



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.

THE BEST RUN



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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.

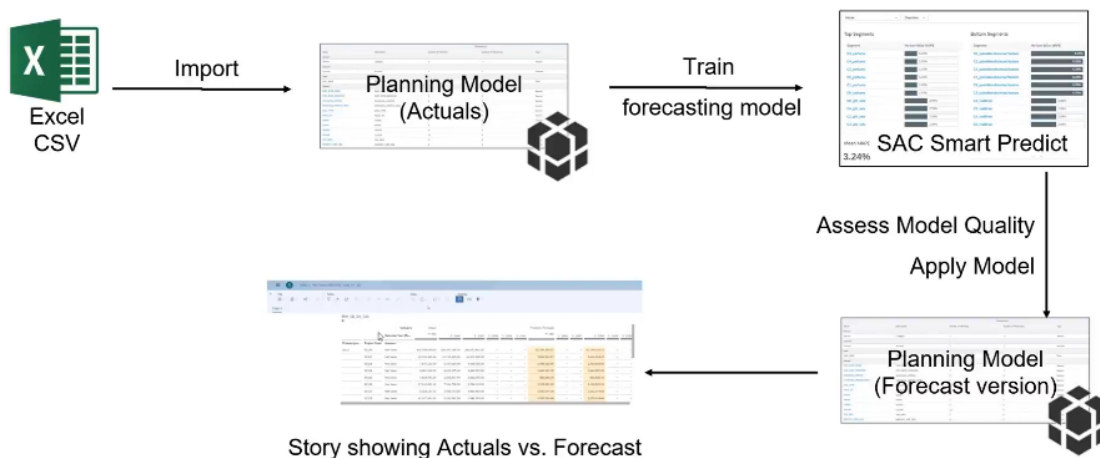
When using a planning model, the input version must be a public version (not in edit mode), or a private version.

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 |
|--|------------|
| <p>Login to your SAP Analytics Cloud (SAC) environment with the user and password given to you by the instructors.</p> <p>Use Google Chrome to launch SAC.</p> | |

STEP 1 – ACCESS DATA

The data for this exercise are [monthly_sales_per_genre.csv](#) in github repository. 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:

- In the Side Navigation Menu select Modeler
- Select From a CSV or Excel File
- On the pop-up menu click Select Source File
- Navigate to the CSV file (BL_monthly_sales_per_genre.csv)
- Click Open
- Click Import

Welcome to the Modeler

Prepare your raw data using a structured view and get started with your scenario analysis. [Learn More...](#)

Models Public Dimensions Currency Conversions Points of Interest

Create New

Model From a CSV or Excel File Live Data Model From a Data Source

Import Data From File

Select Source File *monthly_sales_per_genre.csv*

⚠ Leave the browser tab open and don't refresh while the data loads. We'll let you know when it's done.

☒ Use first row as column headers

CSV Delimiter

Auto-detect

Import Cancel

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

| 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 |

Unique Values: 128 Rows: 1024 Data Type: Date

Modeling

Type: Date Dimension

Date Format: YYYY-MM

Data Quality

No data quality issues detected.

Data Distribution

Number of Bars: 1

| Values | Count |
|---------|-------|
| 2011-01 | 8 |
| 2011-02 | 8 |
| 2011-03 | 8 |

STEP 2 – CREATE 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.
- d) In the right-side dialogue box, click Create Model.
- e) On the pop-up menu click Create.
- f) Name your data model
- book_sales_your username
- g) Click OK.

