PARTNER

DV330_Exercise01: Book Sales Forecast with SAC Predictive Planning

This document will guide you step-by-step through the process of training and implementing a predictive planning model in SAP Analytics Cloud for Book Sales Forecast.

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DISCLAIMER

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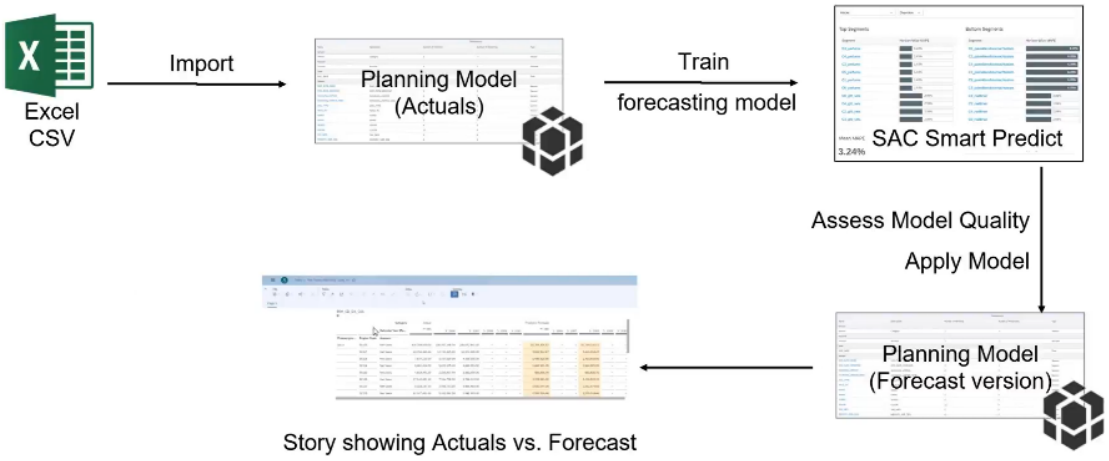
OBJECTIVE

The objective of this exercise is to give you an overview of how you can use the automated machine learning capabilities in SAP Analytics Cloud for predictive planning. You will use the SAC Smart Predict time series forecasting algorithm that will automatically forecast sales per book genre for the next 12 months and integrate the forecast into a planning model.

SAP Analytics Cloud allows you to create planning models and run predictive time series forecasts on your data within a story grid or table.
Planning models can be used as data sources for predictive scenarios. This means you get to add predictive forecasts directly to your planning models. You can easily combine dimensions to split your data into entities, getting forecasts for each entity to improve predictive accuracy and confidence.
When using a planning model, the input version must be a public version (not in edit mode), or a private version.
Smart Predict uses the data available in your planning model to create and train a predictive model. You can then analyze predictive forecast accuracies across the combined dimension values and understand signal breakdown in details. Once you are satisfied with the accuracy of your predictive model, you can generate the predictive forecasts: they are saved back directly in the private version of your planning model. It's then easy for you to augment your story with actual and predictive forecasts.
After analyzing the results in a story, the values can then be published to a public version.

SCENARIO

This exercise uses the book sales data per genre that is available as a csv file that you can upload into SAP Analytics Cloud. The sales data is aggregated per genre per month. You will create a planning model, use the sales data for time series forecasting to forecast the sales per genre for each month over the next 12 months, and integrate the forecast into the planning model.



ENVIRONMENT ACCESS

Explanation	Screenshot
Login to your SAP Analytics Cloud (SAC) environment with the user and password given to you by the instructors. Use Google Chrome to launch SAC.	

STEP 1 – ACCESS THE DATA

The data for this exercise are in the GitHub repository: monthly_sales_per_genre.csv. There are three columns: Month (from 2011-01 up to 2021-08); cluster (there are 8 genre clusters, with IDs from 1 up to 8); and Book Sales per cluster.

Month	cluster	Book Sales
2011-01	1	7
2011-01	2	1
2011-01	3	0
2011-01	4	0
2011-01	5	14
2011-01	6	8
2011-01	7	1
2011-01	8	0
2011-02	1	13
2011-02	2	0
2011-02	3	0
2011-02	4	0
2011-02	5	15
2011-02	6	8
2011-02	7	2
2011-02	8	0
2011-03	1	16
2011-03	2	1
2011-03	3	0
2011-03	4	0
2011-03	5	19
2011-03	6	5
2011-03	7	0
2011-03	8	0
2011-04	1	32
2011-04	2	1
2011-04	3	0
2011-04	4	0

Upload the CSV file by executing the following steps:

a. In the Side Navigation Menu select Modeler.

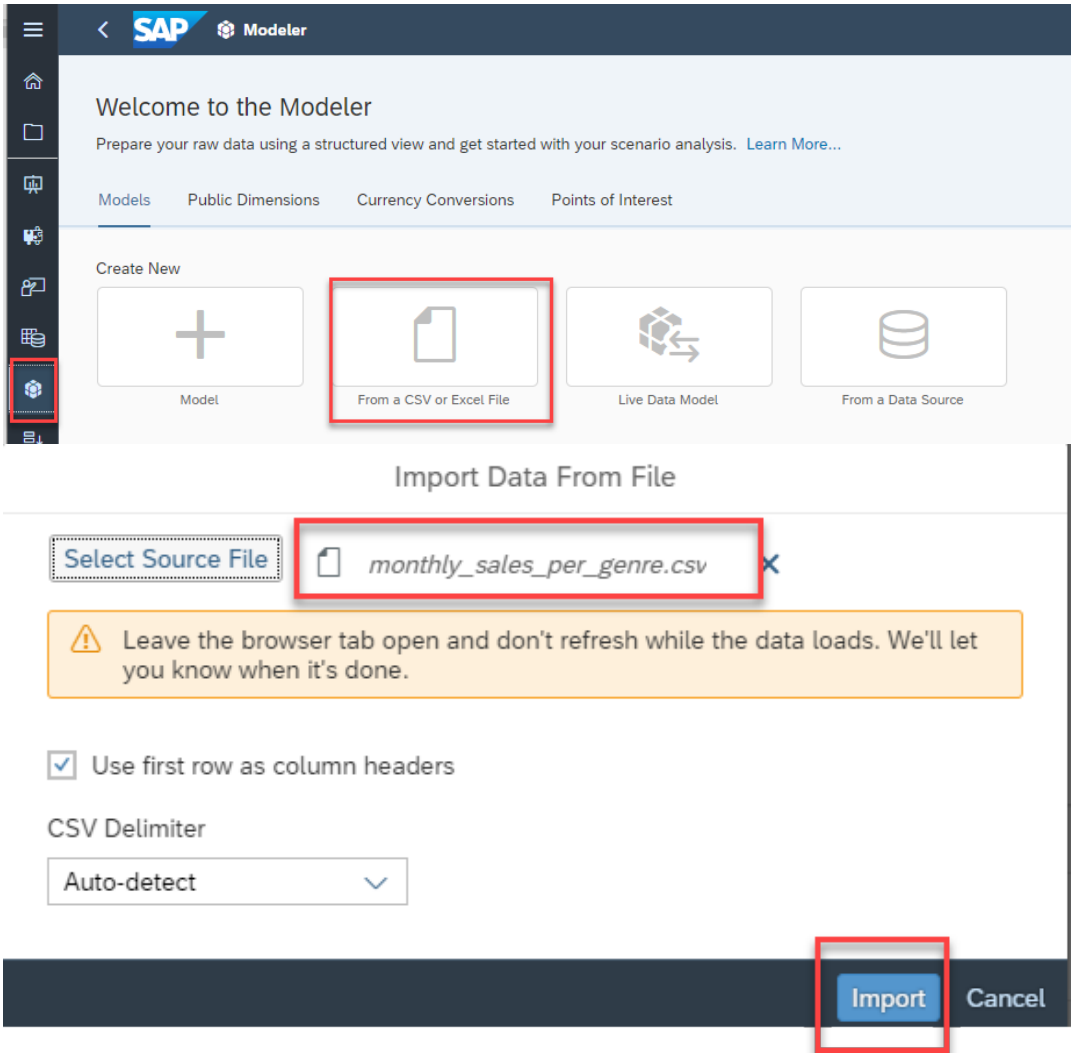
b. Select From a CSV or Excel File.

