

## Browse the Book

*This sample chapter teaches you about predictive analytics in SAP Analytics Cloud. It covers both smart assist and smart predict, and then offers examples of the functionality of each. A sample time series analysis will be created throughout this chapter.*

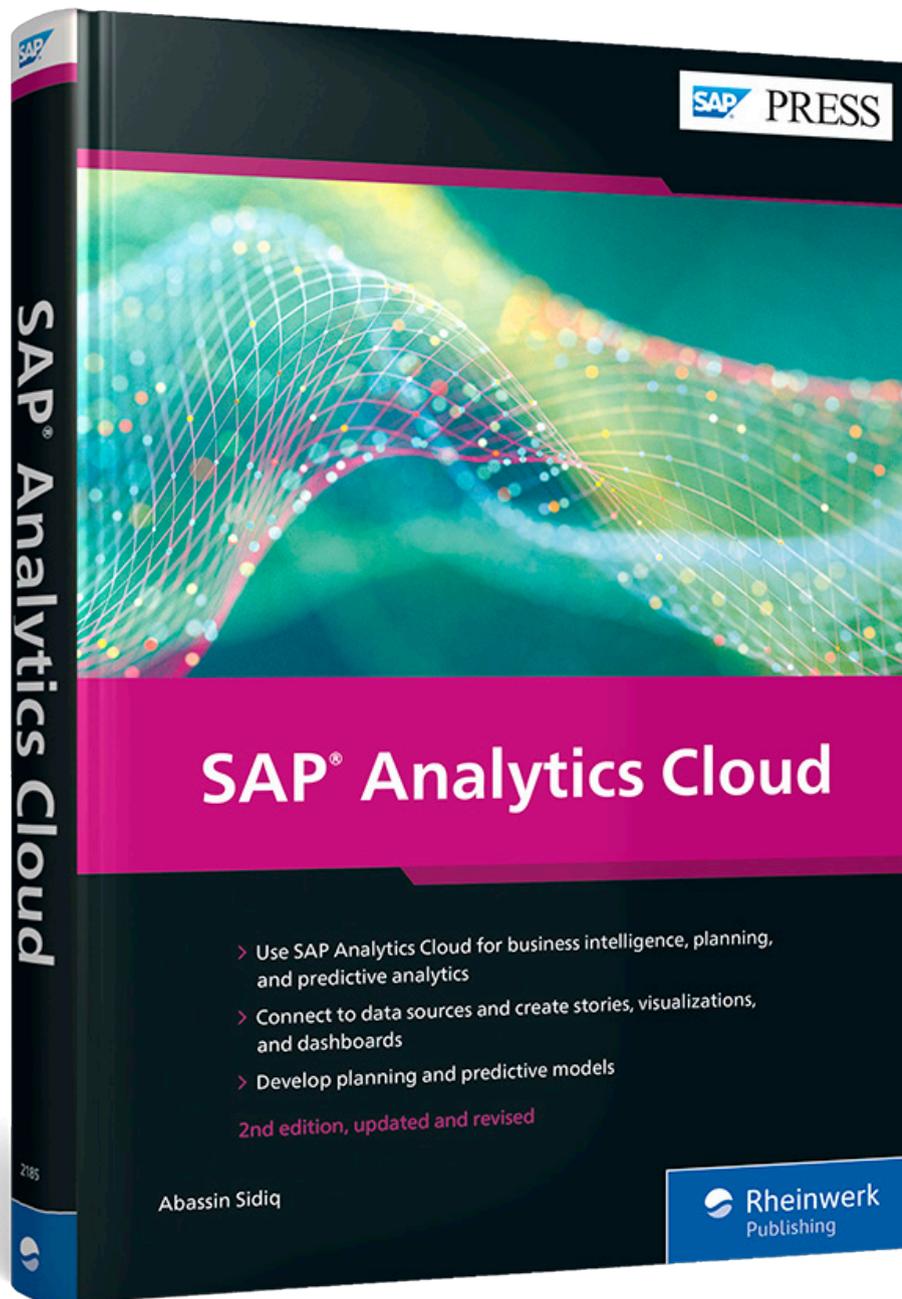
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Abassin Sidiq

### SAP Analytics Cloud

423 pages, 2nd, updated and revised edition 2022, \$79.95  
ISBN 978-1-4932-2185-1

 [www.sap-press.com/5415](http://www.sap-press.com/5415)



## Chapter 7

# Predictive Analytics

*While most analytics use cases focus on analyzing historical data, predictive analytics aims to forecast potential future developments. To facilitate this process, various practices like machine learning are embedded in SAP Analytics Cloud.*

When analyzing historical data, you can often observe patterns that occurred in the past or learn from decisions that were made. However, this data can also be used to gain insights about future developments or relationships between data points that may not be visible at first.

SAP Analytics Cloud offers a dedicated predictive analytics component that provides various functionalities to support users in performing these kinds of analyses. Those functionalities are either automated (*smart assist*) or require users to define explicit predictive scenarios (*smart predict*).

Smart assist and smart predict

In this chapter, you'll first learn about both smart assist and smart predict; then, we'll offer examples of their functionality. Smart predict allows users to create complex scenarios that can't be covered in detail in this book. However, a sample time series analysis will be created throughout this chapter. Section 7.3 describes how to access more information about smart predict.

### Requirements for This Chapter

All examples in this chapter are based on previously created stories and datasets. If you want to follow along with the examples in this chapter, you first must create the dataset, model, and stories as described in these chapters:

- Chapter 4, Section 4.2.1
- Chapter 4, Section 4.3
- Chapter 5

## 7.1 What Is Predictive Analytics?

This section will focus on *predictive analytics* and its differentiation from the classic analytics field. Because the area of data science is rather big and can be separated into a lot of different fields, we won't focus on this topic in this chapter. SAP Analytics Cloud supports users by providing easy access to machine learning algorithms and tools. Machine learning algorithms are mathematical methods that can, for example, recognize patterns in data or relationships among data points. Those algorithms are usually applied automatically within SAP Analytics Cloud and can't be influenced by a user. However, for some cases, a special environment is available where extended analyses can be created.

We'll explore all functionalities that belong to predictive analytics through practical examples.

**Smart assist** The term *smart assist* groups all functionalities that support users by automatically applying algorithms and functions to enable the analysis of data for patterns and highlights. Smart assist includes the following functionalities:

**Smart discovery** ■ **Smart discovery**  
With smart discovery, you can create an automated analysis of a model, as shown in Figure 7.1, which can be used to determine key influencers for a specific dimension or measure.

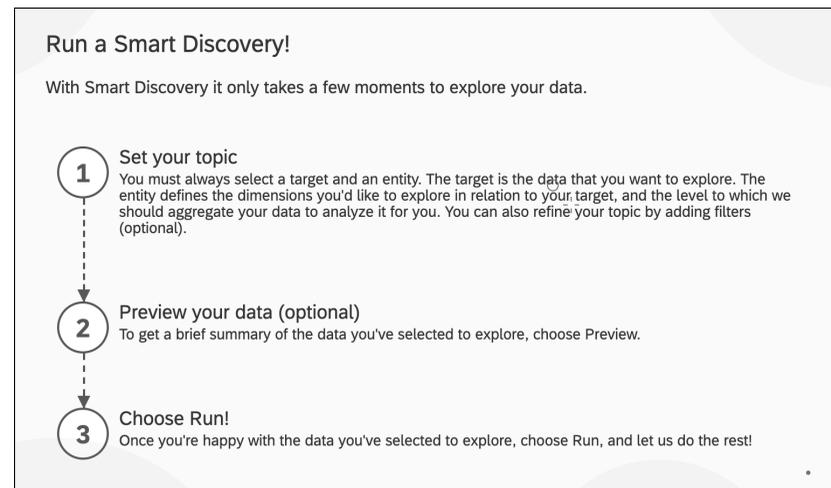


Figure 7.1 Smart Discovery

This function will automatically generate a story that contains various charts and tables showing highlights and relationships. In addition, all

values that don't fit the automatically recognized relationships (outliers) will be shown. Finally, smart discovery also provides a simulation model that allows you to change individual dimensions and measure the effect of the change.