BL_monthly_sales_per_genre

| Rows | Columns | Dimensions | Measures |
|-------|---------|------------|----------|
| 1,024 | 3 | 2 | 1 |

> **Model Requirements** *No issues detected*

▼ **Model Information**

Data
BL_monthly_sales_per_genre.csv — File

▼ **Model Options**

☒ **Enable Planning**

Planning Date Dimension ⓘ
Month ▼

☒ Fill empty ID cells with the "#" value ⓘ

Default Currency for Model
USD

Create Model

Update Planning Model Settings:

- In the toolbar Workspace dropdown, select Model Structure
- In the General toolbar, click the Model Preferences icon (a wrench icon) to inspect which time period has been prepared
- On the pop-up menu, select Planning & Time Range
- As you want to make predictions for 12 months up to end August 2022, you need to extend the planning period until 31-08-2022 in order to make space for writing the predictions
- Click OK
- In the General toolbar, click Save

Model Preferences

General Settings
book_sales_02

Access and Privacy
Data Security

Fiscal Time
Off

Planning & Time Ra...
On

Currency
USD

Structure Priority
Account

Data and Performance
Data Performance

Planning & Time Range

On

Planning Capabilities:

Planning Capabilities support and streamline the planning process. These capabilities include data versions & categories with write-back functionalities in the story, time range settings, auditing, and security features.

Private Versions:

The model has no private versions.

Time and Planning

*Date Dimension used for Planning:

Month

*From:

Jan 1, 2011

*To:

Aug 31, 2022

OK

Cancel


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 screenshot shows the Tableau Builder interface. At the top, the header is blue with a wrench icon and the word "Builder". Below the header, the "Data Source" section shows "book_sales_02" with a copy icon and a pencil icon. A link "+ Add Linked Models" is present. The main section is titled "Table Structure" with a dropdown arrow and a refresh icon. Under "Table Structure", there is a "Cross-tab" section with a grid icon and a dropdown arrow. Below this, there are three checkboxes: "Adaptive Column Width" (checked), "Arrange Totals / Parent Nodes Below" (unchecked), and "Optimized Presentation" (checked with an info icon). The "Rows" section has a header "Rows" and a three-dot menu. It contains two items: "Account" with a dropdown arrow and a close icon, and "cluster" with a close icon. Below the rows is a link "+ Add Measures/Dimensions". The "Columns" section has a header "Columns" and a three-dot menu. It contains two items: "Category" with a dropdown arrow and a close icon, and "Month" with a close icon. Below the columns is a link "+ Add Measures/Dimensions".

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:

- Click on the table
- In the toolbar menu in More / Tools, click Version Management
- Under Public Versions, click the Copy icon. This will open a dialogue so that you can copy the data to a private version
- In the Copy Data to Private Version dialogue, name the version Predictive Forecast_##
- Set Category drop-down to Forecast
- Select Create a blank version
- Click OK
- On the toolbar menu, click File / Save and select Save
- Name the story Book Sales Story_##
- Click OK

Version Management

Data Source
book_sales_02

Public Versions

Actual

Private Versions

You don't have any private versions right now.

Copy Data to Private Version

*Version Name

Predictive Forecast_02

Category

Forecast

☐ Copy data in planning area ⓘ

☐ Copy all data

☐ Choose which data to copy

☒ Create a blank version

☒ Include all comments ⓘ

OK
Cancel

STEP 4 – TRAIN FORECASTING MODEL IN SMART PREDICT

Create Predictive Scenario:






- In the Side Navigation Menu select Predictive Scenarios
- Select Time Series Forecast
- Name the Predictive Scenario, Predictive Planning Scenario_##
- Click OK

New Predictive Scenario

My Files

All files

Search

| Name | Description | Owner |
|--|-------------|---------------|
|  Input Forms | Input Forms | – |
|  Public  | Public | – |
|  Samples | Samples | – |
|  Predictive Planning Scenario_SC | – | Stuart Clarke |
| | | |
| | | |
| | | |
| | | |

*Name

Predictive Planning Scenario_##


Description

Optional


OK

Cancel


Build 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 Force Positive Forecasts to ON
g) Click Train & Forecast.