c. On the pop-up menu click “Select Source File”.

d. Navigate to the CSV file (monthly_sales_per_genre.csv).

e. Click Open.

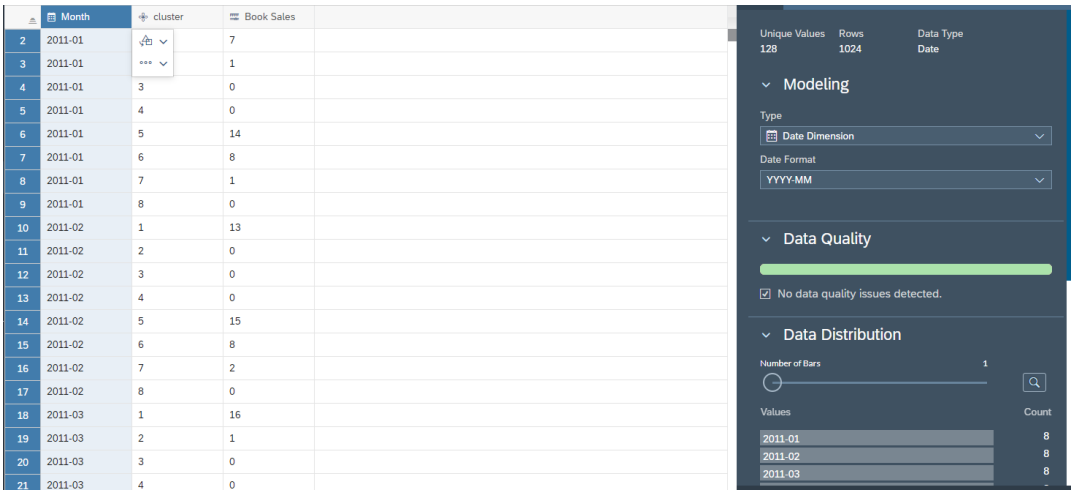
f. Click Import.



Ensure that the data types are discovered correctly.

Click on each individual column and check the Type in the dialogue box on the right side:

- cluster as Generic Dimension;
- Month as Date Dimension (YYYY-MM);
- Book Sales as Measure.



STEP 2 – CREATE THE DATA MODEL

Set model options:

a. Click the cube icon in the right-side dialogue box.

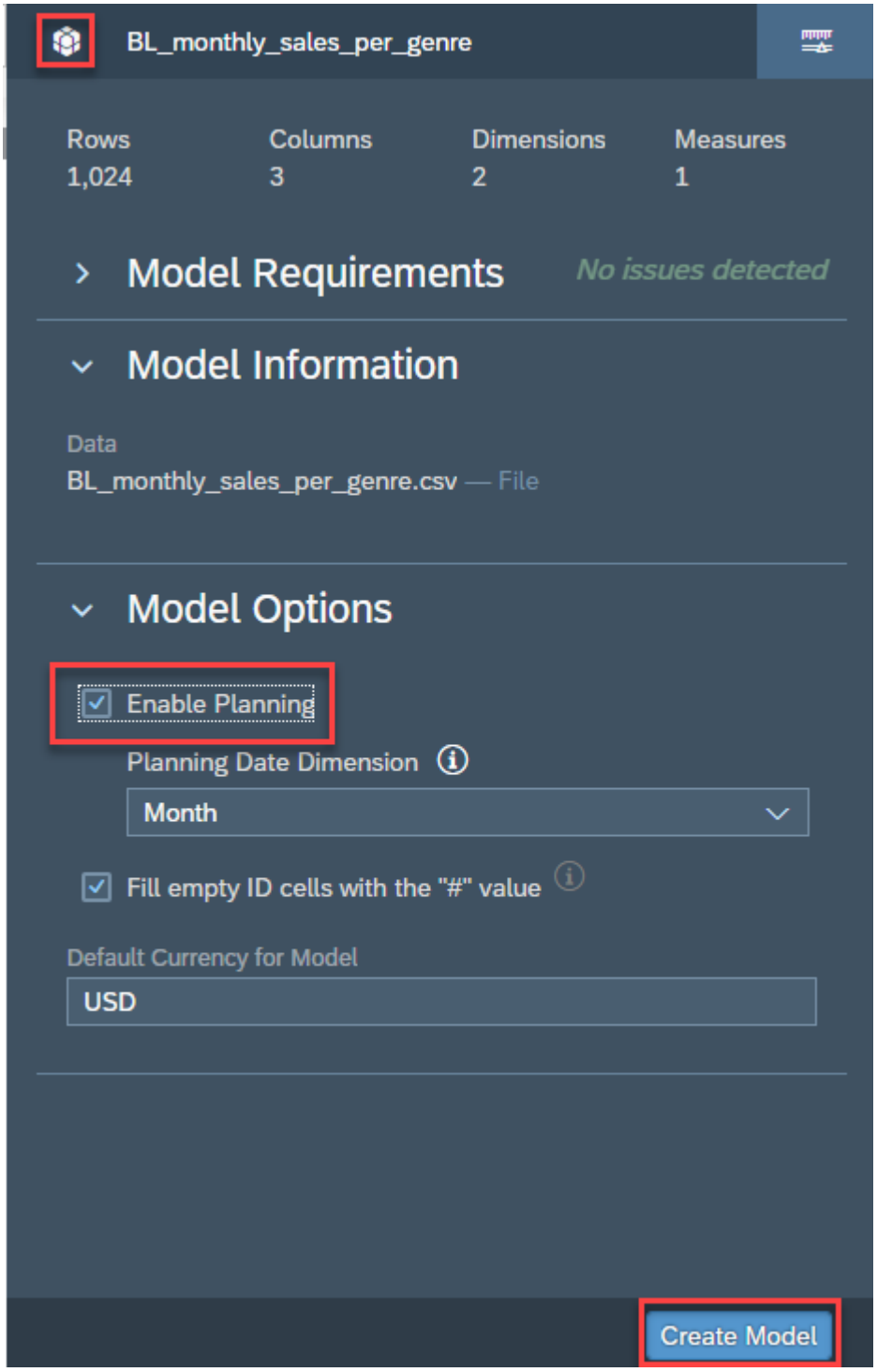
b. Under Model Options check the “Enable Planning” check box.

c. In the right-side dialogue box, click “Create Model”.

d. On the pop-up menu click Create.

e. Name your data model “book_sales_your username”.

f. Click OK.



