

Oracle® Fusion Cloud EPM

Working with Predictive Planning in Smart View



E94164-10



Oracle Fusion Cloud EPM Working with Predictive Planning in Smart View,

E94164-10

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Getting Started

Related Topics

- [Overview](#)
- [Installing Predictive Planning](#)
- [Starting Predictive Planning](#)
- [The Predictive Planning Ribbon](#)
- [Running a Standard Prediction](#)
- [Using Quick Predict](#)
- [Predictive Planning for Users of Ad Hoc Grids](#)

Overview

The Predictive Planning feature of Planning is an extension to Oracle Smart View for Office that works with valid Planning forms to predict performance based on historical data. Predictive Planning uses sophisticated time-series forecasting techniques to create new predictions or validate existing forecasts that were entered into Planning using other forecasting methods.

Notes about working with Predictive Planning:

- Predictive Planning is currently available in 32-bit and 64-bit implementations.
- Valid ad hoc grids are supported. For details, see [Predictive Planning for Users of Ad Hoc Grids](#).
- Predictive Planning supports sandbox versions for forms and adhoc grids. Historical data is read from the same sandbox that the form or adhoc grid is using.
- Users with security roles that enable them to modify Planning forms should read [Setting Up Predictive Planning](#) in this Guide to ensure that forms are configured for maximum compatibility.

Installing Predictive Planning

To install Predictive Planning, follow the instructions in Installing Extensions in *Working with Oracle Smart View for Office 24.100*.

Checking for Updates

Access to recent features in Predictive Planning is dependent on having the latest Oracle Smart View for Office release.

If your Administrator advises, update Predictive Planning by downloading and installing the latest version of Predictive Planning using one of these methods:

- In Microsoft Excel, choose **Smart View**, then **Options**, and then **Extensions**. Click **Check For Updates**, and if the Predictive Planning extension displays **Update Available**, click to

download and then install the latest version. You will be prompted to close all Microsoft Office applications.

- Install the latest release of Predictive Planning from the Planning Home page.
- Download and install the latest version of Predictive Planning from the location your administrator advises.

 **Tip:**

To determine the version of Predictive Planning that you are using, from the Predictive Planning ribbon, select **Help**, and then select **About**.

Uninstalling Predictive Planning

To uninstall Predictive Planning:

1. If your Oracle Smart View for Office Administrator has enabled the uninstall option, in Microsoft Excel, choose **Smart View**, then **Options**, then **Extensions**, and then click **Remove** next to the Predictive Planning extension.
2. If the **Remove** button is not available, then use Windows Add/Remove programs (or Programs and Features) to uninstall.

Starting Predictive Planning

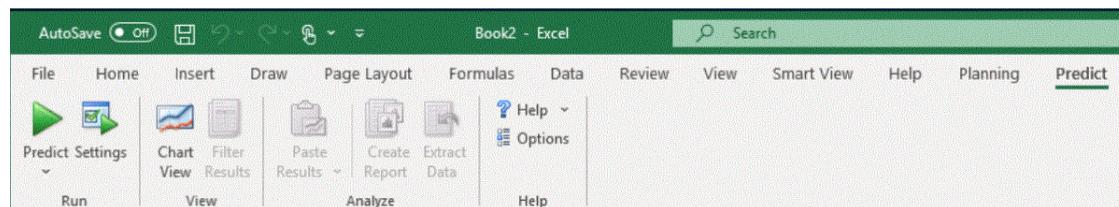
To start Predictive Planning:

1. Confirm that compatible versions of Oracle Smart View for Office, Predictive Planning, and Microsoft Excel are installed on your computer and that you have access to a compatible version of Planning.
2. Start Microsoft Excel.
3. In Smart View, connect to a source.
4. Open a valid Planning form ([Using Valid Forms](#)).
5. To display the Predictive Planning ribbon, select the **Planning** ribbon, and then click **Predict**.

The Predictive Planning Ribbon

When you start Predictive Planning, the Predictive Planning ribbon is added to the ribbon bar.

Figure 1-1 Predictive Planning Ribbon



Button groups are as follows:

- **Run**—Sets form preferences and runs predictions
- **View**—Filters results, displays and manages views of results
- **Analyze**—Pastes results, creates reports, and extracts data to the spreadsheet
- **Help**—Displays online help and information about this version of Predictive Planning.

A tooltip identifies each button when you point to it.

For online help and information about Predictive Planning, select **Help**, and then **Predictive Planning**.

For a list of shortcut keys (keyboard equivalents of buttons and commands), see the *Accessibility Guide*.

You can use Predictive Planning in two ways:

- [Running a Standard Prediction](#)
- [Using Quick Predict](#)

Running a Standard Prediction

When you run a prediction, Predictive Planning analyzes historical data for each selected member, and then projects this information into the future to generate predicted results. If the Planning administrator has created a scenario for the predicted data, you can paste it into Oracle Smart View for Office without overwriting existing data.

To run a standard prediction:

1. Select the Predictive Planning ribbon ([The Predictive Planning Ribbon](#)).



2. Select **Predict**,  **Predict**.

3. Review the **Run Confirmation** dialog.

It shows the number of members, the source and range of historical data to include in the prediction, and the predicted date range.

4. **Optional:** View or change included members and the historical or predicted date range.

- By default, all editable members are selected. To change this, click **Change** and see [Selecting Members](#).
- By default, predictions are based on all historical data for a series. To select a specific data range for historical or predicted data, click **Change** and then specify a start and end year and time period.

Note:

For the most accurate predictions, the number of periods of historical data available should be at least twice the number of prediction periods requested. If you have specified more prediction periods, you are prompted to reduce the number.

5. When the displayed settings are complete, click **Run**.

6. Review the **Run Summary** dialog, if present, and click **OK**.

Results are displayed in the Predictive Planning panel. By default, the Chart tab is selected (Figure 1).

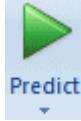
Using Quick Predict

When you run a prediction, Predictive Planning analyzes historical data for each selected member, and then projects this information into the future to generate predicted results. With Quick Predict, all form defaults, except those for member selection, are used without displaying dialogs. The predicted results are immediately pasted into the Planning form. You can choose whether to enter predicted data into all cells for a member or just selected cells.

 **Note:**

To avoid overwriting existing data, the Planning administrator should add a prediction scenario to the form before you predict data.

To run a prediction with Quick Predict:

1. In a Planning form in Oracle Smart View for Office, select member names or cells to predict.
2. Right-click and then select **Predictive Planning**, or select the Predictive Planning ribbon (The Predictive Planning Ribbon), and then click  the lower half of the **Predict** button,  with the label and arrow.
3. Indicate whether to predict an entire member or just selected cells:
 - Select **Quick Predict Selected Members** to predict future values for selected members and paste results into all the members' future data cells.
 - Select **Quick Predict To Selected Cells** to predict future values for members containing the selected data cells and paste results into only the selected cells.

 **Note:**

If the selection includes more than one scenario, you are prompted to choose one for the target of the cell pasting.

Results are pasted as requested. Success icons and prediction quality values are displayed for selected members in the column to the right of the last column of data. For examples, click the listed links.

Results are not displayed in the Smart View panel by default. To display a chart and other results, open the list next to the **Home** icon in the Smart View panel, and then select **Predictive Planning**. Initially, the **Chart** tab is selected (Figure 1). Whatever results tab you viewed last is displayed.

Quick Predict Example 1

In [Figure 1](#), the user selected cells in the Prediction row for two members for months beyond the actual data. Then, the user selected **Quick Predict To Selected Cells**. The predicted data was pasted into the selected cells.

Figure 1-2 Quick Predict Example 1, Pasting to Selected Cells

POV Electronic Segments - DEN_TotPlan_1														
MA	Working	Units	Local	Distribution	Refresh									
K8	f _x	8659.09094585751												
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1														
2			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3		Actual	12930	12110	11670	12140	13730	13150						
4	Bookshelf Audio System	Forecast	12000	12099	12199	12299	12401	12503	12000	12500	13000	13500	14000	14500
5		Prediction							13302	13612	13922			
6		Actual	7845	7425	8125	8489	8216	8594						
7	Home Theater Audio System	Forecast	9000	9074	9149	9225	9301	9377	8640	8748	8855	8964	9072	9180
8		Prediction							8600	8640	8659			
9		Actual	7364	7364	6390	4875	3927	4415						
10	Boom Box	Forecast	5000	5041	5083	5125	5167	5210	5184	5215	5246	5278	5310	5341
11		Prediction												
12		Actual	9230	7660		8330	8880	9220						
13	Personal CD Player	Forecast	10000	10083	10166	10250	10334	10419	10505	10592	10679	10767	10856	10946
14		Prediction												
15		Actual	12310	12370	10950	11290	10210	9870						
16	MP3 Player	Forecast	10000	10083	10166	10250	10334	10419	10505	10592	10679	10767	10856	10946
17		Prediction												

Quick Predict Example 2

In [Figure 1](#), the user selected three member names were selected, and then selected **Quick Predict Selected Members**. Because the selection included multiple scenario-version choices, the user had to respond to a prompt. Then, predicted values were pasted into the Prediction version for the Boom Box and Personal CD Player members.

Figure 1-3 Quick Predict Example 2, Pasting Predicted Values for Selected Members

POV Electronic Segments - DEN_TotPlan_1																							
MA		Working		Units	Local	Distribution	Refresh																
A6		fx		Home Theater Audio System																			
1	A	B	C	D	E	F	G	H	I	J	K	L	M	N	FY10								
2			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec									
3		Actual	12930	12110	11670	12140	13730	13150															
4	Bookshelf Audio System	Forecast	12000	12099	12199	12299	12401	12503	12000	12500	13000	13500	14000	14500									
5		Prediction																					
6		Actual	7845	7425	8125	8489	8216	8594															
7	Home Theater Audio System	Forecast	9000	9074	9149	9225	9301	9377	8640	8748	8856	8964	9072	9180									
8		Prediction							8600	8640	8659	8668	8672	8674									
9		Actual	7364	7364	6390	4875	3927	4415															
10	Boom Box	Forecast	5000	5041	5083	5125	5167	5210	5184	5215	5246	5278	5310	5341									
11		Prediction							4108	4048	3699	5254	5581	6704									
12		Actual	9230	7660		8330	8880	9220															
13	Personal CD Player	Forecast	10000	10083	10166	10250	10334	10419	10505	10592	10679	10767	10856	10946									
14		Prediction							9337	9377	9391	9396	9398	9398									
15		Actual	12310	12370	10950	11290	10210	9870															
16	MP3 Player	Forecast	10000	10083	10166	10250	10334	10419	10505	10592	10679	10767	10856	10946									
17		Prediction																					

Predictive Planning for Users of Ad Hoc Grids

You can use Predictive Planning with ad hoc grids as well as standard Planning forms. When you open a valid ad hoc grid with Predictive Planning installed, the **Predict** button is displayed on the Planning Ad Hoc ribbon. Click it to display the Predictive Planning ribbon ([The Predictive Planning Ribbon](#)). Controls work the same as for standard Planning forms. You can use Quick Predict or run standard predictions ([Using Quick Predict](#)). The special charting features also are available ([Adjusting Future Data Series](#)).

All Predictive Planning functionality works with ad hoc grids, considering the following:

- If you enter free-form mode, you must click **Refresh** before you run a prediction.
- When you create an ad hoc grid, any Predictive Planning preferences that were available in the original Planning form are applied to the new ad hoc grid. If you create an ad hoc grid without starting from a Planning form, the default preferences from the application are used.
- You can set preferences freely through the **Settings** button without Administrator rights. However, you can save preferences only by saving the ad hoc grid, if your security role allows that.
- Ad hoc grids have the same validation requirements as standard forms ([Using Valid Forms](#)). If a form is not valid for Predictive Planning, **Predict** does not display on the Planning Ad Hoc ribbon (unless the **Show ribbon only for valid Planning forms** option is disabled).

Viewing Results

Related Topics

- [Using the Predictive Planning Panel](#)
- [Using Chart View](#)

Using the Predictive Planning Panel

When you run a prediction in Predictive Planning, results are displayed in the Predictive Planning panel. These results are primarily used to compare Predictive Planning predictions with planners' forecasts. They can also be used to compare other types of predictions as well as values for various historical time series.

Initially, a chart is displayed. You can also view data or statistics. For all views, the **Member** list determines which member is displayed. If you predicted results for more than one member, look at all results by selecting each member in the list. After you select a member, you can use the arrow keys to scroll up and down through the member list.

If available, the **Pin Panel** button, , detaches the pane from the side panel. You can move the panel around the screen. Click the **Pin Panel** button again to attach it back to the side.

Note:

If the Predictive Planning panel is hidden, select **Panel** in the **Smart View** ribbon to display it again.