### ■ Smart insights

This functionality can be activated for each chart in a story and provides explanations for specific data points, as shown in Figure 7.2. Once you click on a data point in a chart (e.g., a bar in a bar/column chart), smart insights can be launched to find out which influencers contribute to this data point. Smart insights must be activated for each chart or table manually.

Smart insights

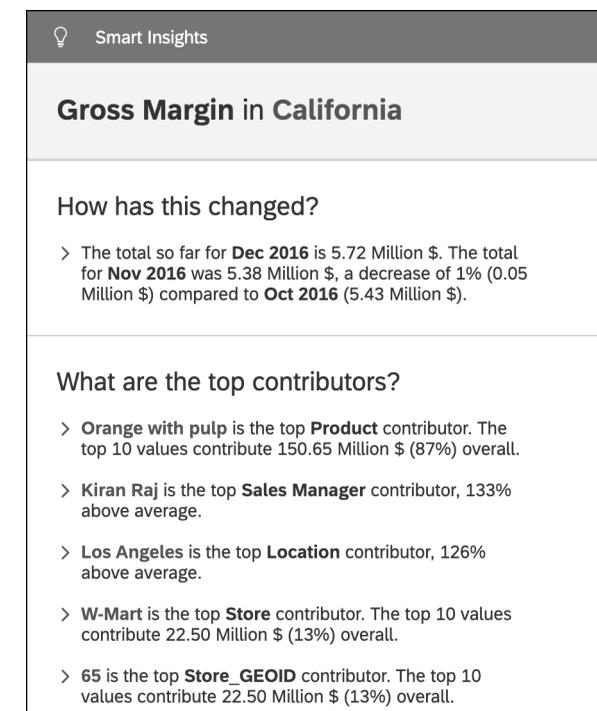


Figure 7.2 Smart Insights

Search to insight is another functionality to quickly access data and explore relationships between data points. This function can be launched from the home screen or within the story. With this functionality, you can type in natural language questions, as shown in Figure 7.3.

Search to insight

Search to insight uses various machine learning algorithms to determine which data model you want to search and which information you request. The generated chart can be copied into a story.

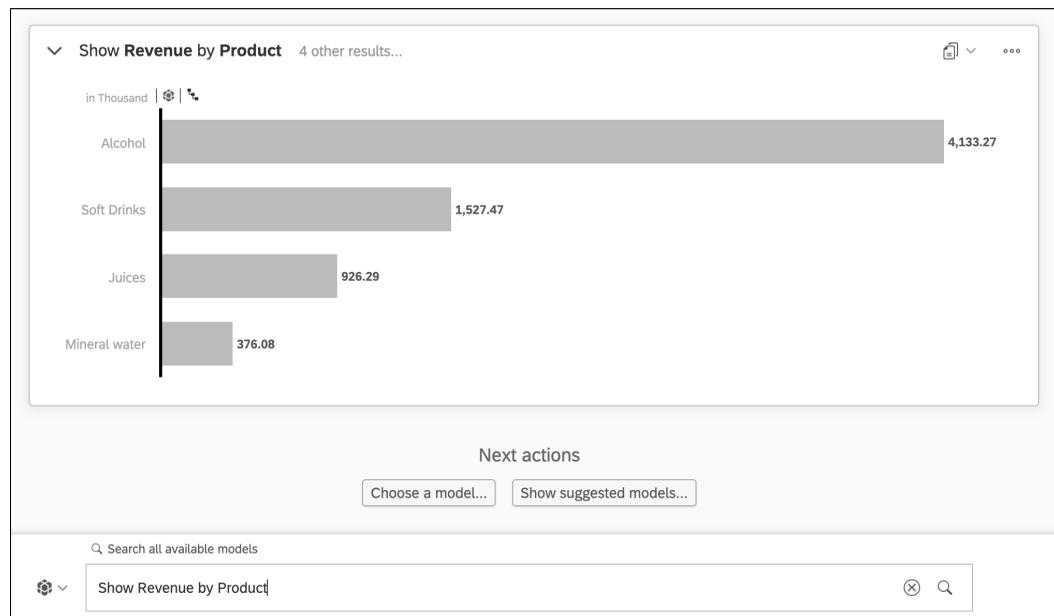


Figure 7.3 Search to Insight

**R visualizations** Although R visualizations are part of the story and behave like charts, they'll be covered in this chapter because they also allow you to apply algorithms to forecast data. An example R visualization is shown in Figure 7.4.

**What Is R?**

R is a programming language commonly used in statistics. This open-source language is maintained by a large community. The language allows extensive data operations and is extended by packages.

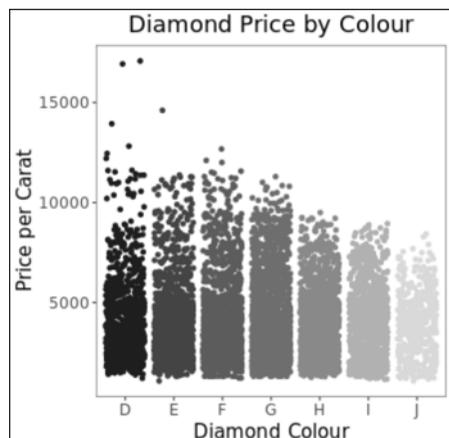


Figure 7.4 Sample R Visualization

R can only be used in SAP Analytics Cloud to create visualizations that aren't included in the standard portfolio of elements used in stories. However, you'll require knowledge of R. Data operations or transformations that are performed within an R script can be executed, but the resulting data can't be stored in a data model. Instead, the result can be shown in a chart or table by using R.

**Data transformations in R**

When using a time series chart, you can activate the automatic forecast feature, which extends the time series chart by adding a forecast of how the values may develop in the future, as shown in Figure 7.5. The parameters of an automatic forecast can only be slightly adjusted.

**Automatic forecast**

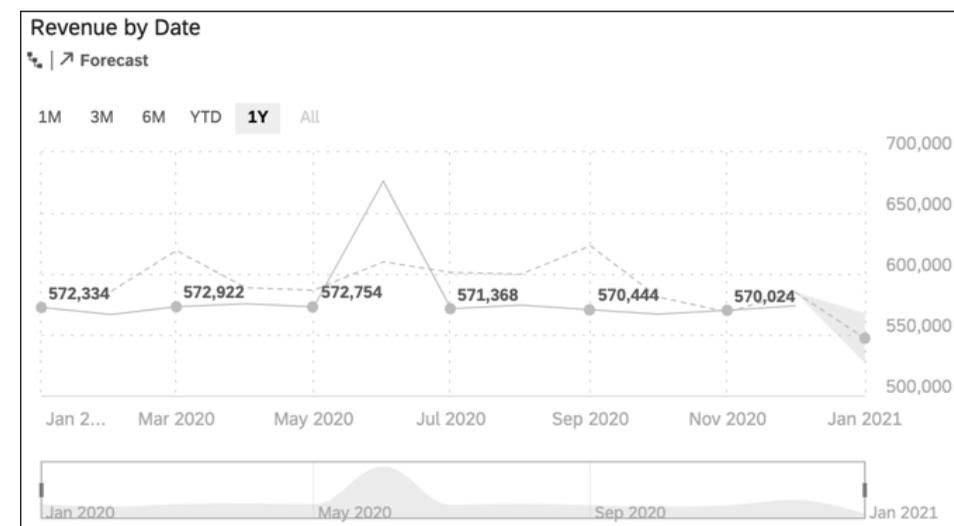


Figure 7.5 Time Series Chart with Forecast

In addition to the smart assist functionalities, SAP Analytics Cloud also offers an extended working environment for power users called *smart predict*. In general, users create predictive scenarios based on datasets trained on their own contents, as shown in Figure 7.6.