Update the planning range:

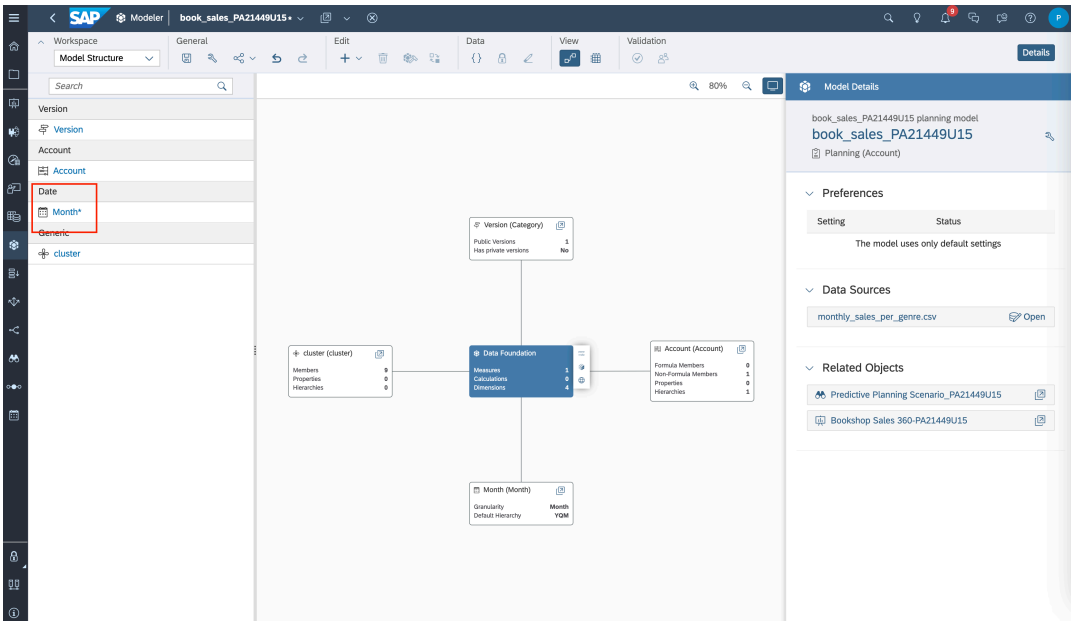
a. In the toolbar Workspace dropdown, select “Model Structure”.

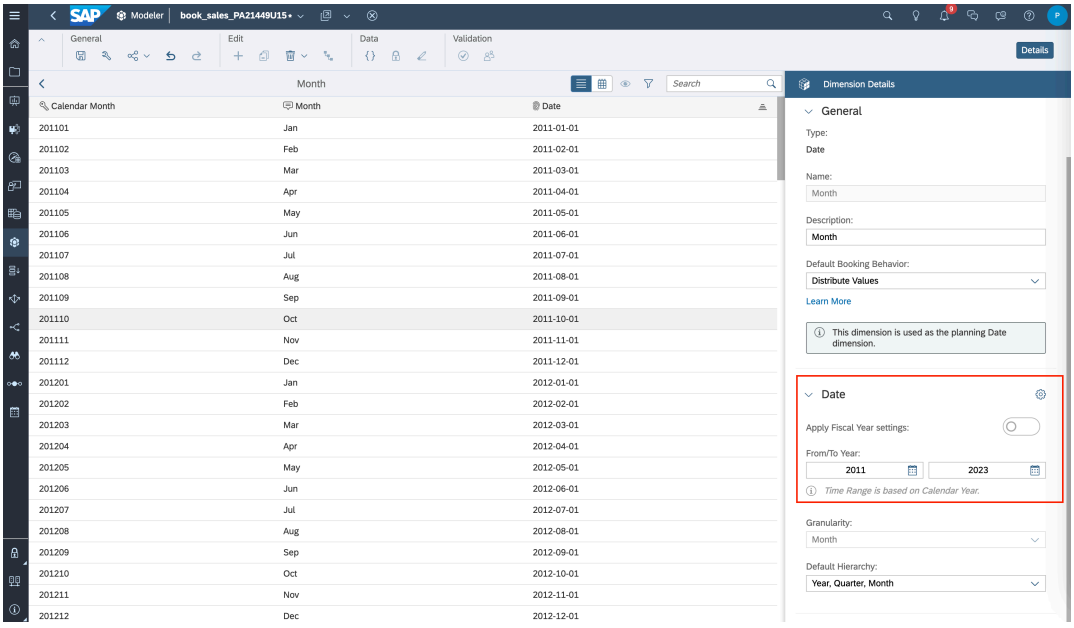
b. On the left-hand side of the screen, click on the planning date dimension, that is Month.

c. As you want to make predictions for 12 months up to end of August 2022, you need to extend the planning period at least until 2022 in order to make space for writing the predictions.

d. Extend the range properly.

e. In the General toolbar, click Save.





STEP 3 – CREATE STORY AND PRIVATE PLANNING VERSION

Create a story:

a. In the Side Navigation Menu select Stories.

b. Select Canvas.

c. Select Table.

d. Click Existing Model.