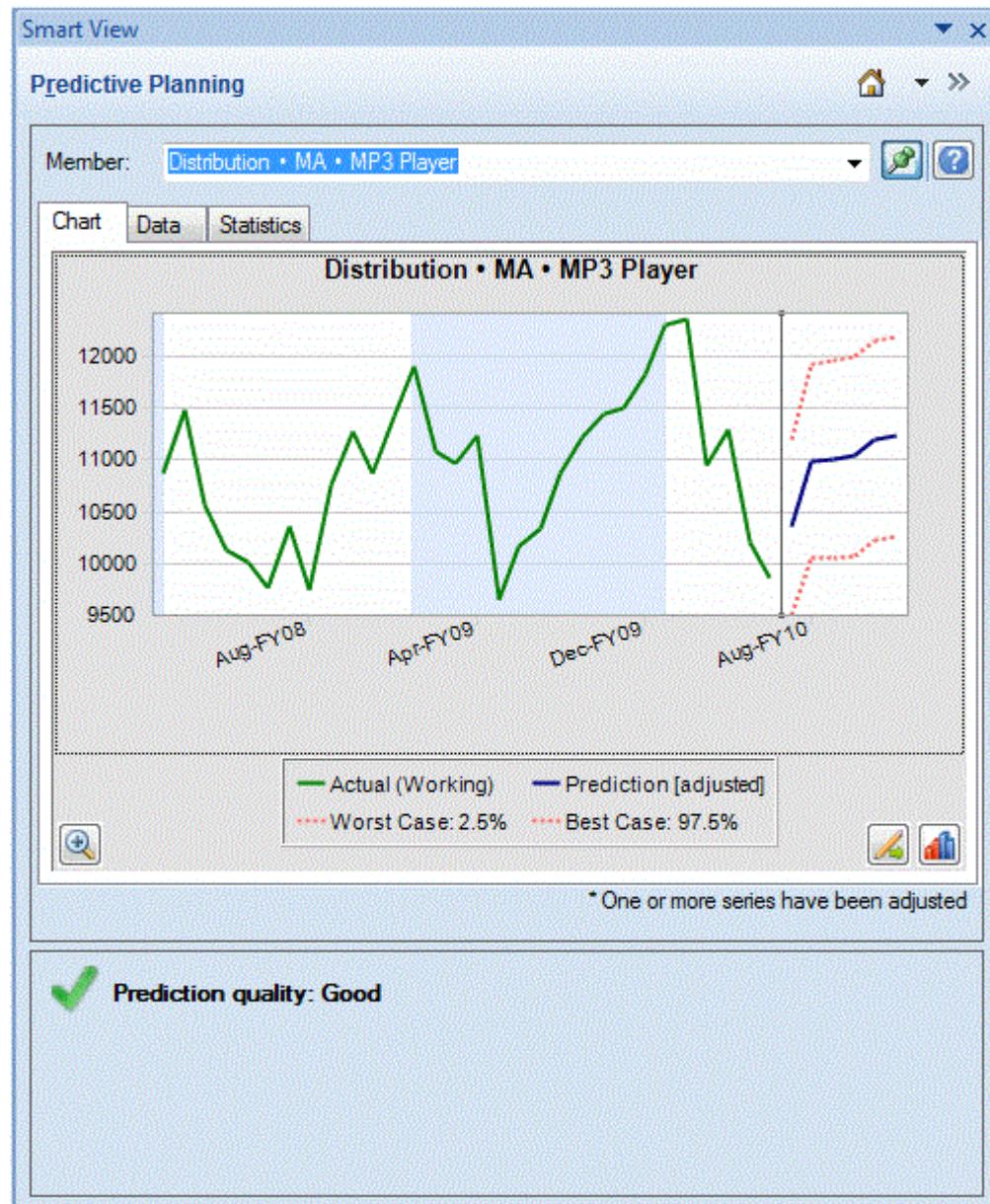
You can click the **Help** button, , to display online help.

In the Comments panel below the displayed results, you can click the **Pivot** button, , to move the Comments panel to the right of the results. Click again to move it back.

Chart Tab

Predictive Planning results are displayed graphically on the **Chart** tab ([Figure 1](#)).

Figure 2-1 Predictive Planning Panel, Chart Tab with Summary Area



The default view, Prediction, includes plots of historical and predicted data. The historical data series is displayed to the left of the vertical separator line. The predicted data series is bounded by dotted lines that show the upper and lower confidence intervals (labeled Worst Case and Best Case).

To change the appearance of a chart, double-click it or click the **Chart Preferences** button,  ([Setting Chart Preferences](#)).

You can use the **Chart Scale** button, , to display a slider control that enables you to show more or less detail in the chart. You can also display a prediction fit line, a trend line (best fitting line), a growth rate line, or other scenario data from the application ([Editing the Chart View](#)).

You can click the **Adjust Series** button, , to change values in future data series ([Adjusting Future Data Series](#)).

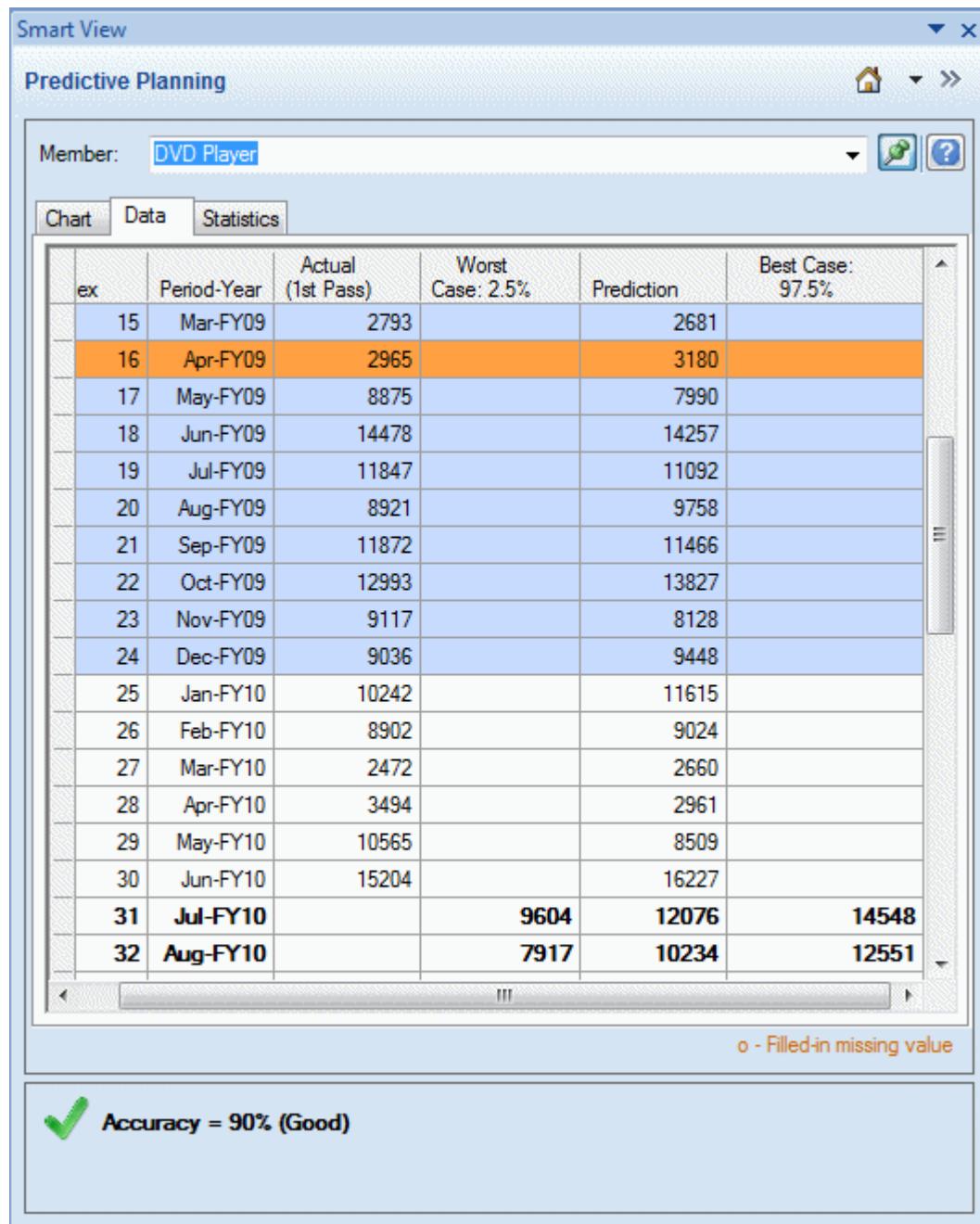
Data Tab

The Data tab shows a column for each data series displayed on the chart for the selected members ([Figure 1](#)). In the default display, columns for the Worst Case and Best Case data series are also included. As in the Chart tab, the Data tab is split into past and future data sections. The future data section is shown at the bottom of the data table in **bold** font.

 **Note:**

Data values in the past section of the **Prediction** column are plotted as the prediction fit line when that data series is selected as part of editing a comparison view ([Adding Prediction Data](#)).

Figure 2-2 Predictive Planning Panel, Data Tab



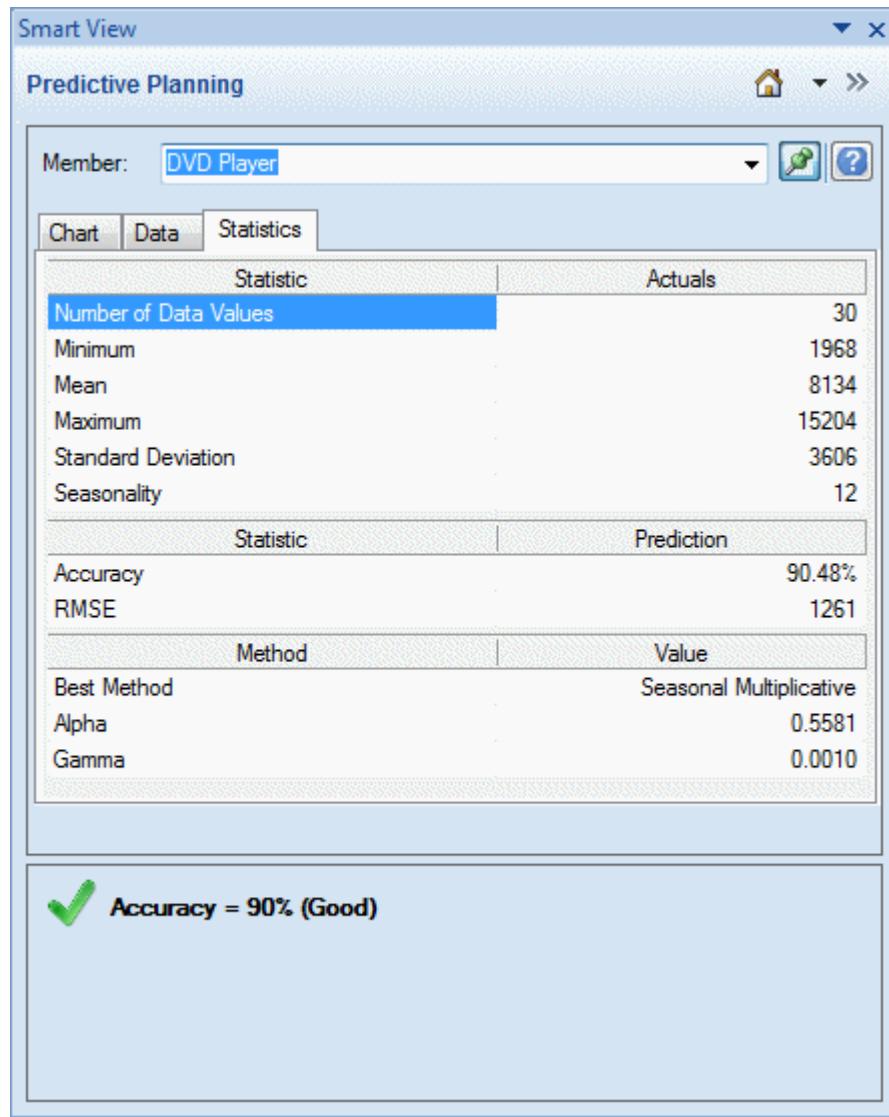
Statistics Tab

The Statistics tab shows several statistics about historical data used to generate the prediction: number of values, minimum value, mean value, maximum value, standard deviation, and the period of seasonality if present (Figure 1).

- **Number of data values**—The number of historical data values in the date range
- **Minimum**—The smallest value in the date range

- **Mean**—The average of a set of values, found by adding the values and dividing their sum by the number of values
- **Maximum**—The largest value in the data range
- **Standard deviation**—The square root of the variance for a distribution, where variance measures the degree of difference of values from the mean
- **Seasonality**—Whether the data has a detectable pattern (cycle) and, if so, the time period of that cycle

Figure 2-3 Predictive Planning Panel, Statistics Tab



The table also displays the following:

- An accuracy value
- The current error measure used to select the best time-series forecasting method (the default is root mean squared error, RMSE); see [Time-series Forecasting Error Measures](#) for a list.