**Smart predict**

Smart predict supports the following predictive scenarios:

- Classification
- Regression
- Time series

Based on the use case, these scenarios can answer various questions and conduct analyses, including, for example, customer churn analysis, time series forecasts, or future developments. A detailed description of these scenarios can be found in Section 7.3.

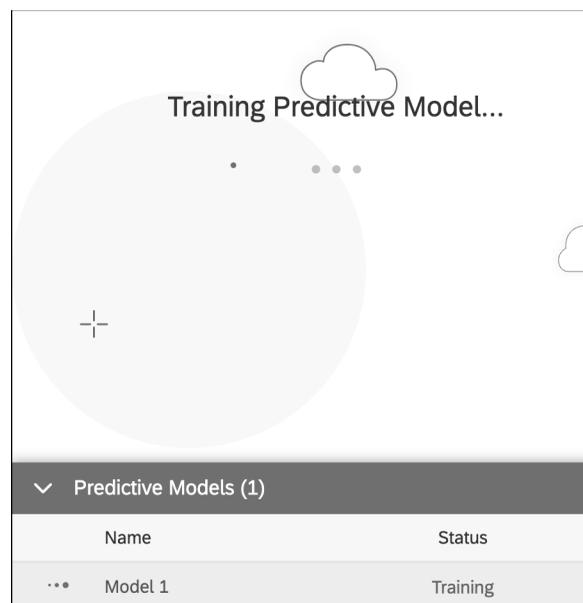


Figure 7.6 Training Predictive Scenarios

## 7.2 Smart Assist

This section covers all functionalities of the smart assist area in detail. Some of our examples may use models or stories that we created in previous chapters. Of course, you can also use the features we present with your own data. Be aware that our demonstrations are based on fictional data from the demo data package, which may not always lead to useful results.

### 7.2.1 Smart Discovery

Now, let's use smart discovery to determine what factors most influence the **Revenue** measure in our Sales Data model.

Create a new story and choose **Run a Smart Discovery**. Instructions on how to create a story can be found in Chapter 5, Section 5.2. Choose the **Sales Data** model we created in Chapter 4, Section 4.3 and Section 4.5.

Configuring smart discovery

You'll now see the smart discovery sidebar, where you can further configure some parameters, as shown in Figure 7.7. For instance, you can specify which target variable (measure or dimension) you want to explore in more detail. Click on **Select a dimension or a measure** below **Target** and select the **Revenue** measure. For the **Entity**, choose the dimensions **Product**, **City**, and **Supermarket**.

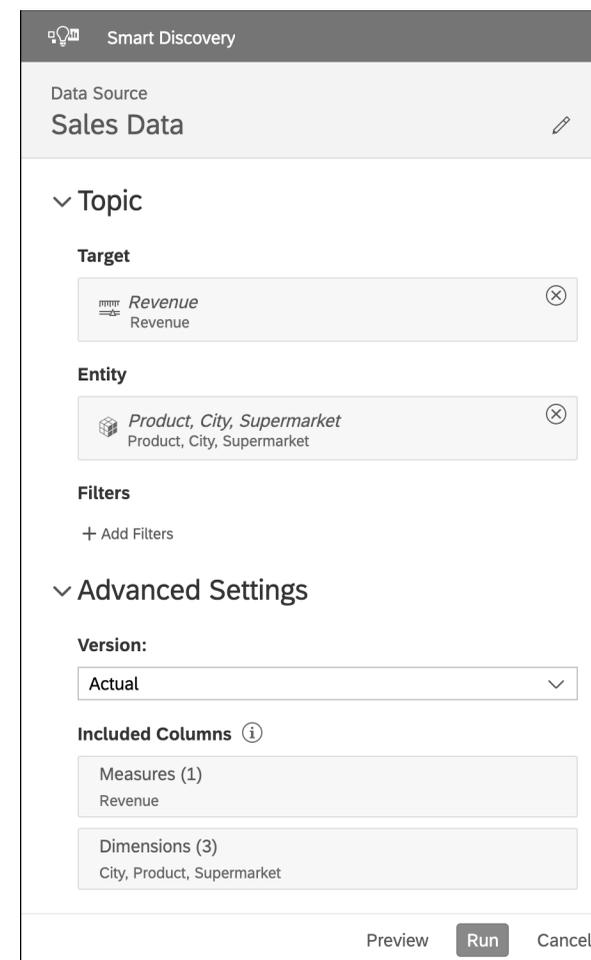


Figure 7.7 Setting Up Smart Discovery

Leave the **Version** dropdown list set to **Actual**. Remove all measures so that only **Revenue** remains. Then, remove the **ID**, **Stores**, and **Street** dimensions because they provide no value for our analysis and are directly related to revenue. (Both **ID** and **Street** are dimensions with a close relation to their respective data points. One value can exist per ID, and only a few values can exist for a street, which would result in a rather high mathematical influence on the revenue. However, this insight has no real-world value.) Initiate the process by clicking on **Run**.

Advanced settings

Wait a few seconds until the automatic story generation process is completed. Smart discovery will generate four pages in total:

Automatically generated story

- Overview
- Key Influencers

- Unexpected Values
- Simulation

If smart discovery is executed for a dimension instead of a measure, only the first two pages are generated.

**Overview** The **Overview of Revenue for City, Supermarket, Product** page shows general information about the analyzed measure and includes overview charts and texts that outline strong relationships that have been found within the data, as shown in Figure 7.8.

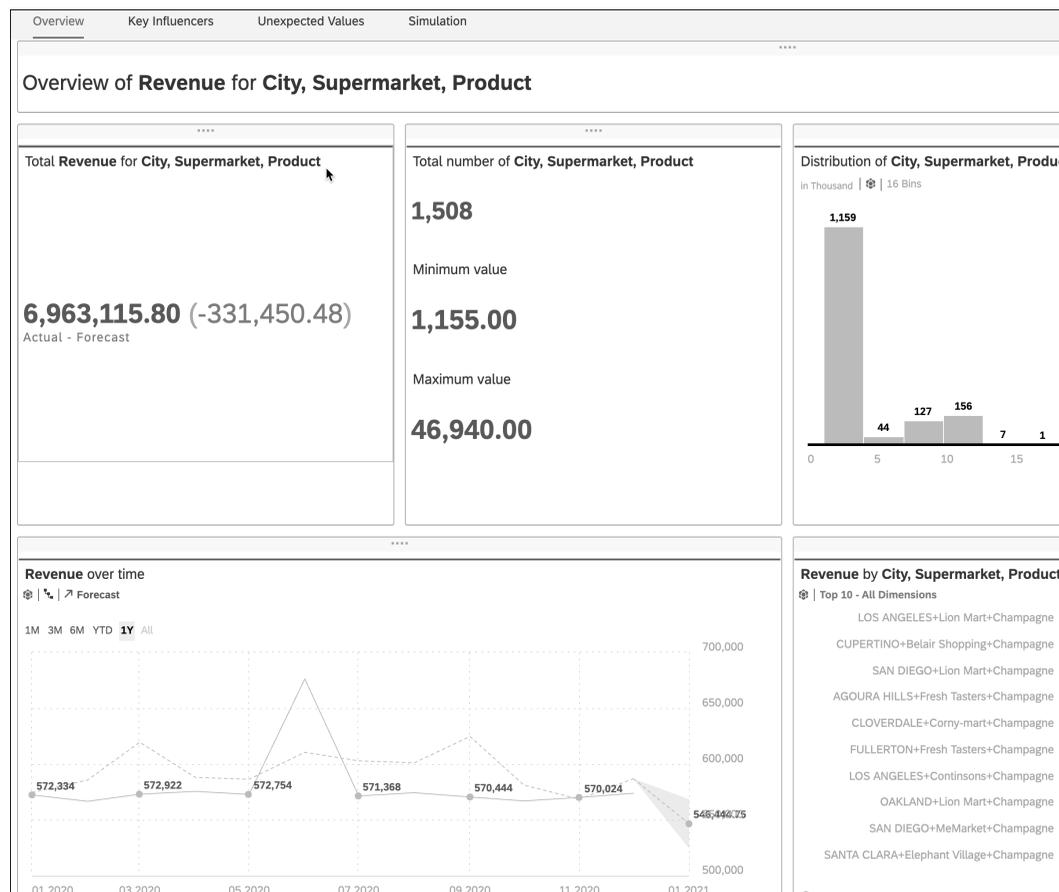


Figure 7.8 Excerpt of Overview Page

In general, the overview page offers a high-level overview of your data and highlights how several factors contribute to the measure. Some charts are interactive and allow you to generate further analyses.