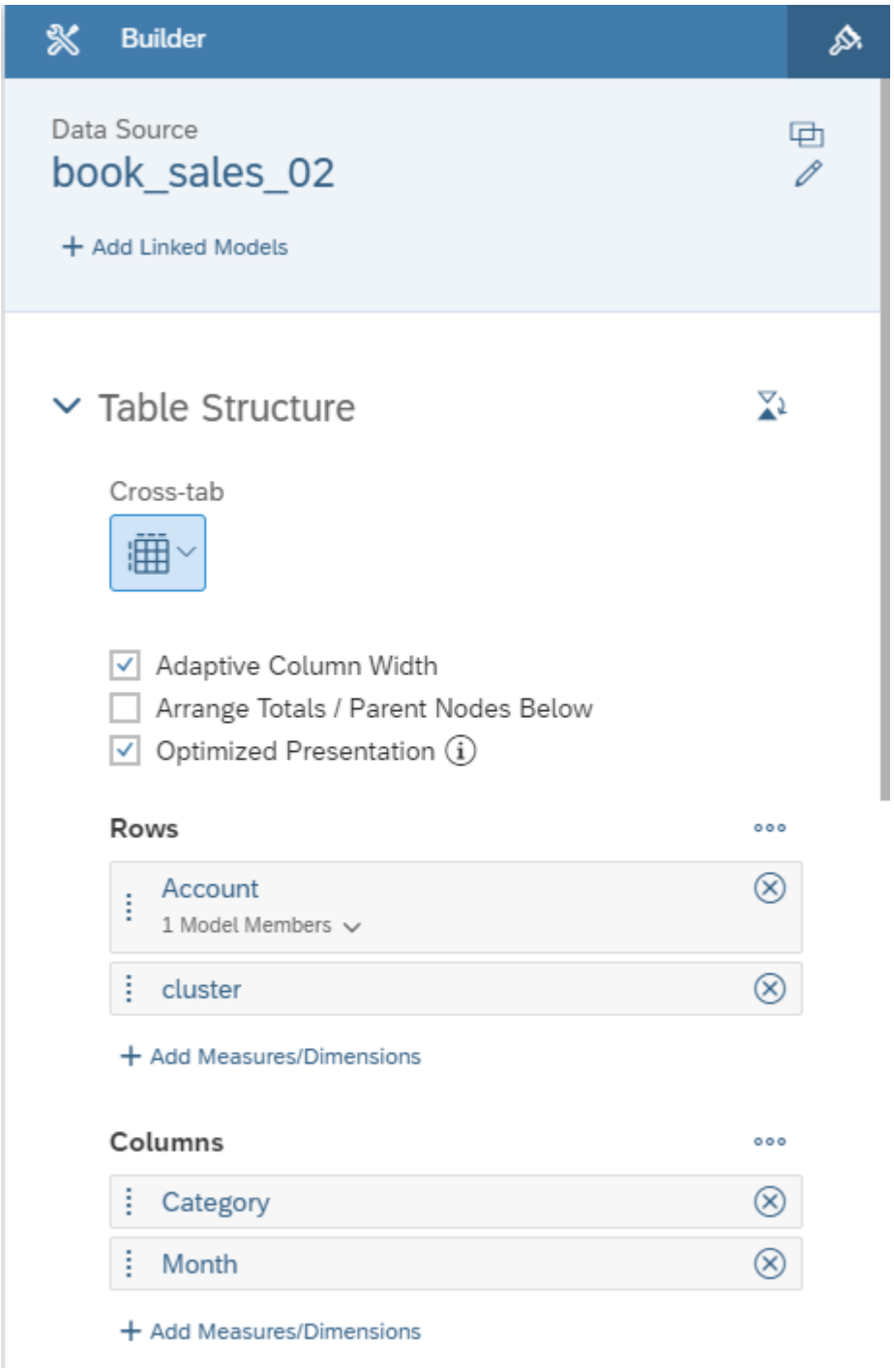
e. In the dropdown, click “Select other model”.

f. Navigate to your data model “book_sales_##” and select it.

g. Click on the table that has been created.

h. In the Builder dialogue box on the right side, under Rows, click “Add Measures/Dimensions”. Then check cluster.

i. Under Columns, click “Add Measures/Dimensions”. Then check Month.



The table will now be as shown here. Click on the arrow in the Actual column to expand the columns. Examine the data.

book_sales_02

	Category	Actual							
	Month	(all)	2011	2012	2013	2014	2015	2016	2017
Account	cluster								
Book Sales	1	34,819.00	609.00	1,164.00	1,392.00	1,504.00	3,551.00	5,768.00	5,143.00
	2	15,507.00	24.00	248.00	472.00	713.00	1,492.00	2,259.00	2,633.00
	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	57,488.00	757.00	1,348.00	1,875.00	2,368.00	4,949.00	8,484.00	8,068.00
	6	14,534.00	130.00	184.00	446.00	593.00	1,423.00	2,342.00	2,286.00
	7	2,329.00	25.00	58.00	87.00	93.00	198.00	387.00	367.00
	8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Create a Private Planning Version:

a. Click on the table.

b. In the toolbar menu in More / Tools, click Version Management.

c. Under Public Versions, click the Copy icon. This will open a dialogue so that you can copy the data to a private version.

d. In the Copy Data to Private Version dialogue, name the version Predictive Forecast_##.

e. Set Category drop-down to Forecast.

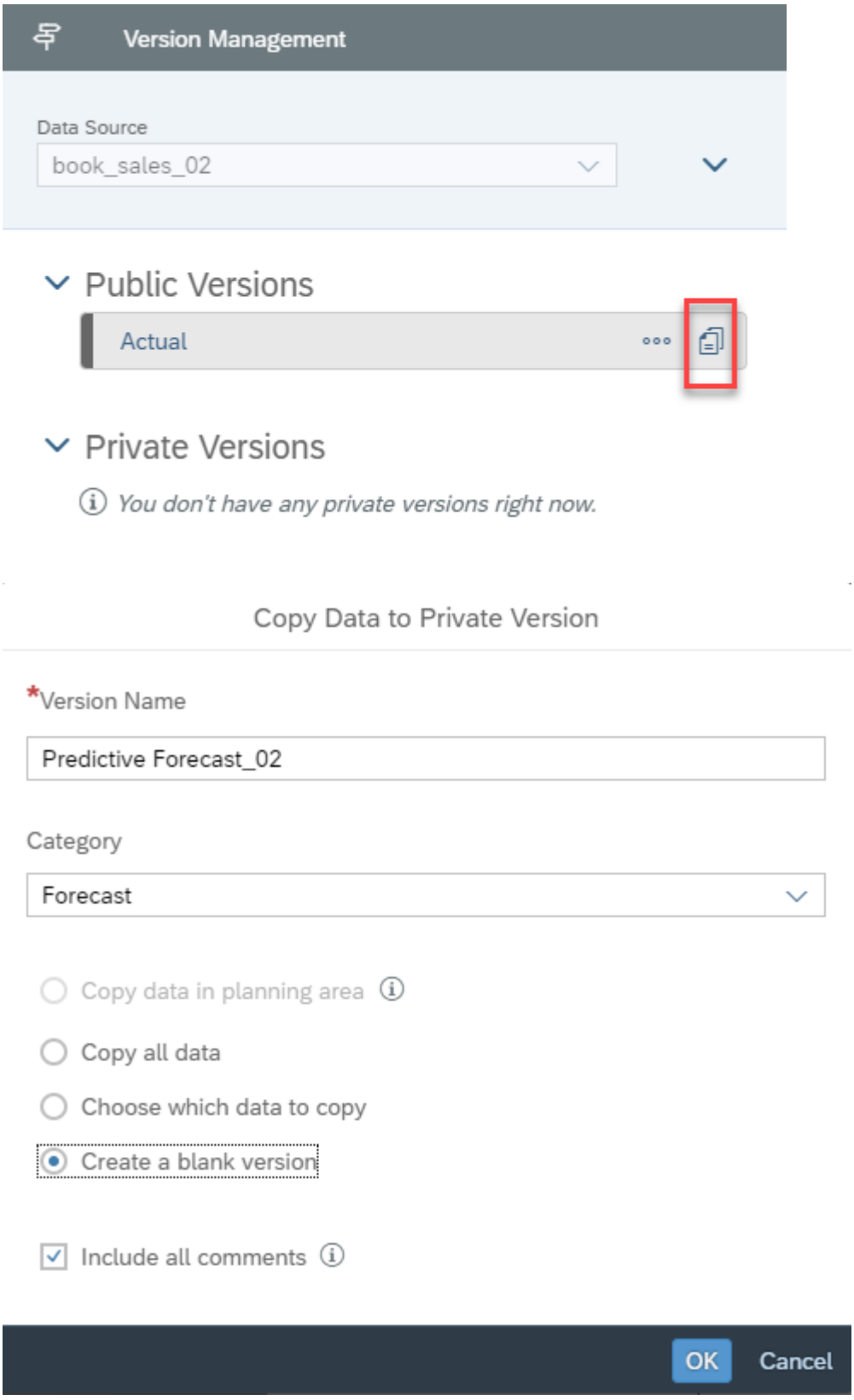
f. Select Create a blank version.

g. Click OK.

h. On the toolbar menu, click File / Save and select Save.

i. Name the story “Book Sales Story_##”.

j. Click OK.