- The name of the best time-series forecasting method ([Classic Time-series Forecasting](#), [ARIMA Time-series Forecasting Methods](#))
- The parameters for that method ([Classic Nonseasonal Forecasting Method Parameters](#), [Classic Seasonal Forecasting Method Parameters](#))

For more information about prediction accuracy, see [Summary Area](#).

Summary Area

By default, the **Summary Area** is displayed below the results chart or table. It indicates whether the prediction was successful or whether a warning or error condition occurred instead. The Summary Area can be used with the Filter Results feature ([Filtering Results](#)) to provide a quick overview of the status of the prediction. If the prediction succeeded, a quality rating is displayed (see [About Prediction Accuracy](#) later in this topic for details). If results are filtered, messages indicate the filtering criteria currently in effect.

About Prediction Accuracy

Statistically, the accuracy value is the average percentage error over the entire prediction period. Accuracy ranges from 0 to 100% and is about 90% in the illustrated example ([Figure 1](#)). Ratings of 95 to 100% are considered Very Good, 90 to 95% are considered good, 80 to 90% are considered Fair, and 0 to 80% are considered Poor.

Notice that these ratings do not indicate whether the *results* of the member prediction are good or not within a planning context, only whether the accuracy of the prediction is good or not.

Prediction accuracy is a relative measure that considers the magnitude of the prediction errors in relation to the range of the data. For example, in some cases, the historical data may appear "noisy" and have apparently large prediction errors, but the accuracy may still be considered good, because the peaks and valleys of the data and the size of the prediction errors are small relative to the entire range of the data from minimum to maximum values.

Setting Chart Preferences

To change the appearance of a chart in the Predictive Planning panel:

1. Double-click the chart or click the **Chart Preferences** button, .
2. Select appropriate settings in the **Chart Preferences** dialog.
3. **Optional:** Select **Reset** to restore default settings.
4. Select **OK** when settings are complete.

Chart Preferences dialog settings are as follows, when selected:

- **Highlight seasonality**—Uses vertical bands to separate periods of cyclical data (years, months, and so on)
- **Highlight missing values and outliers**—Graphically emphasizes filled-in or adjusted-outlier data if these are present
- **Show separator between past and future data**—Displays a vertical line between historical and predicted data sections
- **Show current view name in chart**—Displays the name of the current view in the results chart
- **3D chart**—Adds a depth perspective to the chart without actually adding a third measured dimension

- **Transparency**—Reduces the intensity of chart colors by the indicated percentage to better show gridlines or other marks in charted areas
- **Gridlines**—Indicates whether lines should be displayed in the chart background, and, if so, whether they should be vertical, horizontal, or both.
- **Legend**—Indicates whether a chart legend should be displayed, and, if so, whether it should be located to the right of, to the left of, or at the bottom of the chart, or whether the location should be automatically selected depending on panel size and orientation

 **Note:**

Changing these settings affects only the appearance of charts on your local computer and does not affect the charts of other users.

Adjusting Future Data Series

Prediction charts typically show actual data followed by future series such as predicted values and "worst case/best case" values (Figure 1). You can adjust any future series by activating a "chart grabber" and manipulating charted data with the mouse or by using the **Adjust Series** dialog. When you release the mouse or click **OK** in the dialog, changes are immediately pasted to the matching series on the form.

Adjusting Future Series with the Mouse

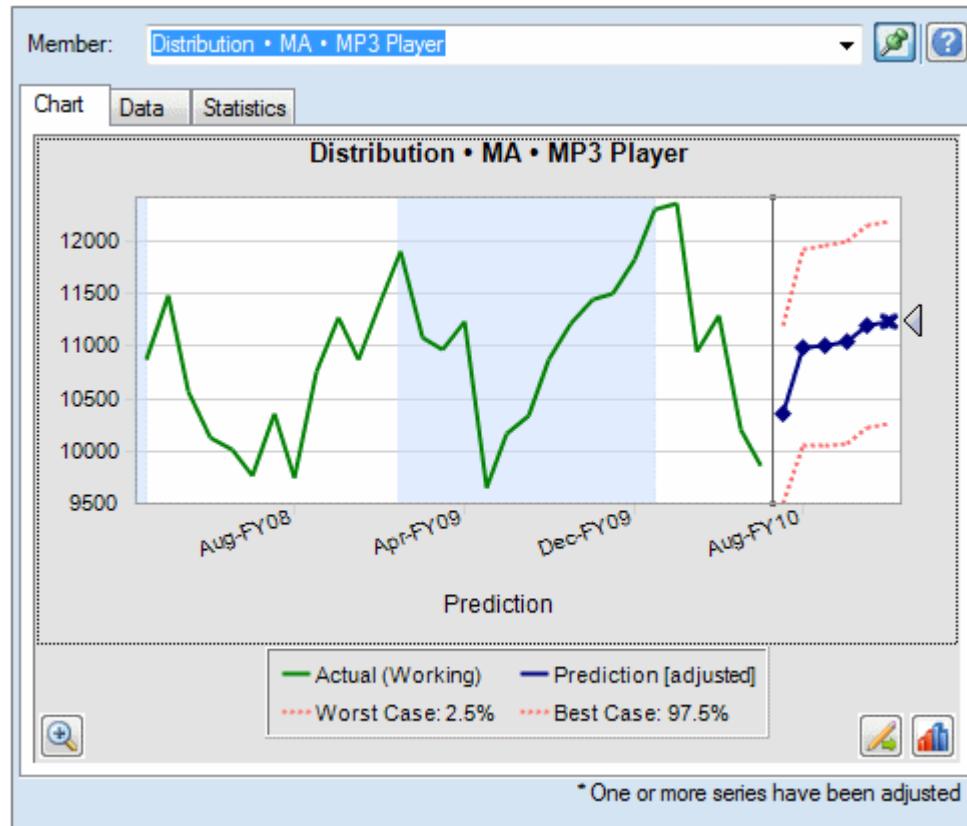
To adjust future series with the mouse:

1. Begin by clicking the future data series, either the main prediction line or one of the bounds, such as Worst Case and Best Case.

This activates the chart grabber (Figure 1). An x is displayed for each data point and a triangle, the chart grabber, appears at the end of the line.

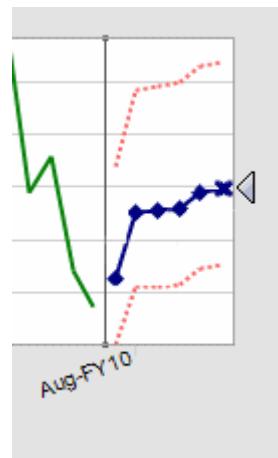
By default, the data points are "unlocked" and can be adjusted evenly.

Figure 2-4 Clicking the Prediction Line to Activate the Chart Grabber



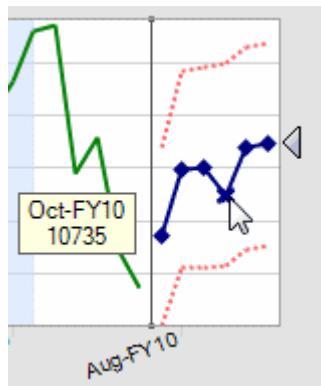
2. Perform one of the following actions:
 - Move the chart grabber up or down to increase or decrease all values evenly with the first period value unlocked (Figure 2).

Figure 2-5 Lowering the Chart Grabber Decreases All Values Equally



- Click a predicted data point and move it to adjust only that value (Figure 3). A tooltip indicates which value is adjusted and how it is changing.

Figure 2-6 Moving a Single Data Point

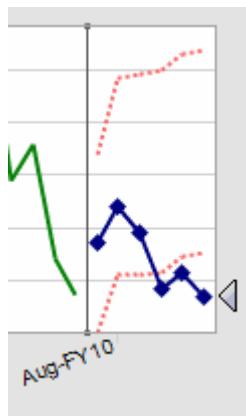


- Right-click and select **Lock First Period** to keep the first predicted value constant. Move the chart grabber up or down to increase or decrease all values relative to the first value (Figure 4).

 **Note:**

For more information about locking, see [Using the Adjust Series Dialog](#).

Figure 2-7 Moving the Chart Grabber with the First Predicted Value Locked



- You can right-click and select **Reset** at any time to restore the original predicted values. Otherwise, the adjusted values replace the original values.

See [Using the Adjust Series Dialog](#) to perform the same actions using a dialog instead of manipulating the chart with the mouse. You can right-click and select **Adjust Series** to display the dialog from within a chart.

Using the Adjust Series Dialog

To adjust predicted values using a dialog instead of the mouse:

- In a Predictive Planning chart, click the **Adjust Series** button, .
- In the **Adjust Series dialog**, use the **Selected series** menu to select a predicted series to adjust.

3. Select one or more adjustments:
 - **Adjust values by** — Specify the amount to adjust all values in the selected series.
 - **Round values to** — Select **No Rounding** or a rounding level: **Integers**, **Tens**, **Hundreds**, **Thousands**, or **Custom**.
For **Custom**, enter a number from -15 to 15 to indicate the rounding level: 0 = first place to the left of the decimal (units place), 1 = second place to the left of the decimal (tens), 2 = third place to the left of the decimal (hundreds), 3 = fourth place to the left of the decimal (thousands), -1 = first place to the right of the decimal (tenths), -2 = second place to the right of the decimal (hundredths), -3 = third place to the right of the decimal (thousandths), and so on. The default level is 0.
 - **Restrict values to range** — Optionally, enter lower or upper limits for adjusted values. Defaults are -Infinity to +Infinity.
4. **Optional:** Select **Lock first period** to keep the value of the first predicted value constant and apply the full set of adjustments to the last predicted value in the series. Predicted values between those two are scaled accordingly. You can click  to review that definition.
5. Click **OK** to perform the adjustment and paste adjusted values into the Planning form.
6. **Optional:** Click **Reset** to restore the original values for the currently selected series.

Using Chart View

Related Topics

- [Overview](#)
- [Editing the Chart View](#)
- [Filtering Results](#)

Overview

You can perform the following tasks to view Predictive Planning results:

- [Editing the Chart View](#) - Adding Scenario, Prediction Data, and Trend Line
- [Filtering Results](#) - Displaying subsets of results

Editing the Chart View

To edit the chart view:

1. Select **Chart View** on the Predictive Planning ribbon or right-click the tabbed portion of the Predictive Planning panel.
2. Select data series to show in the chart and clear the rest.

Each data series in the view can include a **Past** section, which contains historical data, and a **Future** section which contains future predicted values or other forward-looking values. The point of time that separates the Past and Future sections is determined when you run a prediction. **Prediction** items are described in [Adding Prediction Data](#).

3. **Optional:** Use the buttons to add scenarios ([Adding a Scenario](#)), prediction data series ([Adding Prediction Data](#)), and trend lines ([Adding a Trend Line](#)).

Trend lines can be best fit lines through the historical data or lines based on a specified percentage of growth.

4. **Optional:** Click **Remove** to delete the selected item from the Data Series list and the view.
5. **Optional:** Use the arrow keys to change the order of selected items in the list, the lines on the chart, and the columns in the Data tab.
6. Click **OK**.

 **Note:**

You can use **Reset** at any time to restore default settings to predefined views shipped with Predictive Planning.

Adding a Scenario

To add a scenario to a view:

1. In the Edit View or New View dialog, click **Add Scenario**.
2. In the **Member Selection** dialog, select a member from the **Scenario** dimension.
3. **Optional:** Select a member from the **Version** dimension, or leave Version members unselected to use the form's version.
4. Click **OK**.

Adding Prediction Data

To add prediction data to a chart view:

1. In the Edit View or New View dialog, click **Add Prediction**.
2. Select from among available prediction data series:
 - **Prediction base case**—Median prediction values calculated based on past historical data; median values mean that the actual values in the future are equally likely to fall above or below the base case values
 - **Prediction worst case**—A calculated lower confidence interval, by default the 2.5 percentile of the predicted range
 - **Prediction best case**—A calculated upper confidence interval, by default the 97.5 percentile of the predicted range
 - **Prediction fit line**—A line of the best fitting time-series forecasting method through the historical data

If a prediction data series is already in the view, it is checked and not editable. You can remove the data series by selecting it in the Edit View or New View dialog and clicking **Remove**.

3. Click **OK**.

Adding a Trend Line

Trend lines on charts can be lines of best fit through historical data or growth rate lines that increase historical data by a specified percentage.

To add trend lines to a chart:

1. In the Edit View or New View dialog, click **Add Trend Line**.
2. In **Add Trend Line**, select **Linear trend line** or **Growth rate**.

The sample chart shows the effect of your selection.

3. **Optional:** If you select **Growth rate**, specify the rate (2% is the default) and the time dimension (**Year** is the default). To compound growth by adding the previously calculated percentage to the current baseline value when calculating the next value, select **Use compounding**. By default, this setting is not selected.
4. Click **OK**.