 Settings


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 General


Description:


*Time Series Data Source: 

book_sales_02


Version: 


Actual (Actuals)


 Predictive Goal

Target 

*Account

Book Sales

*Date: 

Month

Time Granularity:

by month

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: ⓘ

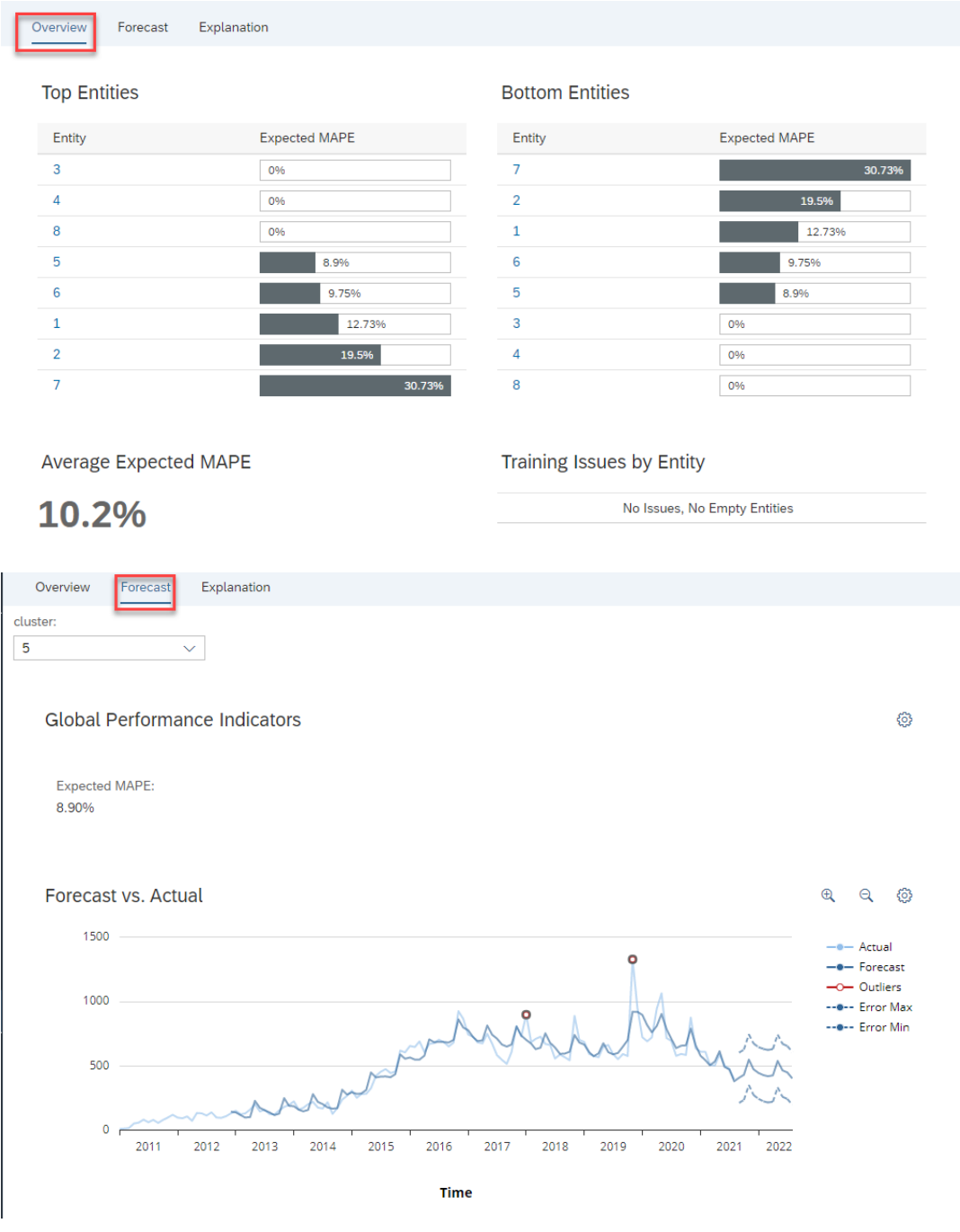
On ☒

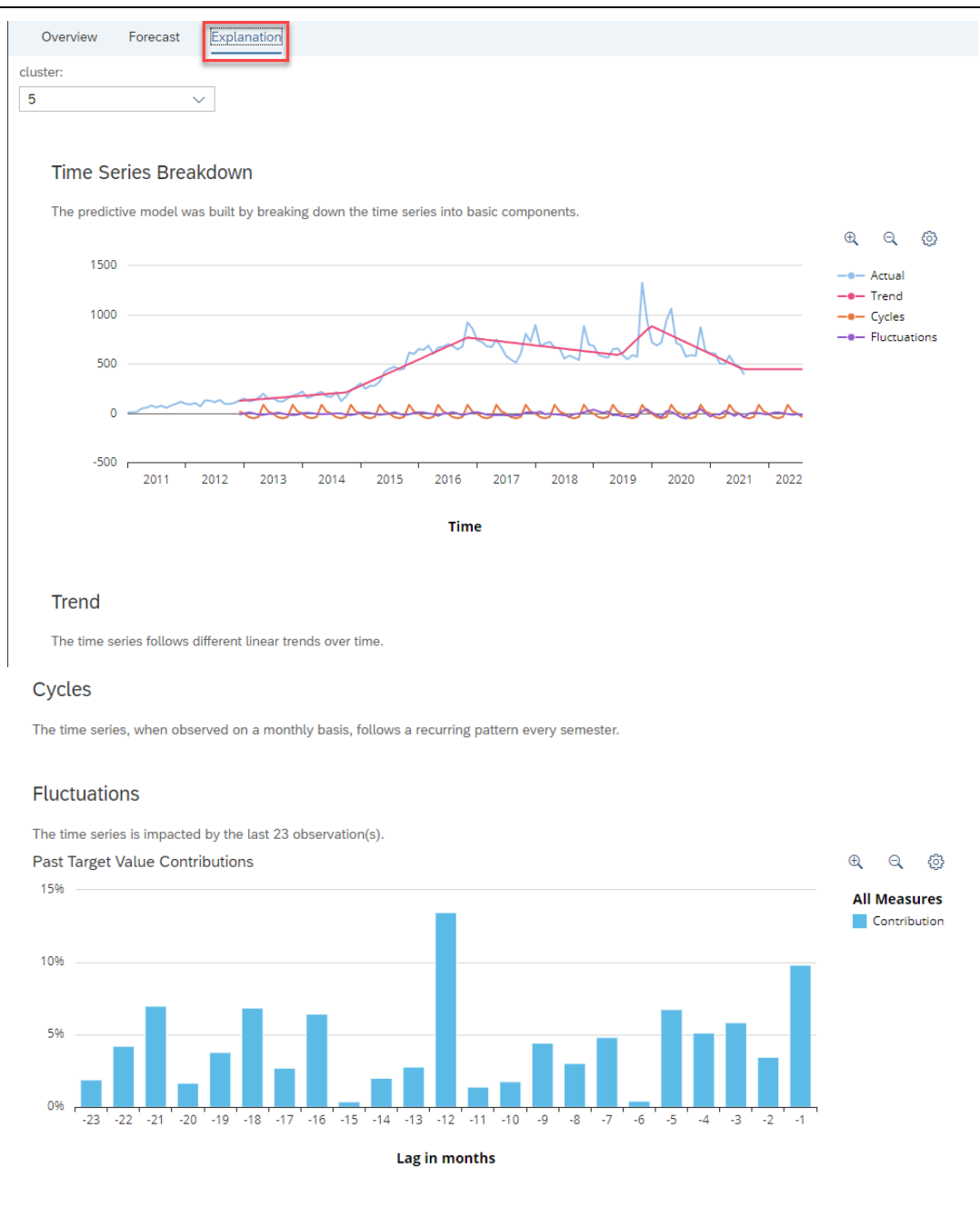
▼ Influencers

Include As Influencers: ⓘ

+ Add Influencer

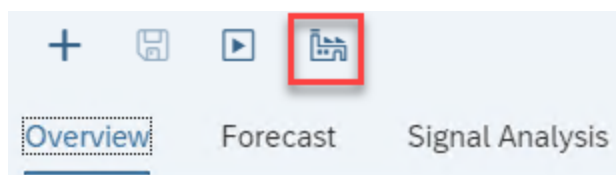
Examine the Overview, Forecast and Explanation reports.