STEP 4 – TRAIN THE FORECASTING MODEL IN SMART PREDICT

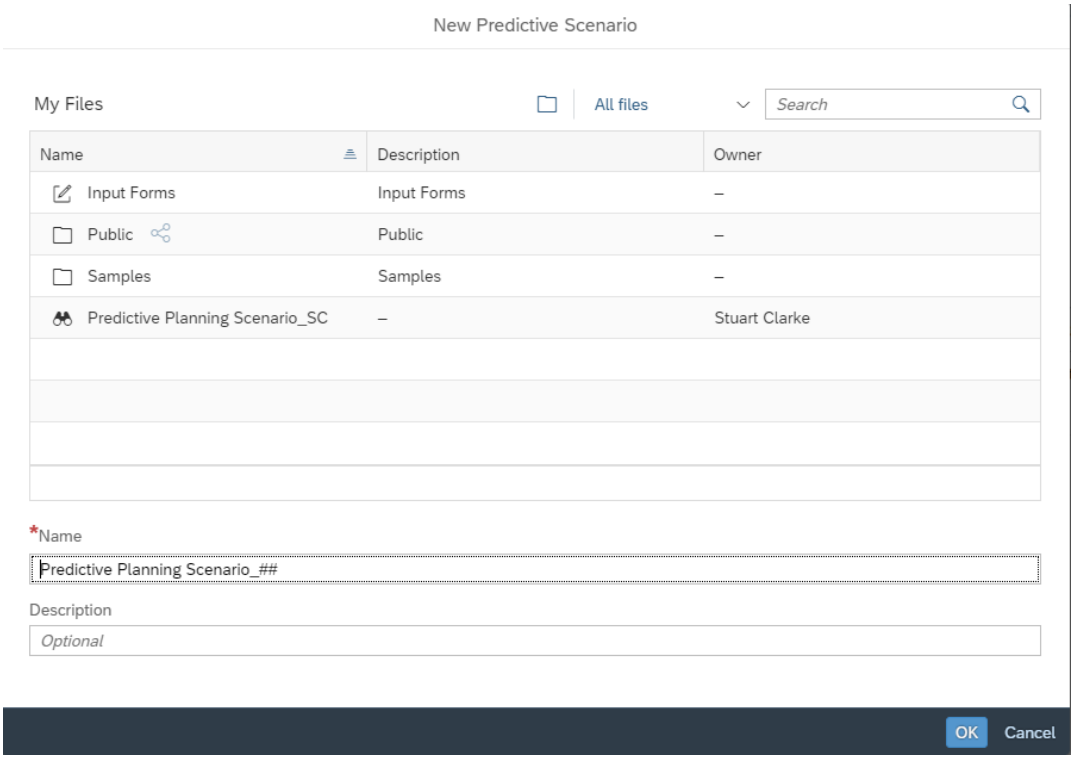
Create the Predictive Scenario:

a. In the Side Navigation Menu select “Predictive Scenarios”.

b. Select “Time Series Forecast”.

c. Name the Predictive Scenario “Predictive Planning Scenario_##”.

d. Click OK.



Build the Forecasting model:

a. In the Settings menu, in the “Time Series Data Source” box, navigate to your data model (book_sales_##) and select it.

b. On the Settings Panel under Predictive Goal / Target /Account, select Book Sales.

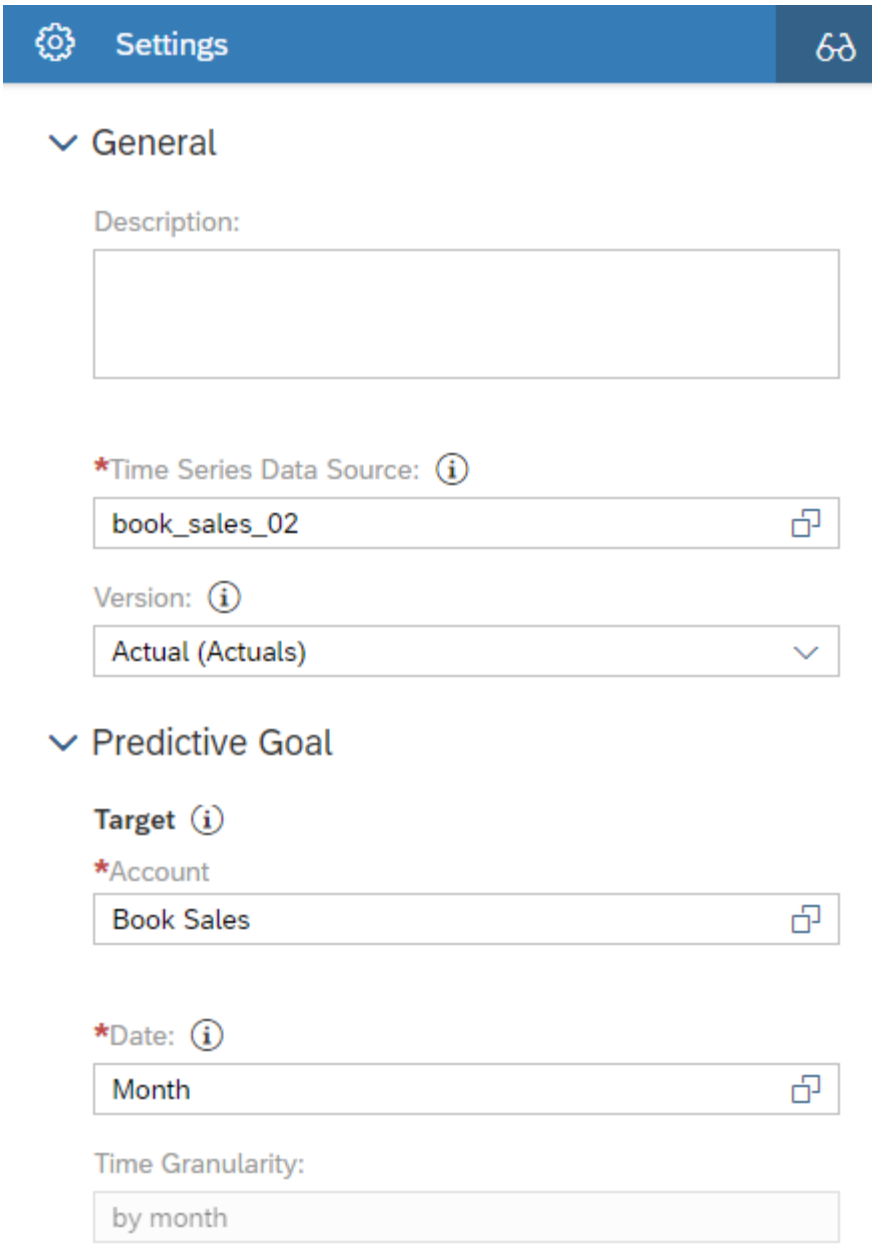
c. Under Date select Month.