Filtering Results

Filtering enables you to display only results that meet certain criteria. For example, you can set the criteria to show only members that have warning messages. The default is to show results for all members. When filtering criteria are changed, all open forms are updated:

- By default, member rows that do not meet the filtering criteria are collapsed to hide them. You can change this setting in the General Options dialog ([Setting General Predictive Planning Options](#)).
- The member list in the Results View is changed to show only members that meet the filtering criteria and the view is updated.

Note:

Filtering is a global setting. It applies to all forms and persists from one session to the next. If you save a filtered workbook and reopen it later, you can display hidden rows by performing a Refresh in Oracle Smart View for Office.

To filter Predictive Planning results:

1. In the **Predict** ribbon, select **Filter Results**.
2. In the **Filter Results** dialog, select a category:
 - **Prediction status**—The type of icon shown in the comments: Success, Warning, or Error
 - **Prediction accuracy**—Determined by a formula based on MAPE (mean absolute percentage error)
 - **Error measure** (RMSE, root mean squared error, MAPE, or MAD, mean absolute deviation)—The error measure to use for selecting the best time-series forecasting method, specified in the Settings dialog.
3. Select a conditional operator: = (equal to), <> (not equal to), <= (less than or equal to), >= (greater than or equal to)
4. Select or enter a value. For **Prediction accuracy**, values range from 0%-100%; for **Error measure**, from 0 to +infinity or 0%-100%, depending on the selected measure.
5. **Optional:** Click **Add Row** to define another set of selection criteria. Multiple rows of criteria must all be satisfied to select a member (an AND operation).
6. Click **OK** to display members that meet the selected criteria.

 **Note:**

At any time, you can click Reset to remove all selected criteria and display results without filtering.

3

Analyzing Results

Related Topics

- [Overview](#)
- [Pasting Results](#)
- [Creating Reports](#)
- [Extracting Data](#)

Overview

You can perform the following tasks to simplify analysis of Predictive Planning results:

- [Pasting Results](#)—Adding predicted data into Prediction scenarios
- [Creating Reports](#)—Displaying formatted results for selected members
- [Extracting Data](#)—Creating tables of predicted data in Oracle Smart View for Office

Pasting Results

Pasting results enables you to manually copy prediction results into a scenario on the form, for example a scenario named Forecast.

Tip:

If you want to save prediction data for later comparisons without overwriting other scenarios, special Prediction scenarios must be added to the form by an administrator or other user who is able to modify Planning forms before you use Predictive Planning.

Note:

An administrator or other user who is able to modify Planning forms can map a scenario to hold base case, best case, or worst case prediction results. Then, prediction results are automatically pasted into that scenario ([Mapping Member Names](#)).

To manually paste prediction results into a scenario on the form:

1. Determine that a Prediction or other special scenario exists so you will not overwrite data in other scenarios.
2. Select one or more members to paste.

Click the bottom half of the **Paste Results** button and select from the listed options. (If you click the top half of **Paste Results**, the Paste Results dialog is displayed for the current member only; see step 3, following.)

Select from the following:

- **Current Member**—Pastes results for only the member that is currently selected in Results View
- **All Members**—Pastes results for all predicted members; if present, filtering is ignored
- **Filtered Members**—When filtering is active, pastes results for the current set of filtered members
- **Selected Members**—Enables you to select members to paste

3. Select scenarios for pasting in the **Paste Results** dialog:

- **From**—Lists all series in the current view that are available for pasting; select the one whose data will be copied
- **To**—Lists all scenario/version combinations in the form; select the one to receive the pasted data
- **Prediction range**—Select the first setting to use the entire prediction range or select the second and specify how many periods of data to use

 **Note:**

If the prediction range overlaps the data range on the form, only the dates shown on the form are pasted.

4. When settings are complete, click **OK**.

Creating Reports

Predictive Planning reports can provide several kinds of information about predictions for selected members, including the run data and time, data attributes, run preferences, and the prediction results.

To create a Predictive Planning report:

1. In the **Analyze** menu or group, select **Create Reports**.
2. In the **Create Report** dialog, select one of the following:
 - **All members**—Shows report information for all predicted members
 - **Filtered members**—If available, shows information for all members that are not excluded by filters
 - **Selected members**—Displays a dialog for member selection
3. **Optional:** Click **Preferences** to customize the contents of the report ([Setting Report Preferences](#)).
4. When settings are complete, click **OK**.

Setting Report Preferences

[Creating Reports](#) describes how to generate a basic Predictive Planning report. Report preferences enable you to customize reports.

To set report preferences:

1. In the **Create Report** dialog, click **Report Preferences**.
2. On the **Report** tab of the **Report Preferences** dialog, in the **Report sections** list, select **Report Summary** to review and, optionally, modify the display selections:
 - **Report title**—Displays a default report title
 - **Run date/time**—The date and time the report was created
 - **Data attributes**—The number of members and other descriptors including the historical data source
 - **Run preferences**—The number of periods to predict, whether missing values are filled in, whether outliers are adjusted, prediction methods used, and the selected error measure
 - **Prediction results**—A summary of the predicted values
3. In the **Report sections** list, select **Members** to review and, optionally, modify the selections:
 - **Chart**—Includes the results chart at the indicated percent of default size
 - **Predicted values**—Values for each time period in the prediction range
 - **Statistics**—Information included in the Statistics tab ([Statistics Tab](#))
 - **Methods**—The number of time-series forecasting methods reported: all methods used, the three best methods, the two best methods, or only the best method, where "best" is defined as the most accurate
4. On the **Options** tab of the **Report Preferences** dialog, review and, optionally, modify the following settings:
 - **Location**—Whether to create the report in a new Microsoft Excel workbook or the current workbook; if you select **Current workbook**, a new sheet is created after the current sheet
You can enter a name for the new sheet in the Sheet Name text box.
 - **Formatting**—Whether to include cell locations (workbook, worksheet, and cell address) in report headers (selected by default)
 - **Chart format**—Whether to create a native Predictive Planning chart (**Image**) or a Microsoft Excel chart
If you select **Image**, you can format charts using the Predictive Planning Chart Preference settings ([Setting Chart Preferences](#)).
5. When all settings are complete, click **OK**.

Extracting Data

You can extract results and methods from the current Predictive Planning run.

To extract results:

1. In the **Analyze** menu or group, select **Extract Data**.
2. In the **Extract Data** dialog, select one of the following:
 - **All members**—Shows report information for all predicted members
 - **Filtered members**—If available, shows information for all members that are not excluded by filters
 - **Selected members**—Displays the Smart View dialog for member selection
3. **Optional:** Click **Preferences** to select which data to extract ([Setting Data Extraction Preferences](#)).
4. When settings are complete, click **OK**.

Setting Data Extraction Preferences

[Extracting Data](#) describes how to extract basic Predictive Planning results to a workbook in tabular form. Data extraction preferences enable you to customize which results to extract.

To set data extraction preferences:

1. In the **Extract Data** dialog, click **Preferences**.
2. On the **Data** tab of the **Extract Data Preferences** dialog, select the type of data to extract:
 - **Results Table**—Extracts past or future values, or both, for the members selected for data extraction
 - **Methods Table**—Lists the best time-series forecasting methods plus any of the following statistical data and information about the forecasting methods used:
 - **Accuracy**—An estimate of the quality of predicted results
 - **Errors**—Error statistics for predicted results (RMSE, MAD, and MAPE)
 - **Parameters**—Displays calculated parameters for the basic forecasting methods and transformational lambda and BIC results for ARIMA methods
 - **Ranking**—Indicates the prediction ranking of displayed methods, where 1 is best
3. On the **Options** tab, review and, optionally, modify the following:
 - **Location**—Indicates whether to write results to a new workbook or the current workbook, and the sheet names to use for the Results table and Methods table
 - **Formatting**—Indicates whether to automatically format results (**AutoFormat** selected)
4. When all settings are complete, click **OK**.

Setting General Predictive Planning Options

[Setting Up Predictive Planning](#) describes how administrators (and other users whose security roles enable them to modify Planning forms) can set up Planning and its Predictive Planning feature for efficient and effective use. This chapter describes how other users can customize Predictive Planning for individual sessions without modifying forms.

To change general Predictive Planning option settings:

1. Select **Options** in the Predictive Planning menu or ribbon.
2. Review and, optionally, change **General options**:
 - **Show ribbon only for valid Planning forms**—When selected, hides the Predict ribbon unless a valid form is open; default is selected.
 - **Collapse rows and columns on form during filter operations**—When selected, "hides" excluded members by collapsing their rows or columns; default is selected.
 - **Reset Alerts** button for "Do not show" checkboxes—When clicked, clears any checkboxes that were selected to prevent the repetitive display of message boxes, prompts, and other information where "Do not show" checkboxes are offered.
3. Review and, optionally, change **Date formatting** options:
 - **Format**—Indicates whether the period or year is displayed first in date labels; default is **Period-Year**.
 - **Separator**—Indicates whether to use -, /, or a blank space to separate the period and year; default is -.
4. **Optional:** Select **Enable accessibility options** to activate Predictive Planning features for users with visual impairments, including the use of patterns instead of colors.
For a description of accessibility features, including keyboard command equivalents, see the *Accessibility Guide*.
5. When settings are complete, click **OK**.

 **Note:**

You can click **Reset** at any time to restore default settings.

A

Setting Up Predictive Planning

Before You Begin

Note:

This appendix is for administrators and other users whose security roles enable them to modify Planning forms.

Predictive Planning is a Planning feature that works within Oracle Smart View for Office to predict future results from historical data. It is easy to use but requires some administrative setup.

This section describes Predictive Planning requirements and explains concepts that are important when setting Planning form defaults for use with Predictive Planning. While factory defaults are available, forms should be set up with application defaults at a minimum; some forms might also require individual defaults.

For most efficient setup, review the topics listed at the beginning of this section first, and then set application and individual defaults ([Setting Form Defaults](#)).

Assigning Security Roles

Predictive Planning users must be assigned roles that enable them to use Planning and to be an ad hoc user. Roles are assigned using Oracle Identity Management. Only those with the ability to modify forms can use the Settings dialog to define Predictive Planning defaults.

Hierarchical Data Prediction Issues

Planning data is structured in a hierarchy of levels, from the most general categories to the most detailed. Knowledge of important concepts in this section will help when working with the Member Selection dialog box and other setup features.

Comparing Bottom-up, Top-down, and Full Predictions

Full predictions, the default, predict all members on a form without regard to dimension hierarchies. With this method, Predictive Planning makes no assumption about the type of aggregation on the form.

Bottom-up predictions involve predicting members at the lowest levels of the dimension hierarchies and optionally rolling up the results to higher level summary members. This type of prediction requires that historical data be available for the lowest level members.

Top-down predictions involve predicting members at the summary levels of the dimension hierarchies and optionally spreading the results down to lower level members. This type of

prediction is useful when historical data is not available for lower level members, or when top level predictions are being used to drive the results down to lower members.

 **Note:**

Prediction results between full, bottom-up, and top-down methods should be close; however, predictions on lower level members are the most accurate because the individual trends and patterns of the data are preserved in the prediction process. If you are using top-down or full predictions and want to preserve the results at the summary-levels, ensure that the Planning business logic does not aggregate the results from lower level members.

Pasting Results for Predictions

To roll up (or spread down) results, users need to paste the predicted values into the form, and then submit the form. This recalculates the Planning business logic and propagates the predicted results accordingly. To simplify the pasting of predicted values by users, you can set up automatic pasting for the form ([Mapping Member Names](#)).

 **Caution:**

If users will be pasting results, either manually or automatically, a scenario must be added to the form to hold the pasted results. For example, a Prediction scenario could be added. Otherwise, the pasted results could overwrite other scenarios. For more information, see [Creating a New Scenario for Prediction Results](#).

Aggregating Best and Worst Case Predictions

The best and worst case predictions (by default, the 2.5% and 97.5% percentiles of the predicted values) are automatically generated. These values can be saved in Planning, but are not easy to roll up or spread down because of the complexity of their aggregation. Rolling them up or spreading them down requires custom formulas to be added to the Planning business logic. While closed-form formulas are available for addition and subtraction, they do not exist for some cases of aggregation (for example, division).

Historical Data and Prediction Accuracy

The amount of historical data available impacts the accuracy of the predictions; the more data the better. At a minimum, there should be at least twice the amount of historical data as the number of prediction periods. A ratio of three or more times the amount of historical data as the prediction periods is preferable. If not enough historical data is available at the time of prediction, a warning or error is displayed. Predictive Planning can detect seasonal patterns in the data and project them into the future (for example, spikes in sales numbers during holiday seasons). At least two complete cycles of data must be available to detect seasonality.

In addition, Predictive Planning detects missing values in the historical data, filling them in with interpolated values, and scans for outlier values, normalizing them to an acceptable range. If there are too many missing values or outliers in the data to perform reliable predictions, a warning or error message is displayed.

Form Creation and Modification Issues

Certain aspects of form structure affect the performance of Predictive Planning, as described in the listed topics.