**Key influencers** On the **Key Influencers** page, you'll find information about all the prominent relationships that were found in your data, accompanied by automatically

generated texts that provide explanations of the results of the analysis and their quality, as shown in Figure 7.9.

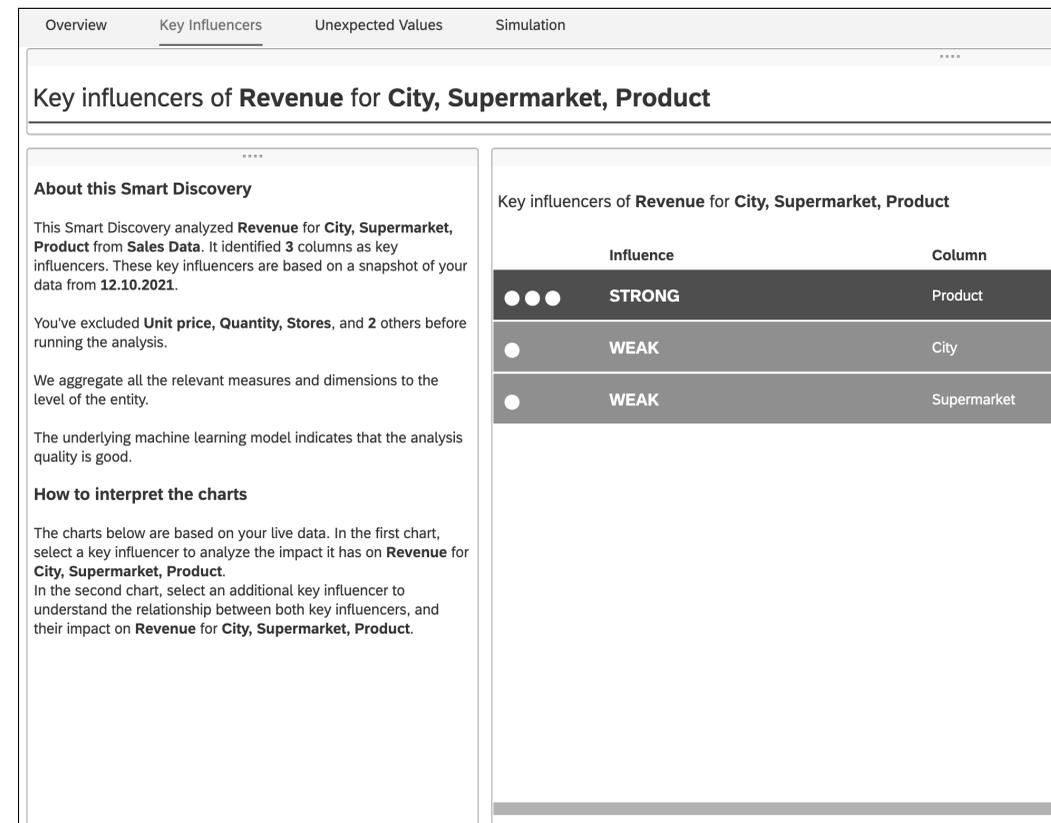


Figure 7.9 Key Influencers

Based on the results of the analysis, this page may show additional charts, which focus on one or more key influencers. Every individual chart allows you to select the key influencers to manually adjust them.

Smart discovery also generates a model in the background, which it uses to measure the relationships within the data and determine the influence of each dimension. This background model is only an approximation of reality, however, and thus, the model cannot explain all the values that occur in the dataset. The **Unexpected Values** page shows a list of all values that don't fit the model, as shown in Figure 7.10. These values are displayed in a table and then again in more detail in the charts. If you click on a value, the charts will automatically adjust.

The final page, **Simulation**, provides a powerful tool where you can adjust individual influencers and directly measure their influence on the measure.

Unexpected values

Simulation

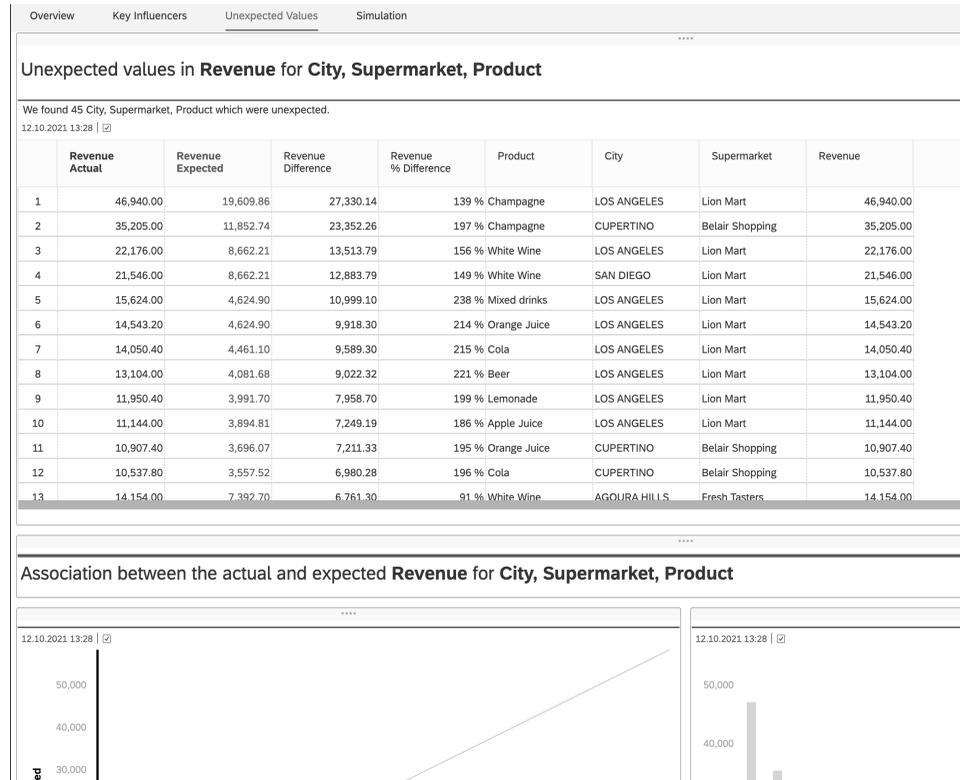


Figure 7.10 Unexpected Values

For each influencer, you can change the dimension member, and the revenue will change based on your decision, as shown in Figure 7.11. In addition, the **Simulation** page directly shows the size of the impact of a dimension.