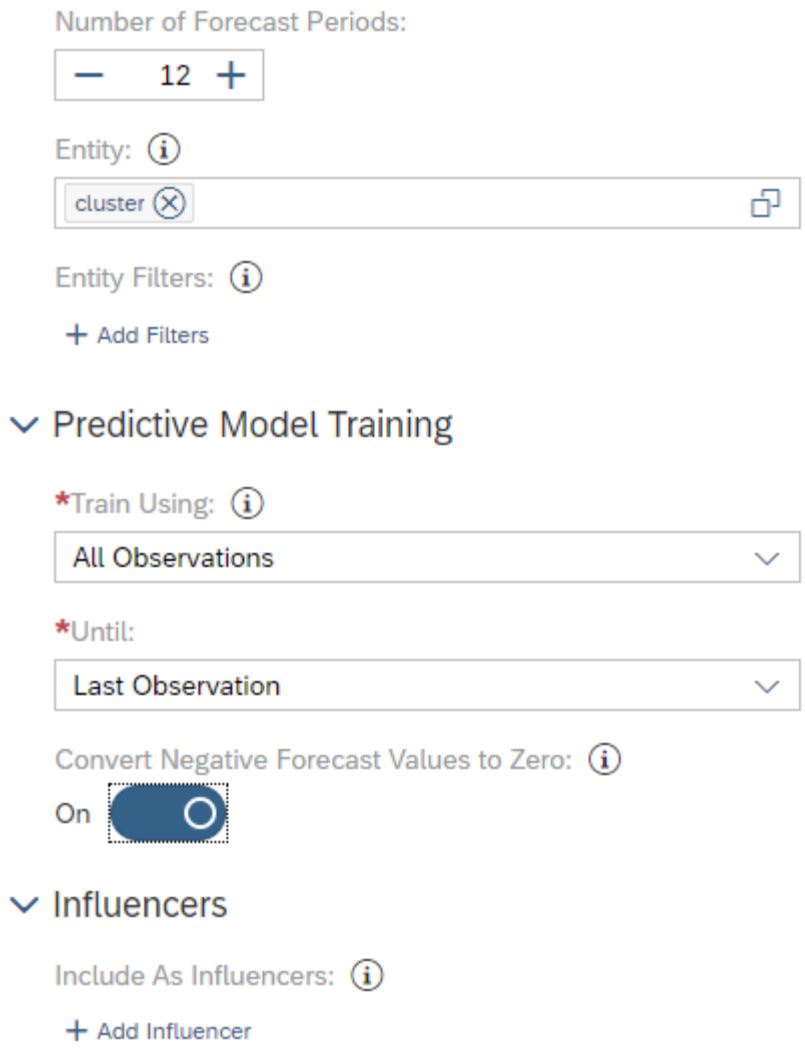
d. Set “Number Of Forecasts” to 12.

e. Click Entity and select cluster.

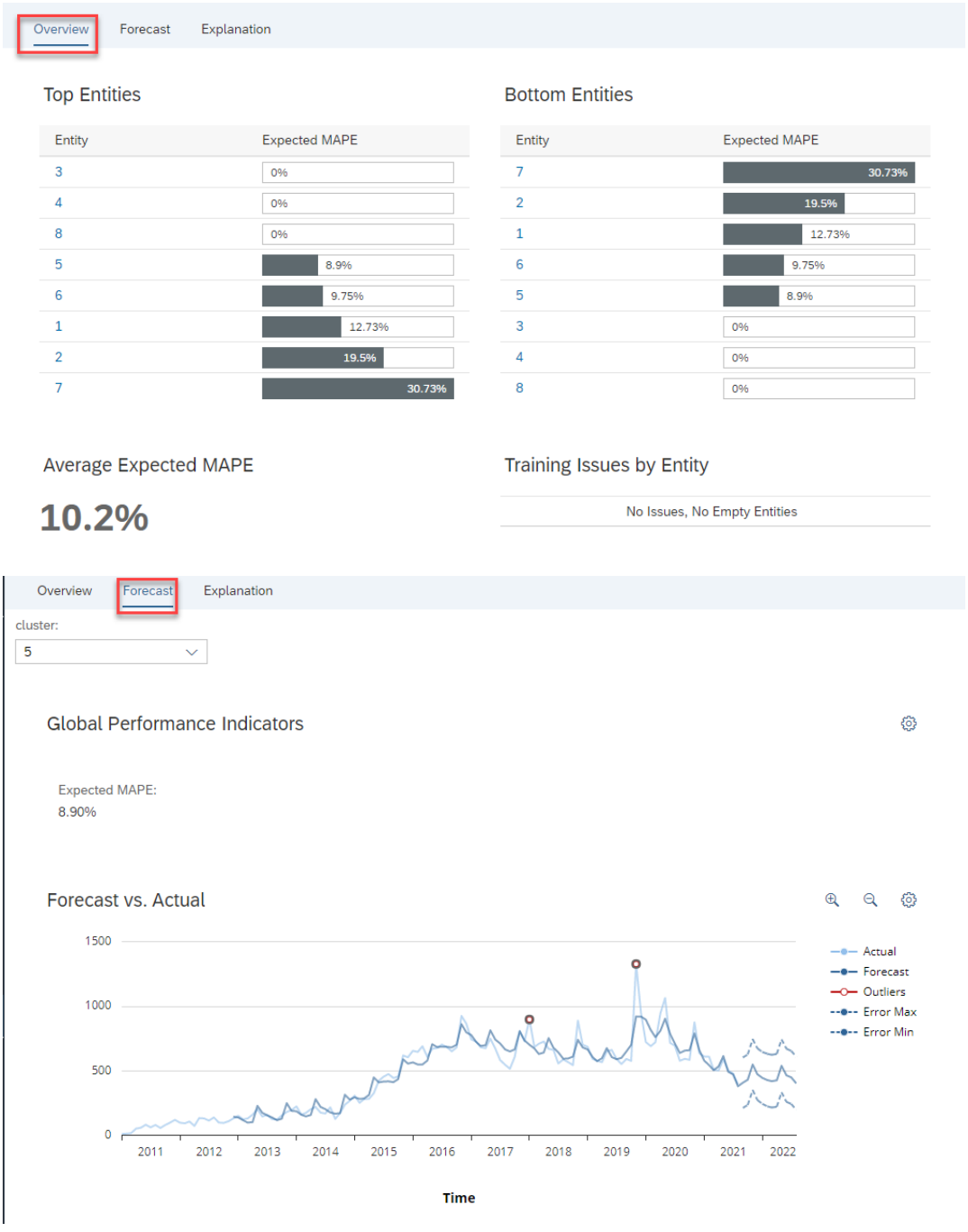
f. Set “Convert Negative Forecast values to Zero” to ON