Using Valid Forms

Before you can predict using Predictive Planning, make sure you have a valid form.

In general, a valid form must have the following:

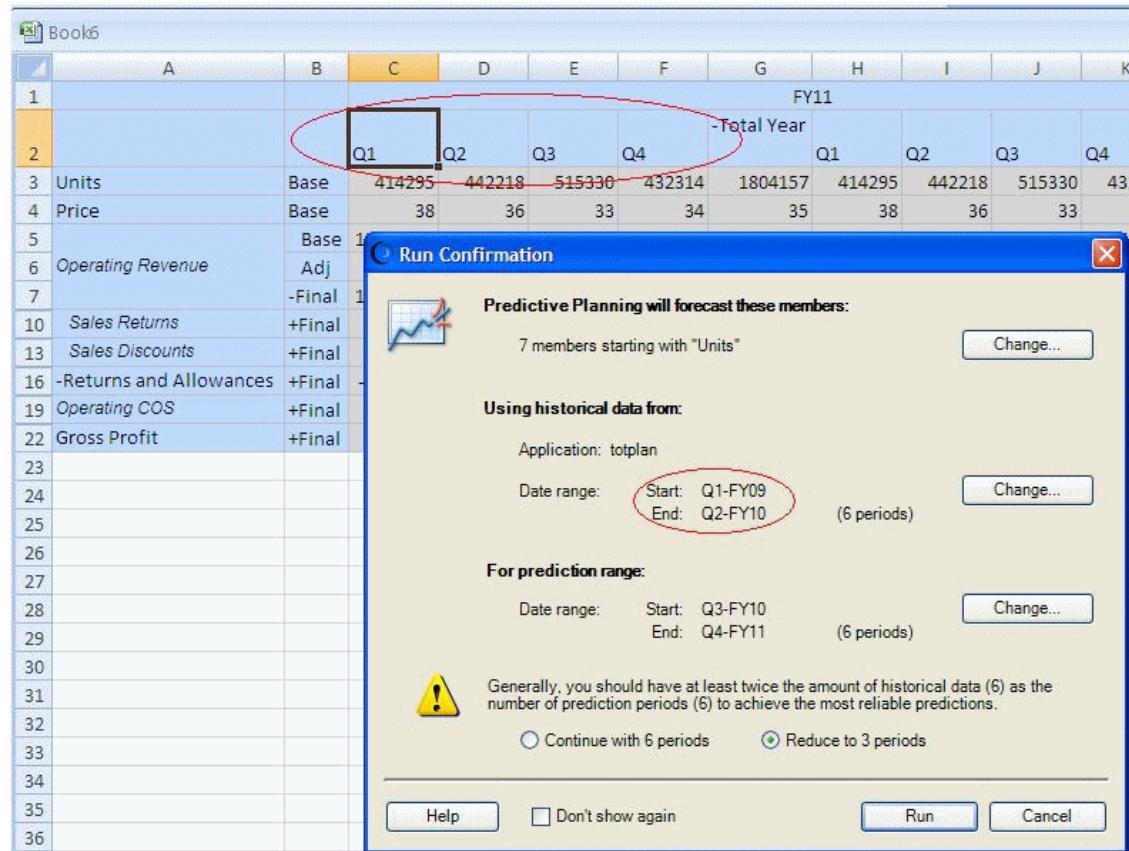
- A series axis, containing one or more non-time dimensions, such as Account or Entity. The series axis may not contain Year or Period dimensions.
- A time axis, containing the Year or Period dimensions, or both. The time axis may contain Scenario and Version dimensions. The time axis may not contain other non-time dimensions.
- Scenario and Version dimensions are permitted on the series or time axes, or both.
- The form must not be empty.
- No hidden dimensions on the rows or columns. (Hidden dimensions are allowed on the POV.)

Determining the Time Granularity of Predictions

The lowest Period dimension member level on a form determines the time granularity of the prediction. That is, if the lowest member level is Quarters (Qtr1, Qtr2, on so on), then historical data is retrieved at the Quarters level and the prediction will also take place at the Quarters level. For this reason, it is important to include on the form the lowest level of Period members possible so that the greatest amount of historical data can be used.

In [Figure 1](#), Quarters are the lowest level members of the Period dimension that appear on the form. You can tell this by the fact that the "Q1" name does not have a "+" symbol by it. If it did, this would mean that lower level members (such as months) exist on the form but are hidden from view by collapsing the columns. If the form included the Months levels (even if hidden), then Predictive Planning would predict at the Months level. For purposes of determining time granularity, it does not matter if the members are hidden or visible on the form.

Figure A-1 Time-granularity Example



Determining the Prediction Range

The prediction range starts one period after the end of historical data for all members on the form, regardless of the starting date of the form. If the members do not all have the same amounts of historical data, the end of historical data (and thus the start of the prediction range) will be determined by those members that have the greatest amount of similar historical data. These dates can be overridden by the user at the start of a prediction. By default, the end date on the form determines the end date of the prediction. This can also be overridden by users at the start of a prediction.

Note:

The prediction range end date is also limited to the members defined for Year and Period. That is, if the last Year-Period defined is 2015-Dec, then it is not possible to predict past this date. This limit is independent of the end date on the form itself. If users are having trouble predicting too far into the future and are receiving error messages, more time periods must be defined in the Planning application.

Creating a New Scenario for Prediction Results

After a prediction runs, users can paste the results to a form and save them. Typically, users may want to save prediction results to a Forecast or Plan scenario. However, if users want to

keep the prediction results separate from these types of scenarios, you will need to add to add a special scenario to Planning (for example, "Prediction") to hold those results without overwriting other scenarios. You can also create additional scenarios to store the best and worse case prediction results as well. These scenarios should then be mapped appropriately in the Settings dialog ([Mapping Member Names](#)). For additional discussion, see [Pasting Results for Predictions](#) and [Aggregating Best and Worst Case Predictions](#).

 **Note:**

Members that are read-only on the form can still be predicted, but the results cannot be pasted back into the member rows or columns.

Setting Form Defaults

Setting up a form for use with Predictive Planning defines application or individual defaults for that form. Some of the settings require Planning knowledge, while others require a basic knowledge of classic and ARIMA time-series forecasting. Once a form has been set up, users should be able to open the form in Oracle Smart View for Office, start Predictive Planning, and immediately run a prediction using the defaults.

 **Tip:**

If other defaults are not available, factory defaults are applied to all forms used with Predictive Planning. If customized defaults are required, application defaults can automate that process at an application level, while individual defaults override other defaults on a particular form. For best results, read this entire section, particularly [Application and Individual Form Defaults](#), before setting any Predictive Planning defaults.

 **Note:**

You must have a security role that enables you to modify Planning forms to define defaults.

Application and Individual Form Defaults

When a form is first opened in Predictive Planning, it receives factory defaults for all Predictive Planning settings (that is, all of the settings that appear in the Settings dialog). You will probably want to override some of these settings and create an application-level default for all forms, or individually customize the default settings for selected forms. The application default settings are stored in the Planning application and are applied to all forms when they are opened. Individual defaults are stored with the form to which they are applied.

 **Tip:**

Set the application-level default for all forms first, and then customize the default for individual forms as needed.

To set application-level defaults:

1. Open any form.
2. Customize the settings in the **Settings** dialog.
3. Click **Set Default**.

All settings on all tabs of the **Settings** dialog are immediately saved as application defaults for all forms.

4. Press **Cancel** to avoid setting an individual-level default for the current form.

To set individual-level defaults:

1. Open a form and customize the settings in the **Settings** dialog.
2. Click **OK** to save all settings on all tabs as individual defaults.

Whenever that form is opened, all the settings are applied and override any application-level defaults.

When forms are opened by users, the form first receives any individual-level default settings, if an individual default was created, and then receives application-level defaults.

Using the Settings Dialog

The **Settings** dialog is used to do the following:

- Select the source of historical data on which to base predictions ([Specifying a Historical Data Source](#))
- Map Predictive Planning names to members ([Mapping Member Names](#))
- Specify which members on a form to predict ([Selecting Members](#))
- Select and override various prediction option settings ([Setting Prediction Options](#))



To open the **Settings** dialog, select **Settings**, , in the Predictive Planning ribbon.

Specifying a Historical Data Source

When you specify a historical data source, you select where the historical data will be coming from and indicate whether to use all historical data or only data from a specified date range.

 **Note:**

Administrators and other users with appropriate security roles can define and use alternate data sources instead of or in addition to the default data source for the current Planning application ([Using Alternate Historical Data Sources](#)).

To specify a source for historical data:

1. Open the **Settings** dialog.
2. On the **Data Source** page, select a **Plan Type**:
 - *PlanName* (Default Plan) is the Plan Type associated with the current form. Select this plan type to use any historical data contained within this application (the default).
 - *OtherPlanNames*, if available, are alternate plan types provided by the data administrator as sources of historical data. These are typically Aggregate Storage Option (ASO) applications.
3. Indicate whether to **Use all historical data** or a **Selected date range**.

 **Note:**

When they run predictions, users will be able to temporarily override the selected date range using the **Change Date** buttons on the **Run Confirmation** dialog.

4. **Optional:** If you selected **Selected date range**, specify a start and end year and time period.

 **Note:**

For a discussion of the date range, see [Determining the Prediction Range](#).

5. **Optional:** Set or reset defaults using one of the following selections:

- Click **Set Default** to store settings on all tabs as application defaults.
- Click **OK** to store settings on all tabs as individual defaults for only this form.
- Click **Reset** at any time to restore the predefined defaults shipped with Predictive Planning or application defaults set with **Set Default**. This resets all tabs of the dialog.

 **Note:**

For more information about defaults, see [Application and Individual Form Defaults](#).

6. **Optional:** To leave the dialog without changing defaults, click **Cancel**.

Mapping Member Names

Use **Map Names** to identify key scenarios in the application and link them to Predictive Planning data series. Predictive Planning uses the historical data series to generate predictions for each member on the form. Comparison data series can be set up to compare predicted results to forecast scenarios, budget scenarios, and so on. Prediction data series can be set up to hold prediction results in a separate area in the application. For details, see [About Name Defaults](#).

To map member names to specific Predictive Planning data series:

1. Open the **Settings** dialog.

2. On **Map Names**, select the following:

- **Historical data series** group, **Scenario**—The dimension member name to use as the historical data series to generate the prediction; a required selection
- **Prediction data series** group, **Base case scenario**, **Worst case scenario**, and **Best case scenario**—Optional scenarios that must be created in Planning forms by administrators or other users whose security roles enable them to modify Planning forms; used to hold predicted values when pasted into the form

To select a member, click the ... button, and then select members from the **Scenario** and **Version** dimensions. If you do not select a Version member, the current Version member on the form is used. If there are more than one Version members on the form, the first Version member is used.

3. **Optional:** When a **Prediction data series member** is selected, an **X** button is displayed next to it. You can use this button to clear the selection and restore the list to its default, **<None>**.

Because the **Historical data series** member is required, you can not clear it and can only select another member.

4. **Optional:** Set or reset defaults using *one* of the following selections:

- Click **Set Default** to store settings on all tabs as application defaults.
- Click **OK** to store settings on all tabs as individual defaults for only this form.
- Click **Reset** at any time to restore the predefined defaults shipped with Predictive Planning or application defaults set with **Set Default**. This resets all tabs of the dialog.

 **Note:**

For more information about defaults, see [Application and Individual Form Defaults](#).

5. **Optional:** To leave the dialog without changing defaults, click **Cancel**.

About Name Defaults

The **Map Names** panel on the **Settings** dialog is used to identify Predictive Planning key scenarios on the form. The only required mapping identifies which scenario holds the historical data series; the default is "Actual ([current])". You will need to change this default if the historical data scenario is something other than "Actual", or if the version for this scenario is different from the form's version. To make it easier for users to compare predicted results to other scenarios like Forecast or Plan, you can map these scenarios.

Selecting Members

Use **Member Selection** to determine which form members to select for prediction. Full predictions, the default, choose all members on the form. "Bottom-up" predictions choose members at the lowest level of the hierarchy for forms built to aggregate results up to higher level members. "Top-down" predictions choose members at the highest level of the hierarchy for forms built to push results down to lower level members. Optionally, you can skip any read-only members.

 **Note:**

When running predictions, users can override these settings using the **Change Member Selection** button on the Run Confirmation dialog. Its settings are similar to the following but they apply only temporarily to the current Predictive Planning session.