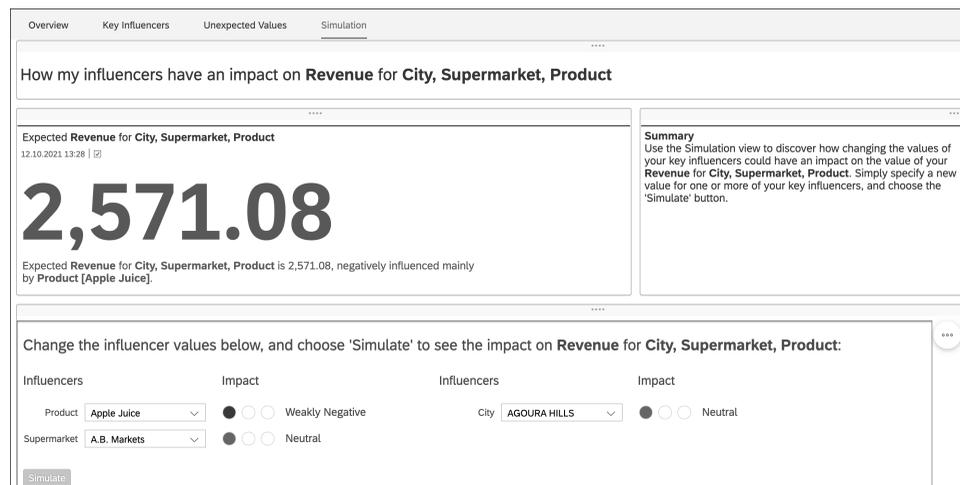


Figure 7.11 Simulation

Change the parameters by using the input controls of one of the dimensions to start a simulation, as shown in Figure 7.12. Choose another product, for example, and click on **Simulate** to see the effects of the change. **Simulating a change**

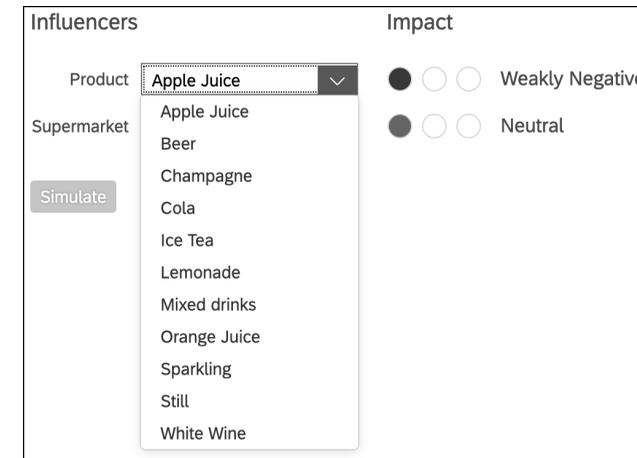


Figure 7.12 Adjusting Simulations

### 7.2.2 Smart Insights

While smart discovery analyzes a measure or dimension in general, smart insights helps you find out more about a specific data point. In general, smart insights can be activated for every chart built on a supported data source. If the amount of data is insufficient or if the context is too detailed, smart insights may fail to produce results.

Open the Sales Analysis 2019 story we created in Chapter 5, Section 5.9, and switch to edit mode. Click on the **Revenue (Variance)** chart and open the action bar by clicking on the three dots icon. Now, select **Add Smart Insights**, as shown in Figure 7.13.

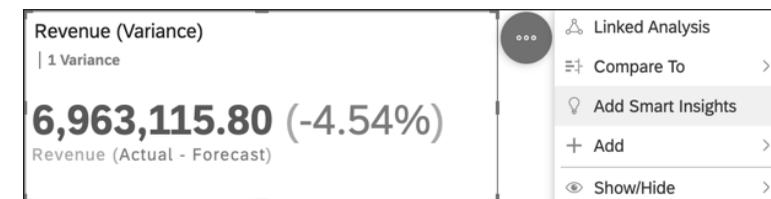


Figure 7.13 Adding Smart Insights

Smart insights are automatically added as text below the chart showing the most prominent finding, as shown in Figure 7.14. You can either access the smart insights by right-clicking on the chart or by clicking on **View more...** at the end of the text. **Accessing smart insights**

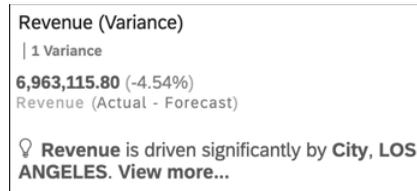


Figure 7.14 Chart with Smart Insights

After you open smart insights, a sidebar will be appear on the right, as shown in Figure 7.15. This sidebar contains details about all findings that lead to the data point. You can click on each finding to see more details and related charts.

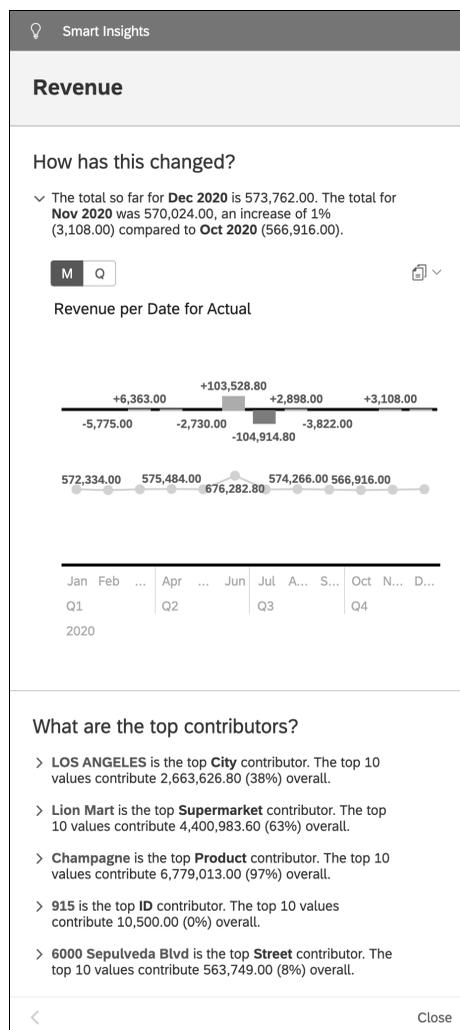


Figure 7.15 Smart Insights Sidebar

### 7.2.3 Search to Insight

Smart assist functionalities are designed to provide easy and intuitive access to data. While the data exploration mode already eases this process (see Chapter 5, Section 5.2.2), search to insight allows you to use natural language to analyze data.

Explore data

Search to insight is directly called from the home screen (see Chapter 3, Section 3.1). Navigate to your home screen, click on **Ask a Question**, and click on **Go to Search to Insight**, as shown in Figure 7.16. You can also access search to insight within a story by clicking the **Search** icon at the top.

Opening the search

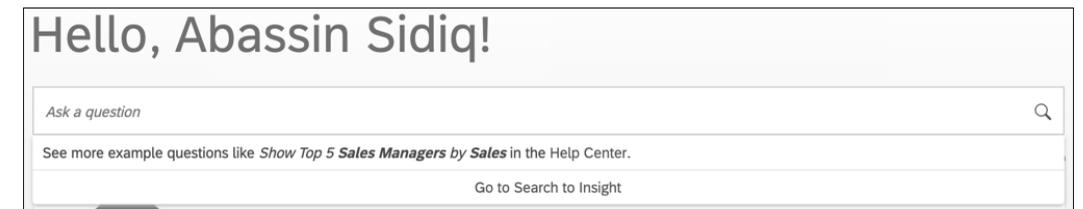


Figure 7.16 Opening Search to Insight

After you open search to insight, the search screen shown in Figure 7.17 appears. You can directly enter your question in the bottom, but the interface also proposes some searches and actions you can perform.

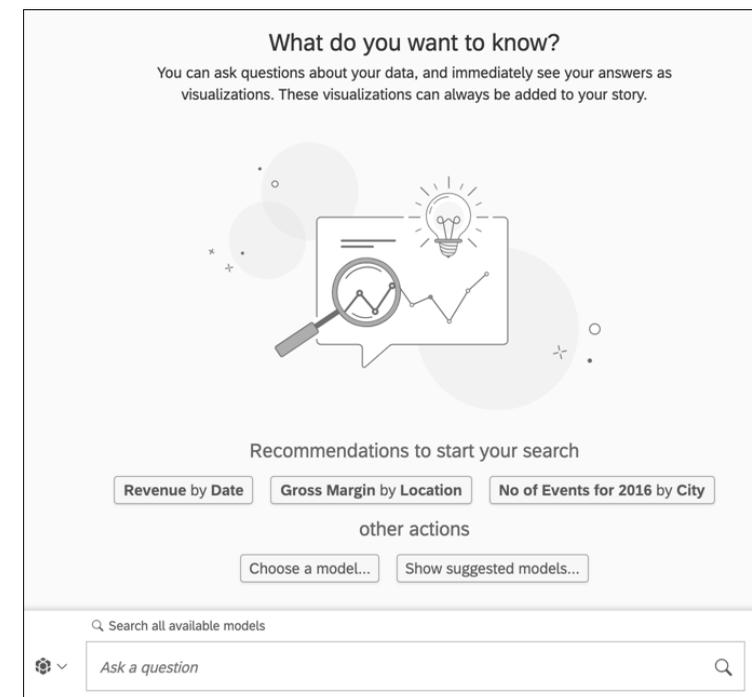


Figure 7.17 Search to Insight

**Searching for data** SAP Analytics Cloud automatically indexes all models so that search to insight can search through them. Enter the question “Show Revenue by Supermarket” and press `Enter`. You’ll also see automatic recommendations while entering the question. Especially when you have many models in your system, these proposals can be helpful for finding the right model. Once you’ve submitted the search query, a chart will be generated, as shown in Figure 7.18.