STEP 5 – WRITE BACK FORECASTS INTO PLANNING MODEL

Write Back Predictive Forecasts into planning model:
a) 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.

Save Forecast

*Private Version: ⓘ

Predictive Forecast_02 (Forecast) ▾

> Advanced Settings

Save Cancel

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 | | Actual | Predictive Forecast_02 |
|------------|---------|-----------|------------------------|
| Month | | > (all) | > (all) |
| Account | cluster | | |
| 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 |

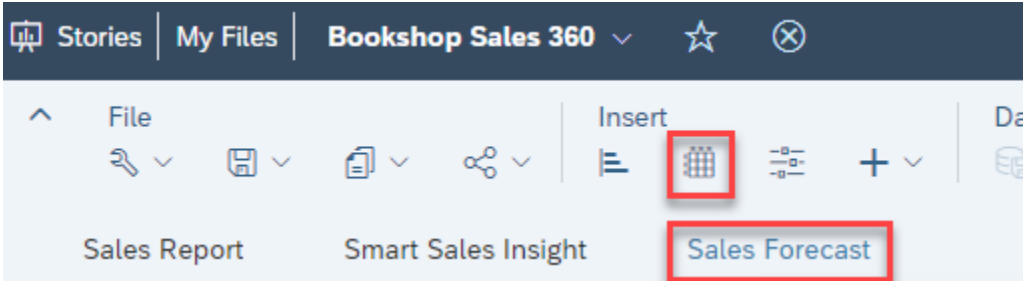
You can resize the table to view Predictive columns. (Click the table. Click the three-dot menu. Select Fullscreen). You can duplicate the browser tab - Select the tab in Chrome, then right click / Duplicate. It will be easier to