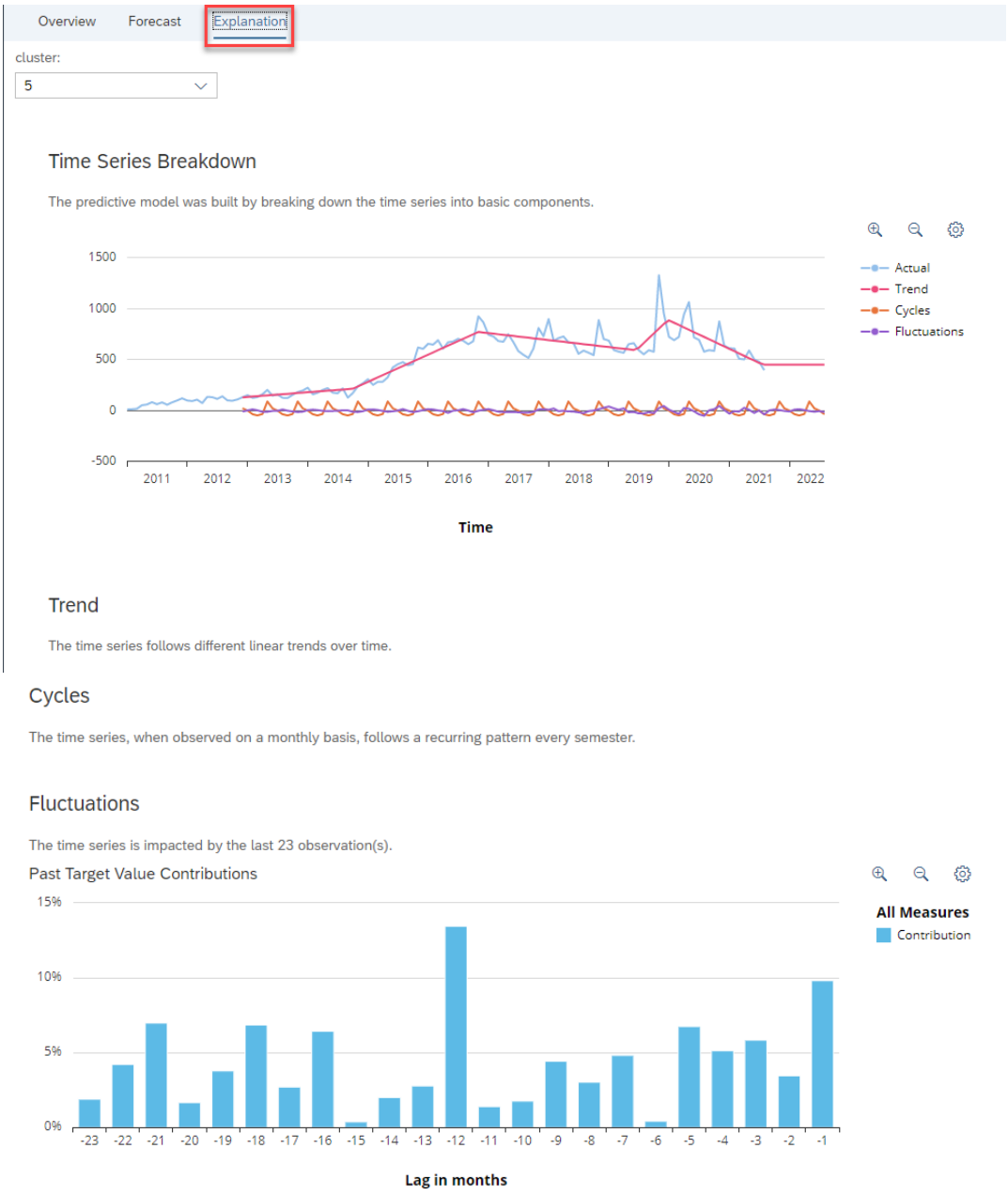
g. Click “Train & Forecast”.




Number of Forecast Periods:
12
Entity:
cluster
Entity Filters:
Add Filters
Predictive Model Training
*Train Using:
All Observations
*Until:
Last Observation
Convert Negative Forecast Values to Zero:
On
Influencers
Include As Influencers:
Add Influencer

Examine the Overview, Forecast and Explanation reports.

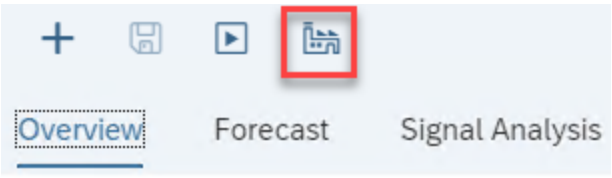


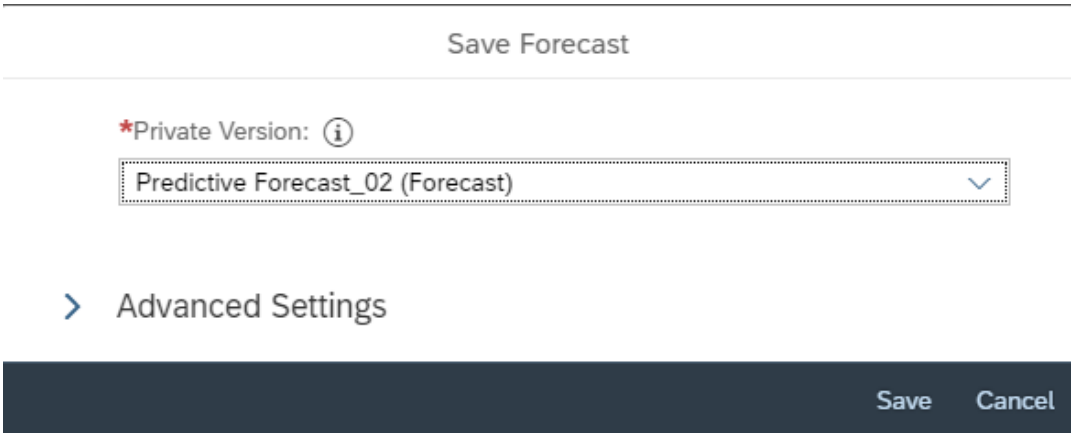


STEP 5 – WRITE BACK THE FORECASTS INTO THE PLANNING MODEL

Write Back the Predictive Forecasts into the planning model:

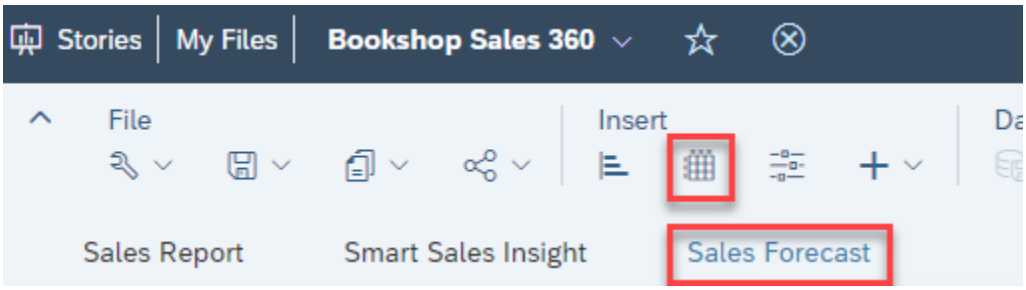
On the toolbar menu, click the Save Forecasts icon.