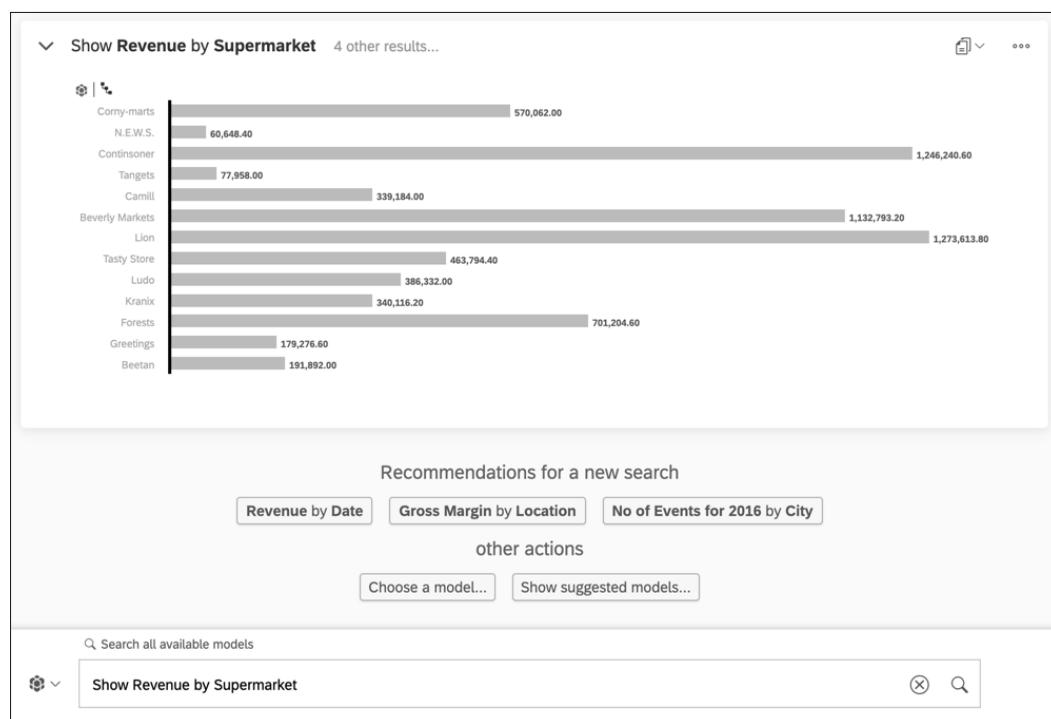


Figure 7.18 Generated Chart

**Filter criteria** You can extend the search by adding filter criteria (e.g., “for last year”) or by clicking the buttons below a chart to submit a proposed question. If you want to use the chart within a story, you can directly copy it from this screen by clicking the **Copy** icon  and selecting **Copy**.

## 7.2.4 R Visualizations

If you’re missing a chart in the standard portfolio or if you want to perform individual statistical transformations before visualizing a specific context, R visualizations can be used to overcome this challenge. By using the open-source programming language R, you can create individual charts. *R servers* provide packages that include predefined charts and functions to manipulate and visualize data.

In general, you can use R to transform your data and implement data science scenarios. Because R can be used to generate charts and graphical elements, R components can also be used within a story. An R component in a story also can be used to manipulate and transform data, but the results can only be visualized and cannot be stored in a data model.

R visualizations are also not interactive. Although R allows you to create interactive charts, this process must be performed completely in R script and isn’t compatible with other charts in the story. You also cannot use the builder or formatting options in R visualizations (see Chapter 5, Section 5.6). R visualizations are created in their own builder, which is only available for this scenario.

### R Server

R scripts must be processed by an R server. SAP Analytics Cloud provides an R landscape by default that allows you to create R visualizations without hosting your own R server. However, if you want to use your own server (e.g., when the SAP landscape is missing the required packages), you must set it up beforehand. More information can be found in Chapter 3, Section 3.3.4.

Because R is a statistical programming language, some knowledge is required to use it properly. SAP Analytics Cloud only provides a limited number of examples, which can’t be applied easily to your own data.

### More Information about R

The following links provide more information about R and further resources to learn the language:

- **R Project**, <https://www.r-project.org/>  
You’ll find general information about R at this website as well as download R for your own desktop computer. This software is not required to use R in SAP Analytics Cloud.
- **R for Beginners**, <http://s-prs.co/v218502>  
This tutorial can help you get started learning R and performing your first steps.

The following example will demonstrate how to create R visualizations. We’ll use a simple script to get familiar with R in SAP Analytics Cloud and the working environment. To start, create a new story and add a canvas page to it. Click on the plus icon **+** in the top bar and select **R Visualization**, as shown in Figure 7.19.

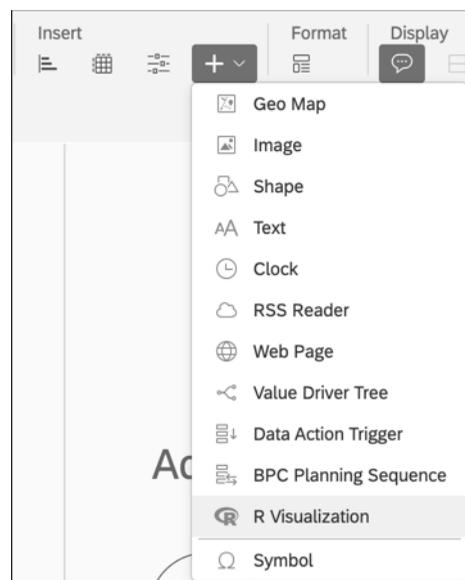


Figure 7.19 Adding R Visualizations

**Builder** The builder for R visualizations, shown in Figure 7.20, will appear in the sidebar to the right of the story.

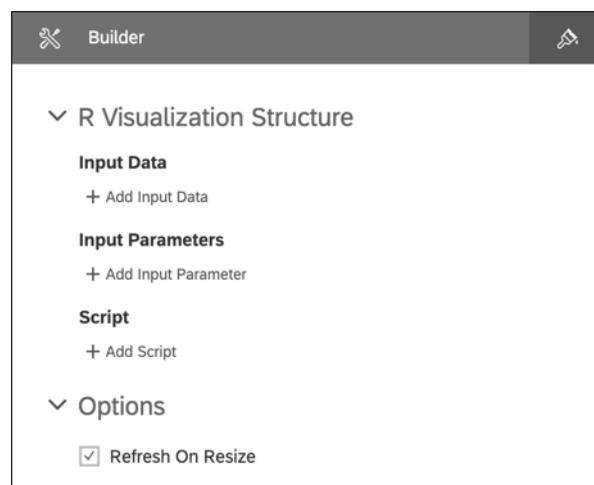


Figure 7.20 Builder for R Visualizations

**Adding input data** Because R can only work with data in flat tables, you must first select a set of data that then will be made available for the R script. Click on **Add Input Data** in the builder to start the data selection process. Select the **Sales Data** model and select all dimensions for the rows. Confirm the selection by clicking on **OK**.

Then, click on **Add Script** to start the script editor. Go into full screen mode by clicking on the **Expand** icon  in the top-right corner of the builder. The screen should now match the screen shown in Figure 7.21.