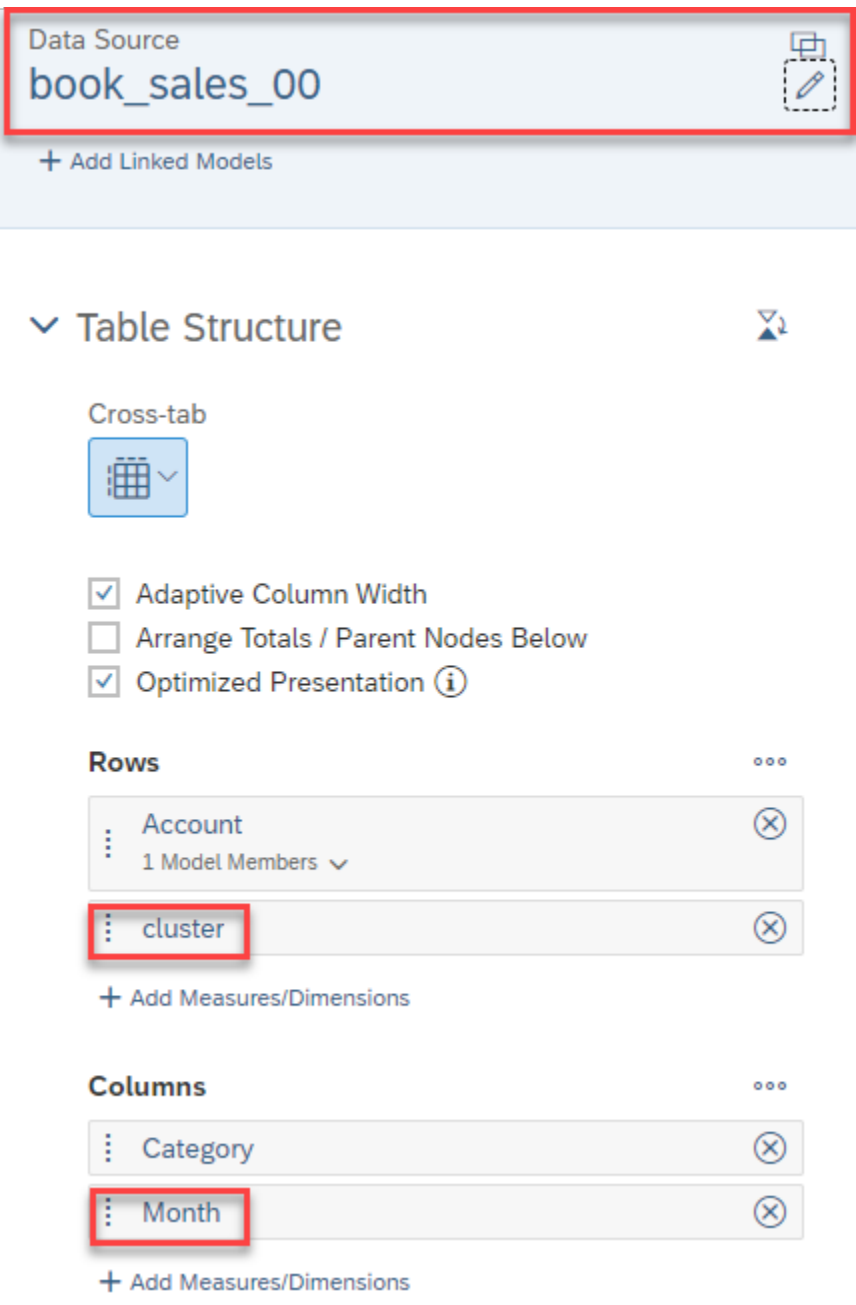
Q3 (2021) Jul (2021) Aug (2021) Sep (2021) Q4 (2021) Oct (2021) Nov (2021) Dec (2021) 2022 Q1 (2022) Jan (2022) Feb (2022) Mar (2022) Q2 (2022) Q3 (2022)