To indicate which members on a form to include in a prediction:

1. Open the **Settings** dialog.
2. On **Member Selection**, select a prediction type:
 - **Bottom-up (lowest level members only)**—Includes only the lowest level members in the hierarchy included on the form, the lowest level for each dimension if multiple dimensions are included
 - **Top-down (highest level members only)**—Includes only the highest level members in the hierarchy included on the form, the highest level for each dimension if multiple dimensions are included
 - **Full (all members)**—Predicts all members regardless of their hierarchy level; the default
3. **Optional:** Select **Skip 'read only' members**, which includes only members with writable (editable) cells in the prediction. Members with read-only cells typically include calculated summary data that is stored in the dimension hierarchy.
4. **Optional:** Set or reset defaults using *one* of the following selections:
 - Click **Set Default** to store settings on all tabs as application defaults.
 - Click **OK** to store settings on all tabs as individual defaults for only this form.
 - Click **Reset** at any time to restore the predefined defaults shipped with Predictive Planning or application defaults set with **Set Default**. This resets all tabs of the dialog.

 **Note:**

For more information about defaults, see [Application and Individual Form Defaults](#).

5. **Optional:** To leave the dialog without changing defaults, click **Cancel**.

Setting Prediction Options

The prediction options specify data attributes, prediction methods, and other aspects of time-series analysis performed by Predictive Planning. The defaults are suitable for most predictions and should only be changed by those with some knowledge of time-series analysis.

To set prediction options:

1. Open the **Settings** dialog.
2. On **Options**, review and select from the following:
 - **Data attributes** group:

- Select whether to detect seasonality (regular cycles of data) automatically (**Automatic**, the default) or manually (**Manual**). If you select **Manual**, specify the number of time periods per cycle. For example if time periods are quarters with a yearly cycle, there would be **4 periods per cycle**.
- Select whether to **Fill in missing values** and **Adjust outliers**. These settings estimate missing data based on adjacent data and help to normalize unusual data.

 **Note:**

Fill-in Missing Values uses interpolation to fill in gaps in the historical data. Clearing this option skips prediction calculation for members with gaps in their data.

Adjust Outliers uses a special fitting algorithm to determine whether data points fall within a reasonable range compared to all the other data points for a member. Clearing this option still allows the prediction to proceed, although the prediction algorithm may be thrown off by the outlier data points.

- **Prediction methods** group:
 - Select which time-series prediction methods to use: **Nonseasonal** (does not fit to cyclical data), **Seasonal** (fits to cyclical data), or **ARIMA** (both nonseasonal and seasonal using predefined statistical models). See [Classic Time-series Forecasting](#) and [ARIMA Time-series Forecasting Methods](#) for lists and details.
Select all three, the default, unless you have a good reason to do otherwise.
 - Select an error measure to use in selecting the best method: **RMSE**, **MAD**, or **MAPE** ([Time-series Forecasting Error Measures](#)).
Again, use the default, **RMSE**, unless you have a good reason to use another.
- **Prediction periods** group:
 - Select whether to detect periods automatically, **Select periods based on form**, or manually, **Manual**. If you select **Manual**, specify the number of periods to predict. Generally, the number of prediction periods should be less than half the amount of actual data.
 - Select a **Prediction interval**, which defines a range around the base predicted value where the value has some probability of occurring; for example, the default (**2.5% and 97.5%**) means that there is a 95% probability that the predicted value will fall between the 2.5 percentile and the 97.5 percentile.

 **Note:**

Prediction Interval determines the percentile range around the base case prediction that is used to represent the best and worst case predictions. For example, a 2.5% - 97.5% prediction interval estimates that 95% of the time the predicted value will actually occur between the lower and upper bounds; 5% of the time the value will lie outside of these bounds.

These lower and upper percentile values are also used to indicate the worst and best case predicted values. For a Revenue-type account member, the worst and best cases are assigned to the lower and upper percentile values, respectively. For an Expense-type account member, the cases are reversed; the best case is associated with the lower bound (e.g. 2.5%) and the worst case is associated with the upper bound (e.g. 97%).

3. Optional: Set or reset defaults using one of the following selections:

- Click **Set Default** to store settings on all tabs as application defaults.
- Click **OK** to store settings on all tabs as individual defaults for only this form.
- Click **Reset** at any time to restore the predefined defaults shipped with Predictive Planning or application defaults set with **Set Default**. This resets all tabs of the dialog.

 **Note:**

For more information about defaults, see [Application and Individual Form Defaults](#).

4. Optional: To leave the dialog without changing defaults, click **Cancel**.

Using Alternate Historical Data Sources

[Specifying a Historical Data Source](#) describes how to specify a source for the historical data used to predict future results. You select the source in the **Plan Type** box.

The default plan type is the plan associated with the current form, but administrators and others with appropriate security roles can define and use alternate plan types as historical data sources. For example, an administrator can create an ASO Plan Type for historical data, since this type supports efficient storage and access to large amounts of data ([Alternate Plan Types and Dates](#)).

 **Note:**

Alternate plan types can contain data for dates that are earlier than those included in the default plan type ([Alternate Plan Types and Dates](#)).

If alternate plan types are available, you can select them for use in the **Data Source** panel. If you select an alternate plan type, the upper part of the Data Source panel includes additional controls:

- **Configure POV** button—Opens the **Member Selection** dialog, where you can add members that are unmatched in the alternate plan type point of view (POV). See [Alternate Plan Types and POV Configuration](#).

- Warning icon—Clicking this icon, , or pressing the spacebar while it is selected displays a detailed message about POV issues to help identify unmatched members for configuration.
- **Consolidate with default plan type** checkbox—When selected, this setting indicates that historical data is taken from the alternate plan type first and then from the default plan type.

With consolidation, data overlaps or gaps are evaluated for each data series. In case of overlap, data from the two data sources are merged. Data from the alternate plan type overrides any data from the default plan type for the same date location. If there is a gap between the data sets, missing values are estimated and filled in when a prediction is run.

When **Consolidate with default plan type** is not selected, historical data is read only from the alternate plan type.

Alternate Plan Types and POV Configuration

If the point of view for the current form can not be matched to the alternate plan type, an error message and a warning icon are displayed. You can click the icon to learn more about the detected mismatch. For example, a member in the POV may not be present in the alternate plan type and must be configured.

To configure the POV:

1. Click **Configure POV**.
2. In the **Member Selection** dialog, locate the unmatched member in the first panel from the left.
3. Select the value to add and then click the right-arrow in the center of the screen to move it into the second panel.
4. When all unmatched members have values, click **OK**.

Alternate Plan Types and Dates

One reason for defining and using alternate plan types is to enable the use of historical date ranges that are earlier than those in the default plan type.

The historical data source, whether default or alternate, must contain all the dimensions on either the Series or Time axis of the current Planning form. One exception is that an alternate year dimension can be specified for the Year dimension. This is useful when an alternate plan type contains earlier dates than the default.

About Alternate Year Dimensions

An alternate year dimension may be used for a historical plan type which contains years prior to the start of the current Year dimension. This approach enables the addition of past historical years if the current Planning application's Year dimension does not include enough past years to meet prediction requirements. For example, if the current Year dimension covers FY08 to FY14, it may be necessary to add historical data from FY03 to FY07 for predictions. In this case, a historical plan type may be used with an alternate year dimension that contains members FY03 to FY07. The dimension name may be any valid custom dimension name, such as AltYear. For dimension requirements, see [Alternate Year Dimension Requirements](#).

Alternate Year Dimension Requirements

Alternate year dimensions must meet the following requirements:

- The alternate year dimension is a custom Planning dimension with year members that follow the same naming pattern as the current Year dimension. For example, if the Year dimension contains FY08 to FY14, then the alternate year dimension should use FYxx as the naming pattern, such as FY03 to FY07.
- The application's Year dimension cannot be included in this alternate historical plan type.
- When an alternate plan type is selected as a data source and an alternate year dimension is present, the alternate year dimension will be detected automatically. A dialog is displayed that asks users if they want to use the alternate year dimension. If they respond **OK**, the alternate year dimension is used.

For additional information about creating alternate plan types, see [About Creating Alternate Plan Types](#)

About Creating Alternate Plan Types

Alternate plan types containing alternate year dimensions typically are created after the initial creation of a Planning application. They usually use the ASO storage type as this type is more efficient for large amounts of data. All plan types created during the initial Planning application creation typically inherit the Year dimension. However, ASO plan types created after the application enable administrators and others with appropriate security roles to add dimensions selectively so that a custom year dimension can be included without the default Year dimension.

Predictive Planning Forecasting and Statistical Descriptions

This section describes the forecasting methods and error measures used in Predictive Planning.

Predictive Planning works with valid forms and ad hoc grids to predict performance based on historical data. It uses sophisticated time-series forecasting techniques to create new predictions or validate existing forecasts that were entered using other forecasting methods.

Predictive Planning is available in Planning and as an Oracle Smart View for Office extension.

Videos

Your Goal	Watch This Video
Learn more about Predictive Planning statistical forecasting methods.	 Overview: Statistical Forecasting Methods in Predictive Planning

Forecasting Basics

Most historical or time-based data contains an underlying trend or seasonal pattern. However, most historical data also contains random fluctuations (noise) that make it difficult to detect these trends and patterns without a computer. Predictive Planning uses sophisticated time-series methods to analyze the underlying structure of the data. It then projects the trends and patterns to predict future values.

Time-series forecasting breaks historical data into components: level, trend, seasonality, and error. Predictive Planning analyzes these components and then projects them into the future to predict likely results.

In Predictive Planning, a data series is a set of historical data for a single member. When you run a prediction, it tries each time-series method on each of the selected data series and calculates a mathematical measure of goodness-of-fit. Predictive Planning selects the method with the best goodness-of-fit as the method that will yield the most accurate forecast.

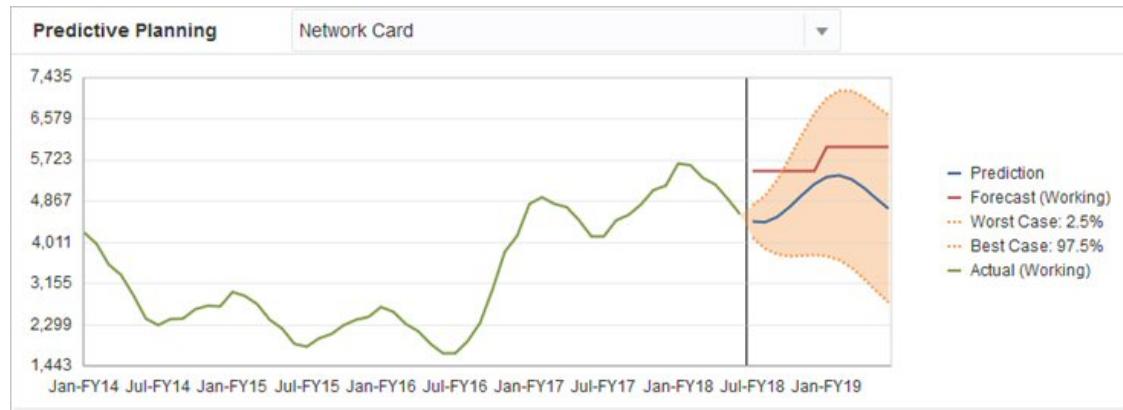
The final forecast shows the most likely continuation of the data. All of these methods assume that some aspects of the historical trend or pattern will continue into the future. However, the farther out you forecast, the greater the likelihood that events will diverge from past behavior, and the less confident you can be of the results. To help you gauge the reliability of the forecast, Predictive Planning provides a prediction interval indicating the degree of uncertainty surrounding the forecast.

Forecasting Use Cases

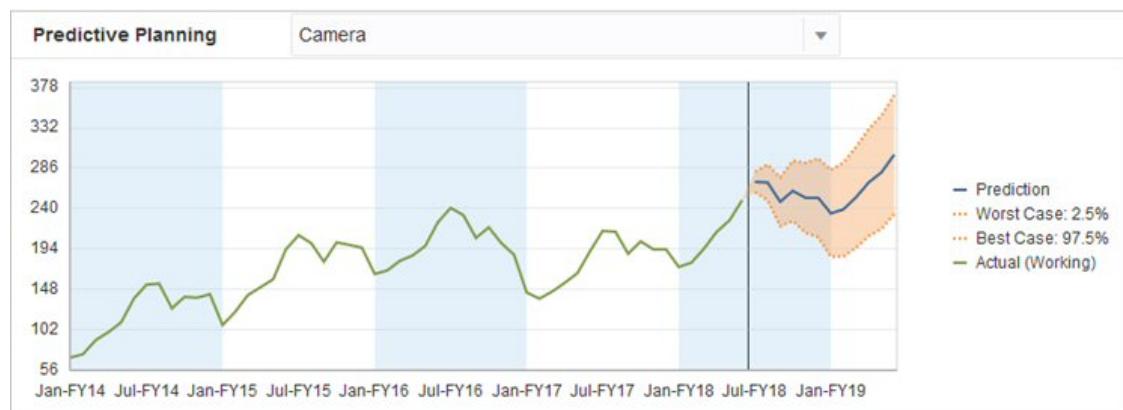
In a planning context, time-series forecasting has several uses. The most common use case is to compare the statistical predictions from Predictive Planning against your own forecast. This generally takes place on a three, six, or twelve month time horizon, and can be performed

once at the start of a planning cycle, or on a rolling basis as plans are adjusted based on incoming actuals.