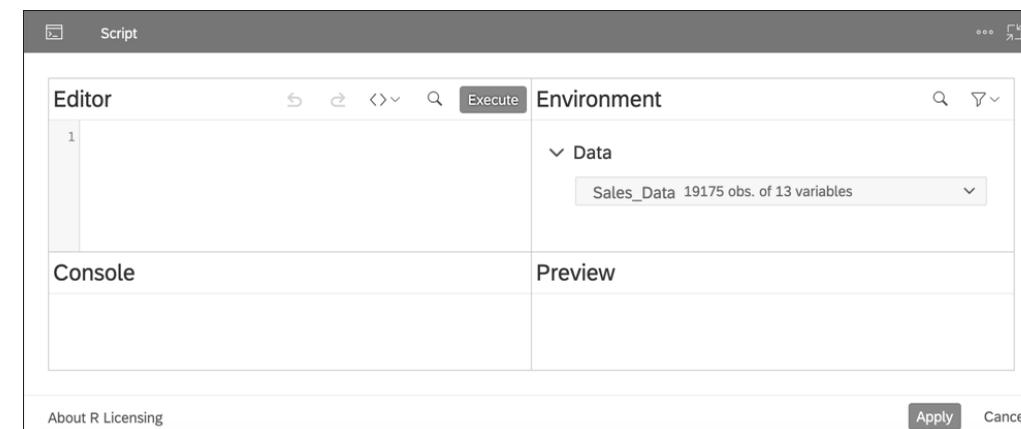


Figure 7.21 Script Environment

The script environment is separated into four main parts:

**Script environment**

- **Editor**  
All R scripts are entered into this field. You can also access code snippets in this area or search through the code.
- **Environment**  
This area lists all available datasets. By clicking on the three dots icon next to each entry, you'll see a preview of the included data.
- **Console**  
Because R can also return console entries (e.g., error messages), these messages are shown in this area.
- **Preview**  
This section previews the visualization that will later be added to the story.

First, we need to find out which packages are installed on the R server. Enter the following script into the **Editor** area and click on **Execute**: **List all packages**

```
installed.packages(lib.loc = NULL, priority = NULL,
                  noCache = FALSE, fields = NULL,
                  subarch = .Platform$r_arch)
```

This code shows a list of all packages installed on the R server, which will be returned in the console. By going through this list, you can find out if the necessary R packages are available to solve your challenge. If you're missing a package, you must install it first, which, however, is only possible on your

own R servers. To use a dataset in an R script, you must first attach the dataset. Enter and execute the following code:

```
attach(Sales_Data)
```

From now on, you can directly reference dimensions and measures by simply writing their names.

#### Creating a word cloud

Remove all code from the script editor and then paste in the code shown in Listing 7.1.

```
# This code loads the required libraries.
library(wordcloud)
library(RColorBrewer)
library(tm)
library(NLP)
# Attaches the dataset.
attach(Sales_Data)
# Creates the word cloud.
wordcloud(Supermarket, rot.per=0.6, use.r.layout=FALSE)
```

#### Listing 7.1 Example R Script

This script will create a word cloud for the **Supermarket** dimension. A *word cloud* visualizes the words in a dimension in the shape of a cloud and can use a measure to determine which words occur most. You can ignore all lines in the code that start with a hash (#), which are just comments that won't be processed by the R server.

After clicking on **Execute**, a preview of the chart will be displayed, as shown in Figure 7.22. To use the chart in a story, click on the **Apply** button.



Figure 7.22 Word Cloud

#### Script execution

R scripts will always be re-executed when opening a story. If the script contains random functions (like in our example), different outcomes should occur each time the story is opened. In our case, the word cloud function randomly defines the final layout.

### 7.2.5 Automatic Forecasts for Time Series

You can extend a time series chart by activating the automated forecast. Create a new story with a new canvas page and add a new chart of the type **Time Series**. Select the **Sales Data** model. Add the **Date** dimension and the **Revenue** measure. You can also use the time series chart we created in Chapter 5, Section 5.3.1.

Creating a time series forecast

Open the action bar of the chart and select **Add • Forecast • Automatic Forecast**, as shown in Figure 7.23. The time series forecast for the chart will be immediately activated, and the projected values (shown earlier in Figure 7.5) will be displayed. In addition, you can change the forecast method (under **Advanced Options**).

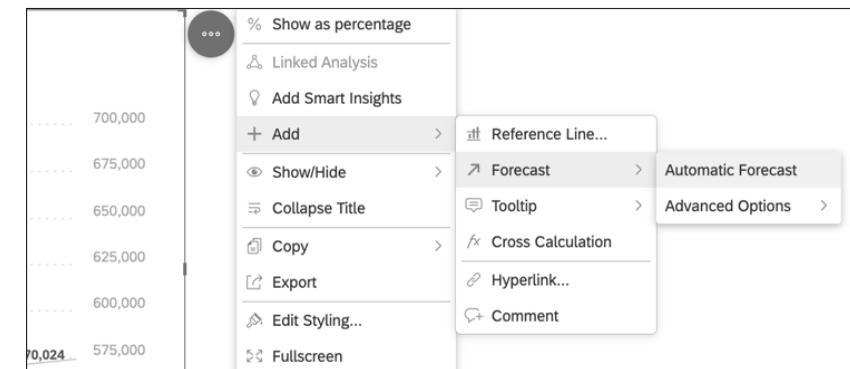


Figure 7.23 Adding Automatic Forecasts

The projected forecast will be added to the end of the time series automatically, as shown in Figure 7.24. The forecast will be shown in a blue area, which indicates the upper and lower bounds of possible future developments. The projected values are shown in the middle of that area on a dotted line.

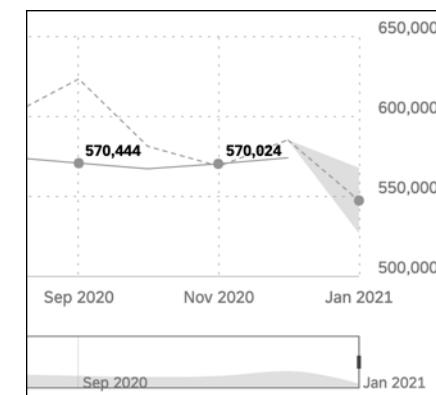


Figure 7.24 Time Series with Forecast

### 7.2.6 Smart Grouping

**Supported chart types** When using the bubble diagram or scatterplot chart type, you can activate an additional function to group values. An algorithm is executed in the background to check which data points are similar to each other, and these data points are grouped together automatically and assigned different colors. You can compare this procedure to a K-means algorithm. This algorithm works in a similar way by searching through the dataset for values that are similar to each other and that can be put in groups.

**Enabling smart grouping** You can activate and configure smart grouping in the builder of a chart. Specify the number of groups and custom labels and optionally include tooltip measures, as shown in Figure 7.25.

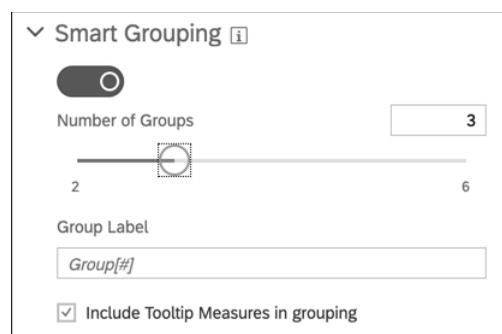


Figure 7.25 Smart Grouping

The algorithm then automatically calculates groups of data points and colors the data points in the chart accordingly. In addition, a legend will be displayed, as shown in Figure 7.26.