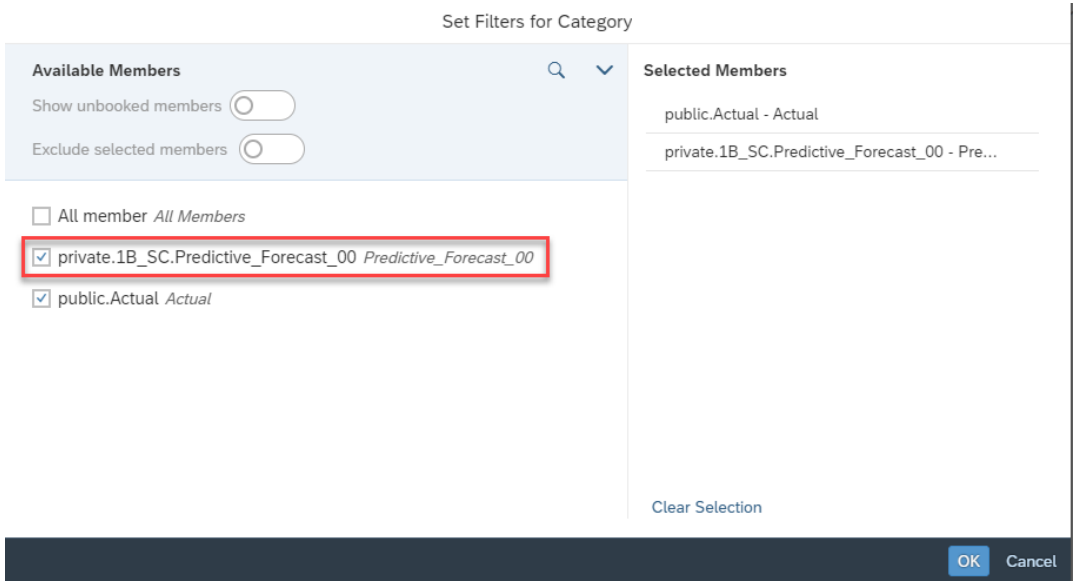
| | | | | | | | | | | | | | | |
|--------|---|---|--------|----------|--------|--------|--------|----------|----------|--------|--------|--------|----------|--------|
| 240.66 | - | - | 240.66 | 721.98 | 240.66 | 240.66 | 240.66 | 1,925.29 | 721.98 | 240.66 | 240.66 | 240.66 | 721.98 | 481.32 |
| 132.55 | - | - | 132.55 | 399.16 | 132.80 | 133.06 | 133.31 | 1,075.72 | 401.46 | 133.57 | 133.83 | 134.07 | 403.77 | 270.49 |
| 0.00 | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 410.26 | - | - | 410.26 | 1,458.13 | 432.87 | 550.37 | 474.90 | 3,590.15 | 1,298.56 | 447.01 | 429.99 | 421.57 | 1,435.62 | 855.97 |
| 130.53 | - | - | 130.53 | 464.20 | 132.46 | 176.01 | 155.73 | 1,070.66 | 419.47 | 144.32 | 130.06 | 145.09 | 394.41 | 256.77 |
| 27.47 | - | - | 27.47 | 83.31 | 27.62 | 27.77 | 27.92 | 228.82 | 84.68 | 28.08 | 28.23 | 28.37 | 86.03 | 58.12 |
| 0.00 | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | |
|--|--|
| 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 page Sales Forecast, use Insert menu to insert a table. |  <p>The screenshot shows the top navigation bar with 'Stories', 'My Files', and 'Bookshop Sales 360'. Below this is a menu bar with 'File', 'Insert', and 'Data'. The 'Insert' menu is open, showing a grid icon (table) and a plus sign. The 'Sales Forecast' option is highlighted in the bottom bar.</p> |

| Explanation | Screenshot |
|--|--|
| <p>Select the table.</p> <p>a) In the dialogue box on the right side, select the pencil icon next to the Data Source.</p> <p>b) In the warning pop-up, click OK.</p> <p>c) Click Existing Model</p> <p>d) In the dropdown, click Select other model</p> <p>e) Navigate to your data model book_sales_## and select it</p> <p>f) Click on the table that has been created</p> <p>g) In the Builder dialogue box on the right side, under Rows, click Add Measures/Dimensions. Then check cluster.</p> <p>h) Under Columns, click Add Measures/Dimensions. Then check Month.</p> |  <p>The screenshot displays the 'Data Source' and 'Table Structure' configuration interface. At the top, the 'Data Source' section shows 'book_sales_00' with a pencil icon next to it, which is highlighted by a red rectangular box. Below this is a '+ Add Linked Models' button. The 'Table Structure' section is expanded, showing a 'Cross-tab' view with a grid icon. Under the 'Rows' section, there are two items: 'Account' (with '1 Model Members' below it) and 'cluster'. The 'cluster' item is highlighted with a red rectangular box. Below the 'Rows' section is a '+ Add Measures/Dimensions' button. Under the 'Columns' section, there are two items: 'Category' and 'Month'. The 'Month' item is highlighted with a red rectangular box. Below the 'Columns' section is another '+ Add Measures/Dimensions' button.</p> |

| Explanation | Screenshot |
|---|--|
| <div>a) In the dialogue box, in Columns, hover over Category.</div> <div>b) Select the filter icon.</div> <div>c) Select the private version of the planning model you have created that includes the forecasts.</div> <div>This will add the forecasts to this Bookshop Sales 360 Story.</div> |  |
| Save the story. | |
| You have completed this predictive planning exercise. | |