to expand the **Properties** pane for a better view of the Comment Manager.
4. Navigate to the comment that you want to delete.
5. Select the comment.
6. Click **Delete**.

   A confirmation dialog box appears.
7. Click **Delete**.

*Note:* You can delete your own, or another user's comments.

## Importing Content

Generic content (such as a PNG file or MS Word document, for example) that you have imported into SAS Field Quality Analytics cannot be opened from The SAS Visual Analytics Hub.

## Using Formats

SAS Field Quality Analytics supports formats in a manner consistent with the technology being used. This support includes both display style and localization. So the same data might be formatted differently in the SAS Field Quality Analytics application, in exported files (CSV, Excel, PDF), and in SAS Enterprise Guide.

The following table provides some examples:

***Table A1.1*** *Formatting Examples*

| Variable Type | FORMAT | Exports(en_US) | UI(en_US) | Exports(sv_SE) | UI(sv_SE) |
|---|---|---|---|---|---|
| Month/Year | MMYY | 01M2014 | 01/2014 | 01M2014 | 01/2014 |
| Quarter | YYQC | 2014 : 1 | Q1 14 | 2014 : 1 | 2014 K1 |
| Date | NLDATE10 | 01Jan2001 | 01Jan2001 | 1 januari 2014 | 2001-01-01 |
| Numeric | F3.3 | 100.000 | 100.000 | 100.000 | 100,000 |

*Note:* Some formats, such as F and QQYY, will be localized by the SAS Field Quality Analytics application, but will not be localized by the exports.

SAS Field Quality Analytics supports the following formats:

- BEST (Numeric)
- COMMA (Numeric)
- COMMAX (Numeric)
- EURO (Numeric)
- EUROX (Numeric)
- F (Numeric)
- DOLLAR (Numeric)
- DOLLARX (Numeric)
- NLMNLJPY (Numeric)
- NLMNLGBP (Numeric)
- NLMNLKRW (Numeric)
- PERCENT (Numeric)
- PERCENTx (Numeric)
- POUND (Numeric)
- WON (Numeric)
- YEN (Numeric)
- CURRENCY (Numeric)
- DATE (Date and Time)
- DATEN (Date and Time)
- DAY (Date and Time)
- DOWNAME (Date and Time)
- JULDAY (Date and Time)
- JULIAN (Date and Time)
- JULDATE (Date and Time)
- MMDDYY (Date and Time)
- MMDDYYx (Date and Time)
- MONNAME (Date and Time)
- MONTH (Date and Time)
- MONYY (Date and Time)
- YYMON (Date and Time)
- NLDATE (Date and Time)
- NLDATEW (Date and Time)
- DDMMYY (Date and Time)
- DDMMYYx (Date and Time)
- YYMMDD (Date and Time)

- YYMMDDx (Date and Time)
- MMYY (Date and Time)
- WEEKDATE (Date and Time)
- WEEKDATEX (Date and Time)
- WORDDATE (Date and Time)
- WORDDATEX (Date and Time)
- YEAR (Date and Time)
- DATEYW (Date and Time)
- YYQC (Date and Time)
- DATETIME (Date and Time)
- DATEAMPM (Date and Time)
- DTDATE (Date and Time)
- DTMONYY (Date and Time)
- DTWKDATX (Date and Time)
- DTYEAR (Date and Time)
- DTYYQC (Date and Time)
- HHMM (Date and Time)
- HOUR (Date and Time)
- MMSS (Date and Time)
- TIME (Date and Time)
- TIMEAMPM (Date and Time)
- TOD (Date and Time)

## Dates and Times

The dates and times that are displayed in SAS Field Quality Analytics are determined by the time zone of the server.

## Cache Updates

If the cache is currently being refreshed, you might receive a “send failed” message when attempting to create a data selection. If this occurs, check with your administrator about the status of the server.

*Appendix 2*

# Data Selection and Analysis Status Values



## Overview of Status Values

This appendix presents information about possible status values for a data selection and an analysis in SAS Field Quality Analytics.

## Data Selection Status Values

The following table presents the possible status values for a data selection in SAS Field Quality Analytics.

***Table A2.1*** *Data Selection Status Values*

| Status | Description |
|---|---|
| Saved | In the case of dynamic data selections (data selections not marked for stored data), a data selection in Saved status is ready to be used for an analysis.<br>In the case of stored data selections, a Saved status indicates that the data selection is defined, but the data has not been pulled yet. It would have to be run for it to be used for running an analysis. |
| Submitted | The data selection has been submitted to queuing to pull the data, but is not running yet (stored data selections only). |
| Running | The data selection is currently running and pulling the data (stored data selections only). |

| Status | Description |
|---|---|
| Completed | The data selection is ready to use in an analysis. For stored data selections, the data has been pulled. For data selections that have not been stored, the data has been defined. |
| Error | The data selection attempted to pull data, but encountered errors (stored data selections only). |

# Analysis Status Values

The following table presents the possible status values for an analysis in SAS Field Quality Analytics.

***Table A2.2*** *Analysis Status Values*

| Status | Description |
|---|---|
| Saved | The analysis has been defined, but has not been submitted. |
| Submitted | The analysis has been submitted to queuing, but is not running yet. |
| Running | The analysis is currently running. |
| Completed | The analysis has run without errors and results are available. |
| Completed with Errors | The analysis has completed with some errors, yet some results are ready to be viewed (applicable only for Early Warning Enterprise Analytic) |
| Error | The analysis has run with errors, and some messages might be available. |