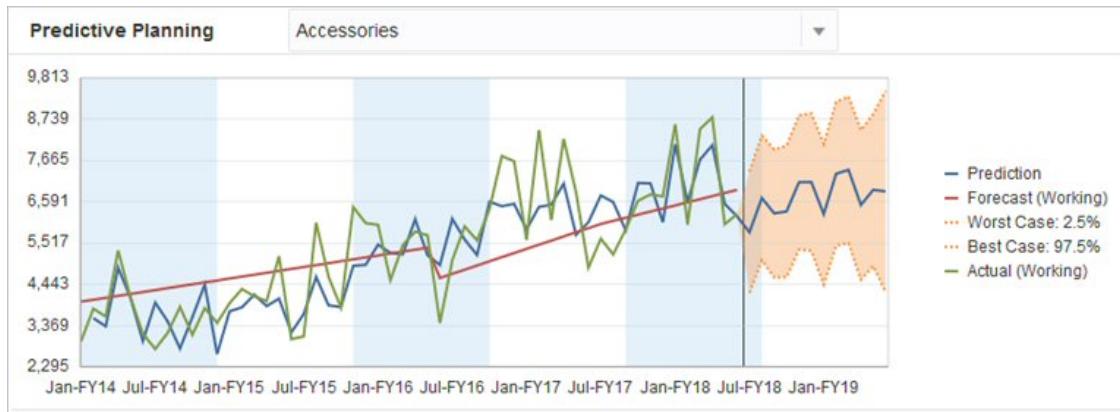
In this example, you can see that the prediction is below the forecast for the coming fiscal year. You can also measure how the forecast lies within the prediction's 95% confidence interval (orange band). Using this information, you can decide to adjust the forecast for the fiscal year, or take other actions that mitigate the forecasting gap.



If you haven't supplied a forecast, or can't generate one for the fiscal year, you can decide to use the prediction as your own forecast. You can copy and paste the prediction results into the form and save the results.



You can also compare the historical predictions against the historical forecasts to determine the accuracy of each, assuming that predictions have been saved in a separate scenario. By turning on the historical view in the chart, you can gauge how far the forecast (red line) and the predictions (blue line) have diverged from the actuals (green line) in the past. For this member, it appears that the prediction had smaller variance than the forecasts against the actuals.



Classic Time-series Forecasting

Two primary techniques of classic time-series forecasting are used in Predictive Planning:

- [Classic Nonseasonal Forecasting Methods](#): Estimate a trend by removing extreme data and reducing data randomness
- [Classic Seasonal Forecasting Methods](#): Combine forecasting data with an adjustment for seasonal behavior

For information about autoregressive integrated moving average (ARIMA) time-series forecasting, see [ARIMA Time-series Forecasting Methods](#).

Classic Nonseasonal Forecasting Methods

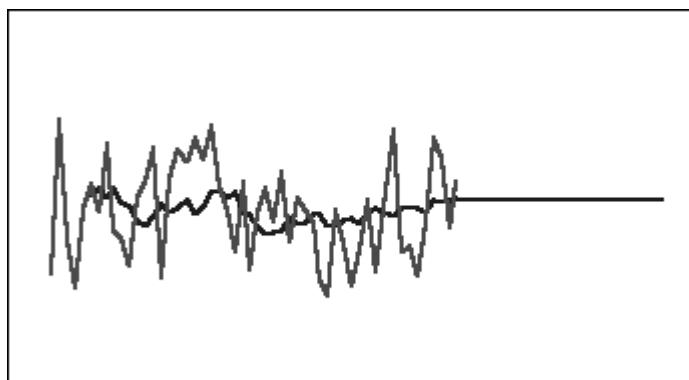
Nonseasonal methods attempt to forecast by removing extreme changes in past data where repeating cycles of data values are not present.

Single Moving Average (SMA)

Smooths historical data by averaging the last several periods and projecting the last average value forward.

This method is best for volatile data with no trend or seasonality. It results in a straight, flat-line forecast.

Figure B-1 Typical Single Moving Average Data, Fit, and Forecast Line

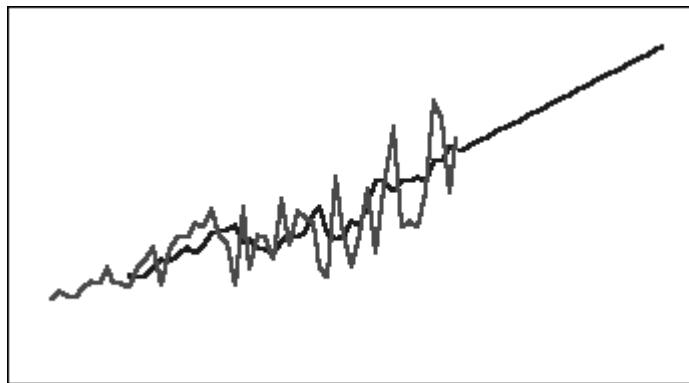


Double Moving Average (DMA)

Applies the moving average technique twice, once to the original data and then to the resulting single moving average data. This method then uses both sets of smoothed data to project forward.

This method is best for historical data with a trend but no seasonality. It results in a straight, sloped-line forecast.

Figure B-2 Typical Double Moving Average Data, Fit, and Forecast Line

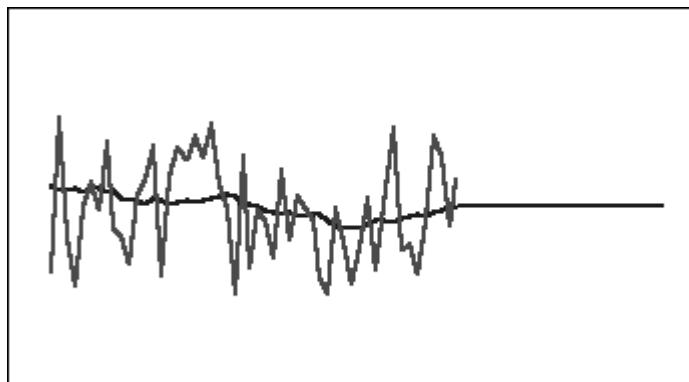


Single Exponential Smoothing (SES)

Weights all of the past data with exponentially decreasing weights going into the past. In other words, usually the more recent data has greater weight. Weighting in this way largely overcomes the limitations of moving averages or percentage change methods.

This method, which results in a straight, flat-line forecast is best for volatile data with no trend or seasonality.

Figure B-3 Typical Single Exponential Smoothing Data, Fit, and Forecast Line

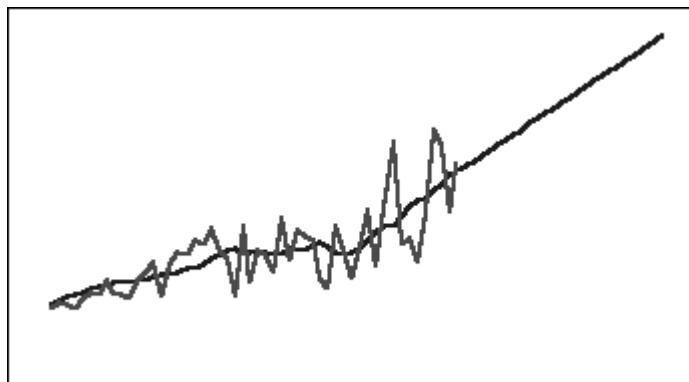


Double Exponential Smoothing (DES)

Applies SES twice, once to the original data and then to the resulting SES data. Predictive Planning uses Holt's method for double exponential smoothing, which can use a different parameter for the second application of the SES equation.

This method is best for data with a trend but no seasonality. It results in a straight, sloped-line forecast.

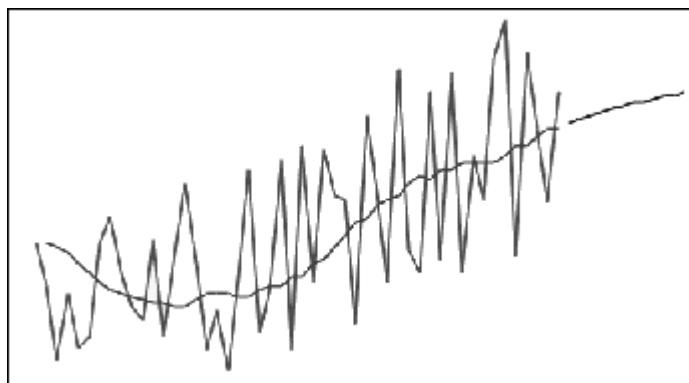
Figure B-4 Typical Double Exponential Smoothing Data, Fit, and Forecast Line



Damped Trend Smoothing (DTS) Nonseasonal Method

Applies exponential smoothing twice, similar to double exponential smoothing. However, the trend component curve is damped (flattens over time) instead of being linear. This method is best for data with a trend but no seasonality.

Figure B-5 Typical Damped Trend Smoothing Data, Fit, and Forecast Line



Classic Nonseasonal Forecasting Method Parameters

The classic nonseasonal methods use several forecasting parameters. For the moving average methods, the formulas use one parameter, period. When performing a moving average, Predictive Planning averages over a number of periods. For single moving average, the number of periods can be any whole number between 1 and half the number of data

points. For double moving average, the number of periods can be any whole number between 2 and one-third the number of data points.

Single exponential smoothing has one parameter: alpha. Alpha (a) is the smoothing constant. The value of alpha can be any number between 0 and 1, not inclusive.

Double exponential smoothing has two parameters: alpha and beta. Alpha is the same smoothing constant as described above for single exponential smoothing. Beta (b) is also a smoothing constant exactly like alpha except that it is used during second smoothing. The value of beta can be any number between 0 and 1, not inclusive.

Damped trend smoothing has three parameters: alpha, beta, and phi (all between 0 and 1, not inclusive).

Classic Seasonal Forecasting Methods

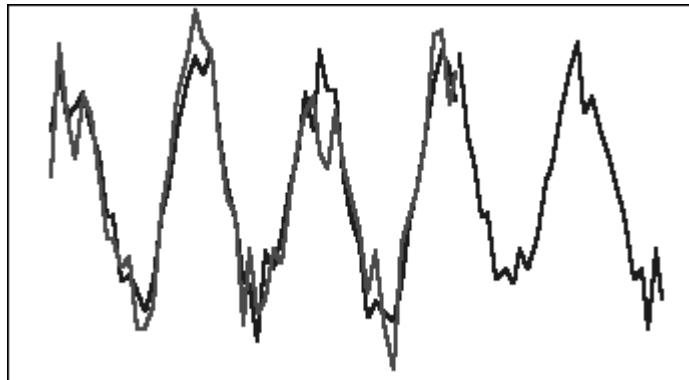
Seasonal forecasting methods extend the nonseasonal forecasting methods by adding an additional component to capture the seasonal behavior of the data.

Seasonal Additive

Calculates a seasonal index for historical data that does not have a trend. The method produces exponentially smoothed values for the level of the forecast and the seasonal adjustment to the forecast. The seasonal adjustment is added to the forecasted level, producing the seasonal additive forecast.

This method is best for data without trend but with seasonality that does not increase over time. It results in a curved forecast that reproduces the seasonal changes in the data.

Figure B-6 Typical Seasonal Additive Data, Fit, and Forecast Curve without Trend

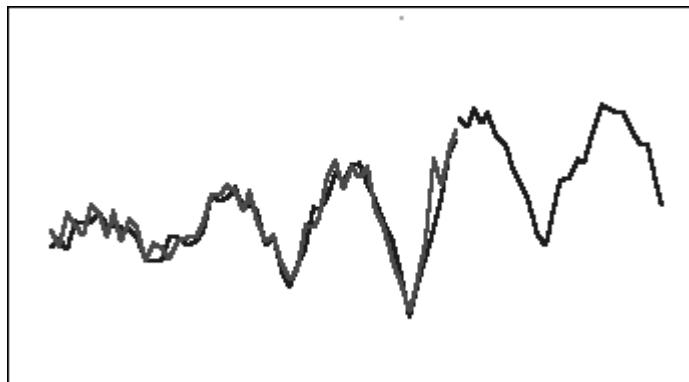


Seasonal Multiplicative

Calculates a seasonal index for historical data that does not have a trend. The method produces exponentially smoothed values for the level of the forecast and the seasonal adjustment to the forecast. The seasonal adjustment is multiplied by the forecasted level, producing the seasonal multiplicative forecast.

This method is best for data without trend but with seasonality that increases or decreases over time. It results in a curved forecast that reproduces the seasonal changes in the data.