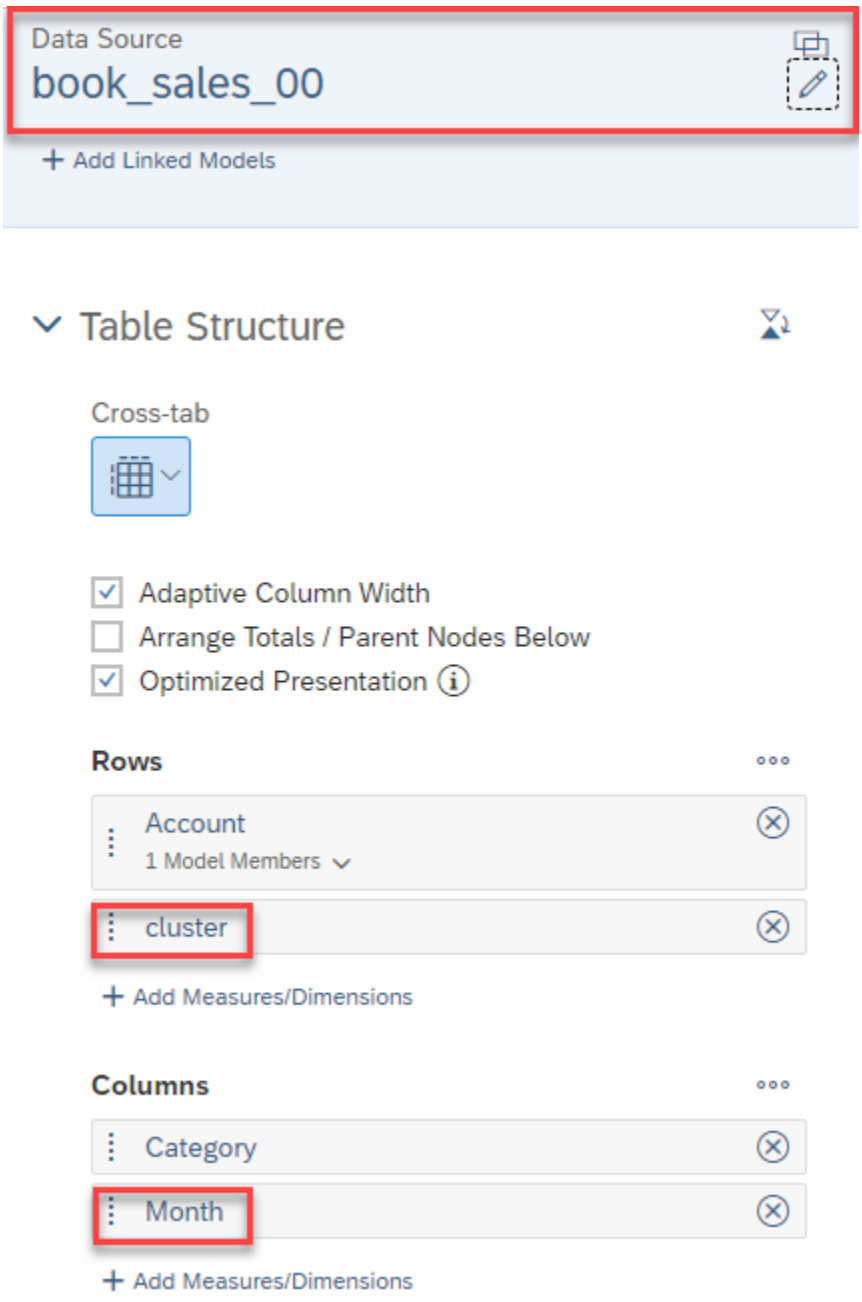


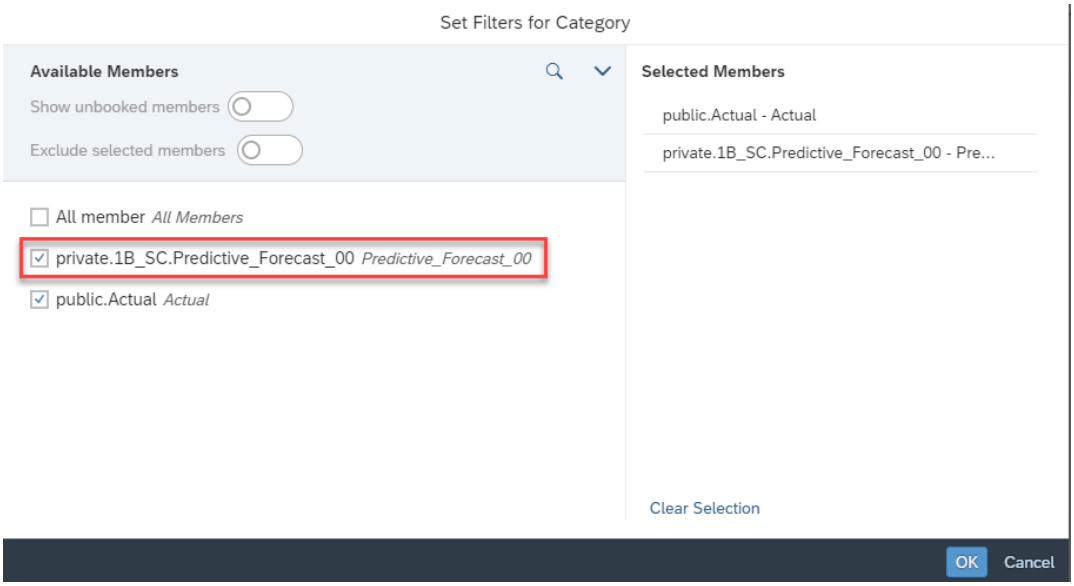
When the predictive model is applied, data are written to the private version of the planning model segmented by cluster.	
From the pop-up menu select the Predictive Forecast Version you have created. Click Save.	
Examine the Planning Model in the Story: a. In the Side Navigation Menu select Files. b. Select your story Book Sales Story_##. c. Click the arrow under Predictive Forecast to expand the date dimension and examine the quarterly/monthly predictive forecasts in 2021 and 2022	book_sales_02 Category / Month / Account / cluster Actual > (all) Predictive Forecast_02 > (all) Book Sales 1 34,819.00 2,887.93 2 15,507.00 1,607.44 3 0.00 0.00 4 0.00 0.00 5 57,488.00 5,458.54 6 14,534.00 1,665.39 7 2,329.00 339.60 8 0.00 0.00

You can resize the table to view Predictive columns: Click the table; click the three-dot menu; select Fullscreen. You can duplicate the browser tab: select the tab in Chrome, then right click / Duplicate. It will be easier to examine the Predictive results in the Story table.	

STEP 6 – ADD FORECASTS TO BOOKSHOP SALES 360 STORY

Explanation	Screenshot
Open Bookshop Sales 360 Story. In the page “Sales Forecast”, use Insert menu to insert a table.	

Explanation	Screenshot
Select the table. a. In the dialogue box on the right side, select the pencil icon next to the Data Source. b. In the warning pop-up, click OK. c. Click “Existing Model”. d. In the dropdown, click “Select other model”. e. Navigate to your data model book_sales_## and select it. f. Click on the table that has been created. g. In the Builder dialogue box on the right side, under Rows, click “Add Measures/Dimensions”. Then check cluster. h. Under Columns, click “Add Measures/Dimensions”. Then check Month.	

Explanation	Screenshot
a. In the dialogue box, in Filters, click over Category. b. Select the private version of the planning model you have created that includes the forecasts. This will add the forecasts to this Bookshop Sales 360 Story.	
Save the story.	
You have completed this predictive planning exercise.	