Figure B-7 Typical Seasonal Multiplicative Data, Fit, and Forecast Curve without Trend

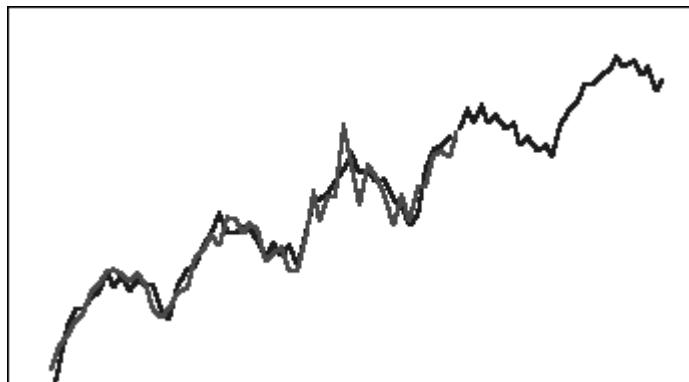


Holt-Winters' Additive

Is an extension of Holt's exponential smoothing that captures seasonality. This method produces exponentially smoothed values for the level of the forecast, the trend of the forecast, and the seasonal adjustment to the forecast. This seasonal additive method adds the seasonality factor to the trended forecast, producing the Holt-Winters' additive forecast.

This method is best for data with trend and seasonality that does not increase over time. It results in a curved forecast that shows the seasonal changes in the data.

Figure B-8 Typical Holt-Winters' Additive Data, Fit, and Forecast Curve

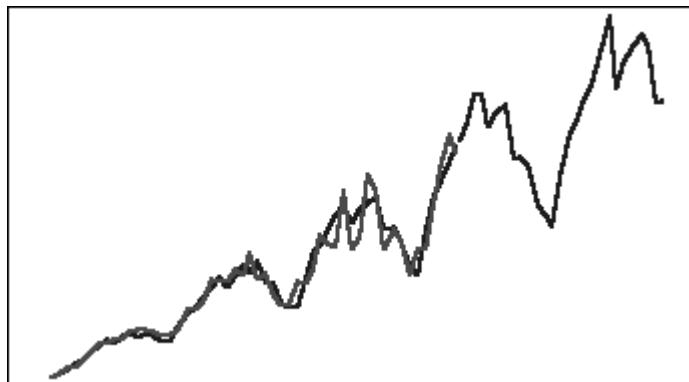


Holt-Winters' Multiplicative

Is similar to the Holt-Winters' additive method. Holt-Winters' Multiplicative method also calculates exponentially smoothed values for level, trend, and seasonal adjustment to the forecast. This seasonal multiplicative method multiplies the trended forecast by the seasonality, producing the Holt-Winters' multiplicative forecast.

This method is best for data with trend and with seasonality that increases over time. It results in a curved forecast that reproduces the seasonal changes in the data.

Figure B-9 Typical Holt-Winters' Multiplicative Data, Fit, and Forecast Curve

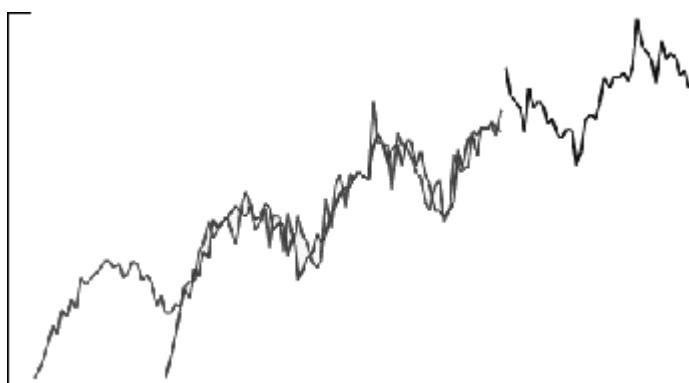


Damped Trend Additive Seasonal Method

Separates a data series into seasonality, damped trend, and level; projects each forward; and reassembles them into a forecast in an additive manner.

This method is best for data with a trend and with seasonality. It results in a curved forecast that flattens over time and reproduces the seasonal cycles.

Figure B-10 Typical Damped Trend Additive Data, Fit, and Forecast Curve

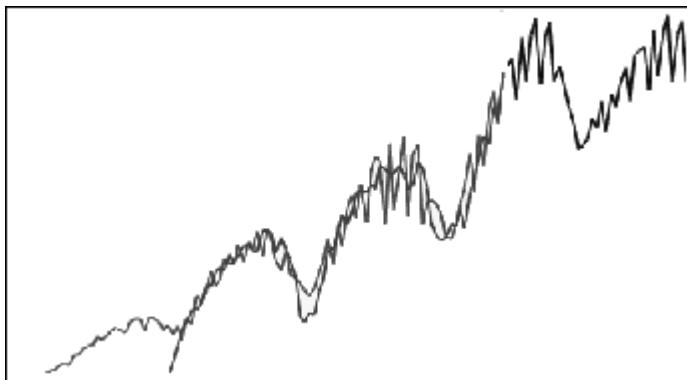


Damped Trend Multiplicative Seasonal Method

Separates a data series into seasonality, damped trend, and level; projects each forward; and reassembles them into a forecast in a multiplicative manner.

This method is best for data with a trend and with seasonality. It results in a curved forecast that flattens over time and reproduces the seasonal cycles.

Figure B-11 Typical Damped Trend Multiplicative Data, Fit, and Forecast Curve



Classic Seasonal Forecasting Method Parameters

The seasonal forecast methods use the following parameters:

- alpha (α): Smoothing parameter for the level component of the forecast. The value of alpha can be any number between 0 and 1, not inclusive.
- beta (β): Smoothing parameter for the trend component of the forecast. The value of beta can be any number between 0 and 1, not inclusive.
- gamma (γ): Smoothing parameter for the seasonality component of the forecast. The value of gamma can be any number between 0 and 1, not inclusive.
- phi (Φ): Damping parameter; any number between 0 and 1, not inclusive.

Each seasonal forecasting method uses some or all of these parameters, depending on the forecasting method. For example, the seasonal additive forecasting method does not account for trend, so it does not use the beta parameter.

The damped trend methods use phi in addition to the other three.

ARIMA Time-series Forecasting Methods

Autoregressive integrated moving average (ARIMA) forecasting methods were popularized by G. E. P. Box and G. M. Jenkins in the 1970s. These techniques, often called the Box-Jenkins forecasting methodology, have the following steps:

1. Model identification and selection
2. Estimation of autoregressive (AR), integration or differencing (I), and moving average (MA) parameters
3. Model checking

ARIMA is a univariate process. Current values of a data series are correlated with past values in the same series to produce the AR component, also known as p . Current values of a random error term are correlated with past values to produce the MA component, q . Mean and variance values of current and past data are assumed to be stationary, unchanged over time. If necessary, an I component (symbolized by d) is added to correct for a lack of stationarity through differencing.

In a nonseasonal ARIMA(p, d, q) model, p indicates the number or order of AR terms, d indicates the number or order of differences, and q indicates the number or order of MA terms. The p , d , and q parameters are integers equal to or greater than 0.

Cyclical or seasonal data values are indicated by a seasonal ARIMA model of the format:

$SARIMA(p,d,q)(P,D,Q)(t)$

The second group of parameters in parentheses are the seasonal values. Seasonal ARIMA models consider the number of time periods in a cycle. For a year, the number of time periods (t) is 12.

 **Note:**

In Predictive Planning charts, tables, and reports, seasonal ARIMA models do not include the (t) component, although it is still used in calculations.

Predictive Planning ARIMA models do not fit to constant datasets or datasets that can be transformed to constant datasets by nonseasonal or seasonal differencing. Because of that feature, all constant series, or series with absolute regularity such as data representing a straight line or a saw-tooth plot, do not return an ARIMA model fit.

Estimation of ARIMA Model Coefficients

For a given ARIMA model, Predictive Planning uses the unconditional least square method to estimate model coefficients. Instead of using matrix algebra, a simpler iterative scheme is used (Box, G. E. P., Jenkins, G. M., and Reinsel, G. C. *Time Series Analysis: Forecasting and Control*. 4th ed. Hoboken, NJ: John Wiley & Sons. 2008.).

ARIMA Equations

- Equation for a p-th order autoregressive (AR) model — that is, AR(p) model:

$$y_t = C + \phi_1 y_{t-1} + \phi_2 y_{t-2} + \dots + \phi_p y_{t-p} + \varepsilon_t$$

Where $\{y_t\}$ is the data on which the ARMA model is to be applied. That means, the series is already power-transformed and differenced, in that order. The parameters ϕ_1, ϕ_2 and so on are AR coefficients.

- Equation for a q-th order moving average (MA) model — that is, MA(q) model:

$$y_t = C + \varepsilon_t - \theta_1 \varepsilon_{t-1} - \theta_2 \varepsilon_{t-2} - \dots - \theta_q \varepsilon_{t-q}$$

Where $\{y_t\}$ is as defined previously and θ_1, θ_2 and so on are MA coefficients.

- Equation for an ARMA(p,q) model:

$$y_t = C + \phi_1 y_{t-1} + \phi_2 y_{t-2} + \dots + \phi_p y_{t-p} + \varepsilon_t - \theta_1 \varepsilon_{t-1} - \theta_2 \varepsilon_{t-2} - \dots - \theta_q \varepsilon_{t-q}$$

Where $\{y_t\}, \phi_1, \phi_2, \dots, \theta_1, \theta_2, \dots$ are as defined previously.

- Equation for a SARMA(p,q)(P,Q) model (seasonal):

$$y_t = C + \sum_{i=1}^p \phi_i y_{t-i} + \sum_{i=1}^P \Phi_i y_{t-is} + \varepsilon_t - \sum_{i=1}^q \theta_i \varepsilon_{t-i} + \sum_{i=1}^Q \Theta_i \varepsilon_{t-is}$$

Where $\{y_t\}$, $\{\phi\}$, and $\{\theta\}$ are as defined previously, and $\{\Phi\}$ and $\{\Theta\}$ are the seasonal counterparts.

ARIMA Constants

The constant term in an ARIMA equation introduces deterministic trend into the model and extends that trend indefinitely into the future. If the model includes a single difference (either nonseasonal or seasonal) and the constant term is present, the trend is linear, where a twice-differenced model has quadratic trend. The AutoSelect setting for ARIMA constants in the Predictor ARIMA Options dialog leaves out the constant term in the model if it contains one or more nonseasonal or seasonal differences.

When the constant term is included in the model, the value of the term is calculated by the following equation:

$$C = \mu \times (1 - \sum \phi_i) (1 - \sum \Phi_i)$$

Where ϕ_i are nonseasonal AR coefficients, Φ_i are seasonal AR coefficients, and μ is the mean of the series.

Stationarity

ARIMA time-series forecasting assumes that the time series mean, variance, and autocorrelation are stationary over time. This characteristic is called stationarity. If a time series statistic has nonstationarity, it must be adjusted:

- **Nonstationarity in the mean:** In this case, the mean is not constant but drifts slowly. This can be true for both seasonal and nonseasonal series and is removed by differencing the series. The automatic ARIMA implementation of Predictor determines the amount of nonseasonal differencing required to make a series stationary by using repeated KPSS (Kwiatkowski-Phillips-Schmidt-Shin) tests with appropriate alpha values. For seasonal series, repeated Canova-Hansen tests with appropriate alpha values are used.
- **Nonstationarity in variance:** In this case, the time series is heteroscedastic; the variance of the data around the mean changes over time. This nonstationarity in variance is removed by applying the Box-Cox transformation, a special type of power transformation:

$$z_t = \frac{y_t^\lambda - 1}{\lambda}$$

, if lambda is not equal to 0

$$= \ln(y_t)$$

, if lambda equals 0

Where the original series is $\{x_t\}$, the transformed series is $\{z_t\}$, and the power transformation constant is lambda (λ).

Predictive Planning determines a suitable value of lambda with an algorithm that uses the seasonality information to divide the dataset into groups, and then tries to find a lambda value that renders the variance stationary across groups.

For users who want more control over the Box-Cox transformation, Predictive Planning provides commonly used power-transformation options, such as log transformation (lambda = 0) or square-root transformation (lambda = 0.5), and even a custom transformation with a user-selected lambda between -5 and +5 (inclusive). However, Predictive Planning prevents the use of custom lambda values that would result in transformed values being too large or too small.

Time-series Forecasting Error Measures

One component of every time-series forecast is the data's random error that is not explained by the forecast formula or by the trend and seasonal patterns. The error is measured by fitting points for the time periods with historical data and then comparing the fitted points to the historical data.

RMSE

RMSE (root mean squared error) is an absolute error measure that squares the deviations to keep the positive and negative deviations from cancelling out one another. This measure also tends to exaggerate large errors, which can help eliminate methods with large errors.

Forecasting Method Selection and Technique

Predictive Planning uses the following process for forecasting method selection:

- All of the nonseasonal forecasting methods and the ARIMA method are run against the data.
- If the data is detected as being seasonal, the seasonal forecasting methods are run against the data.
- The forecasting method with the lowest error measure (for example, RMSE) is used to forecast the data.

Predictive Planning uses only standard forecasting for time-series forecasting to select the best method. Standard forecasting uses the error measure between the fit values and the historical data for the same period. (Other methods, such as simple lead, weighted lead, and holdout are not used.)