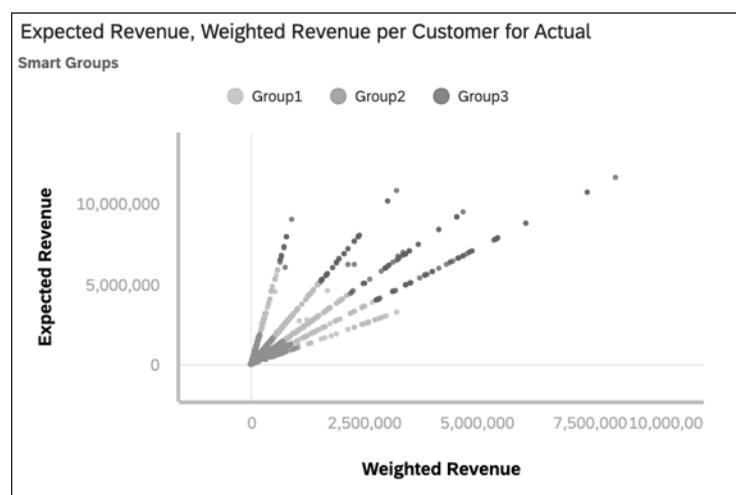


Figure 7.26 Scatterplot with Smart Grouping

## 7.3 Smart Predict: Predictive Scenarios

Smart predict can extend predictive scenarios, which can become rather complex. We'll create an example time series forecast in this section again using the Sales Data dataset uploaded in Chapter 4, Section 4.2.1.

Then, we'll briefly elaborate on regression and classification scenarios. However, our focus will be on use cases and requirements. In general, we recommend consulting the product help when creating predictive scenarios, which contains extensive information about using smart predict and about creating scenarios.

### 7.3.1 Time Series

While the automatic time series forecast described in Section 7.2.5 can't be modified, the predictive scenario can be used to create extended forecasts. These forecasts allow you to set your own variables and return statistical evaluation criteria.

Let's start by creating a new predictive scenario. Open the main menu and click on **Predictive Scenario**. This step will prompt you to select a predictive scenario type. Choose the **Time Series Forecast** option, as shown in Figure 7.27. Enter the name "Revenue Forecast" and click on **Save**.

Creating a predictive scenario

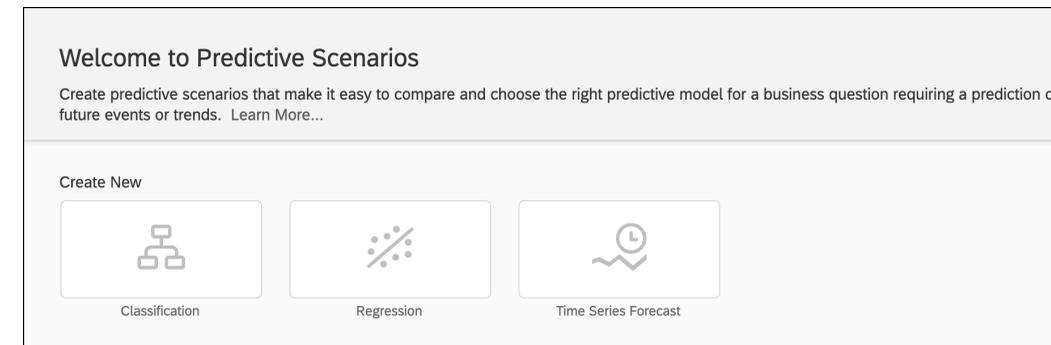


Figure 7.27 Selecting Predictive Scenarios

A message will remind you to configure the predictive model before training it. Use the sidebar on the right to configure the predictive model. Click on the **Time Series Data Source** field to open the dataset selection dialog box. Now, select the **Sales Data** dataset, which will prompt the sidebar to show additional settings, as shown in Figure 7.28.

Selecting a dataset

The **Predictive Goal** section is where you'll specify the role of each column in the dataset. The **Target** field should contain the measure for which you want projected values for the future. For our example, select the **Revenue** measure.

Select **Date** for the **Date** field. The **Entity** field specifies the column with which the measure should later be aggregated. Select **City** for the **Entity** field.

Figure 7.28 Dataset Selection and Configuration

**Training the model** In the **Predictive Model Training** section, you can exclude variables and change further parameters. You can restrict the amount of data used for the training and convert negative forecasted values to zeros. Let's leave the standard settings in place and start the model training process by clicking on **Train & Forecast** as shown in Figure 7.29.

Figure 7.29 Training and Forecast Settings

The model training process may require several minutes to finish. However, the process performed in the background will result in a new predictive model generated for the time series forecast.

During the training process, you can view a list of available **Predictive Models** at the bottom of the page (as shown in Figure 7.30). This list includes all active predictive models and errors if they occur. You'll also see other predictive models that are part of the predictive scenario, if others are included.

Name	Status
Model 1	Training

Figure 7.30 List of Predictive Models

**MAPE value** After the model training process has been completed, you'll see the results, which you can use to evaluate the prediction, as shown in Figure 7.31. The overview focuses on the **Average Expected MAPE** value. The mean absolute percentage error (MAPE) value indicates the probability of an erroneous forecast. The lower this value, the lower the probability of an error occurring if the model is used to forecast values.

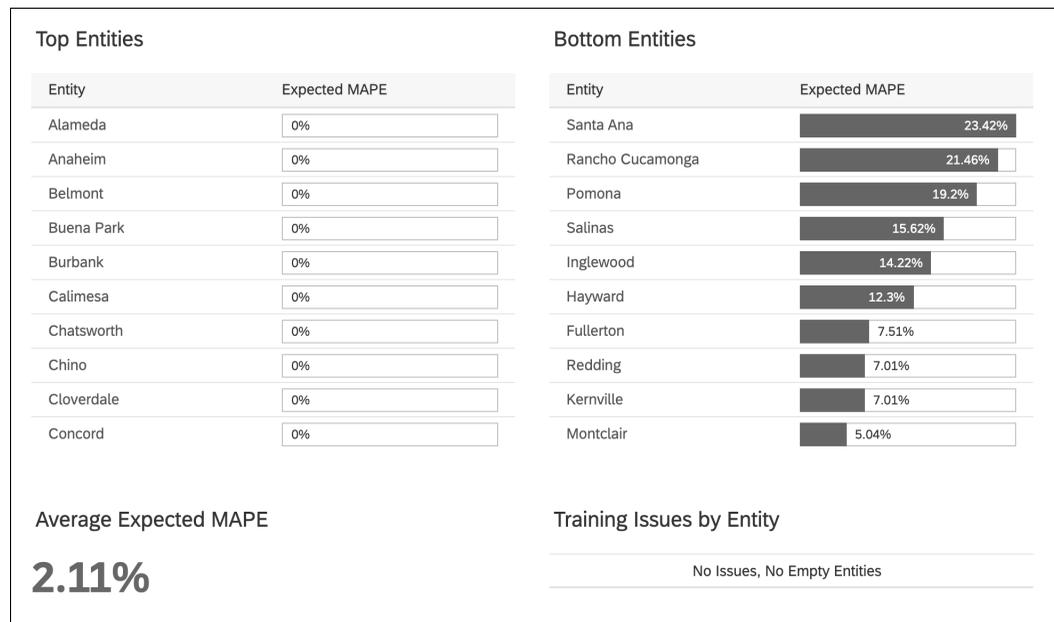


Figure 7.31 Model Evaluation

**MAPE Value**

MAPE provides a good indication of a forecast's quality. Although a low MAPE value usually means that the model is sound, you should still check its results and evaluate if these results are realistic. This evaluation should be performed by analyzing the segments in detail.

If you run the training process on your own system, note that your results may not exactly match the examples in this book.

By looking at the **Top Entities** and **Bottom Entities** lists, you'll see for which cities the model created good (or bad) forecasts. In general, a MAPE value of 2.3% indicates high model quality.

**Detailed analysis** To evaluate the model in detail, you can analyze each segment (in this case, each city) separately. Either click on a city in the **Top Entities** and **Bottom Entities** list or scroll down to a table of segments and their MAPE values.

Select the city **Salinas** for our example. As shown in Figure 7.32, the interface will now provide a chart to compare the forecasted values with the actual data. The chart will also show the calculated value for the future (in this case, January 2022).

**Forecast versus actual**

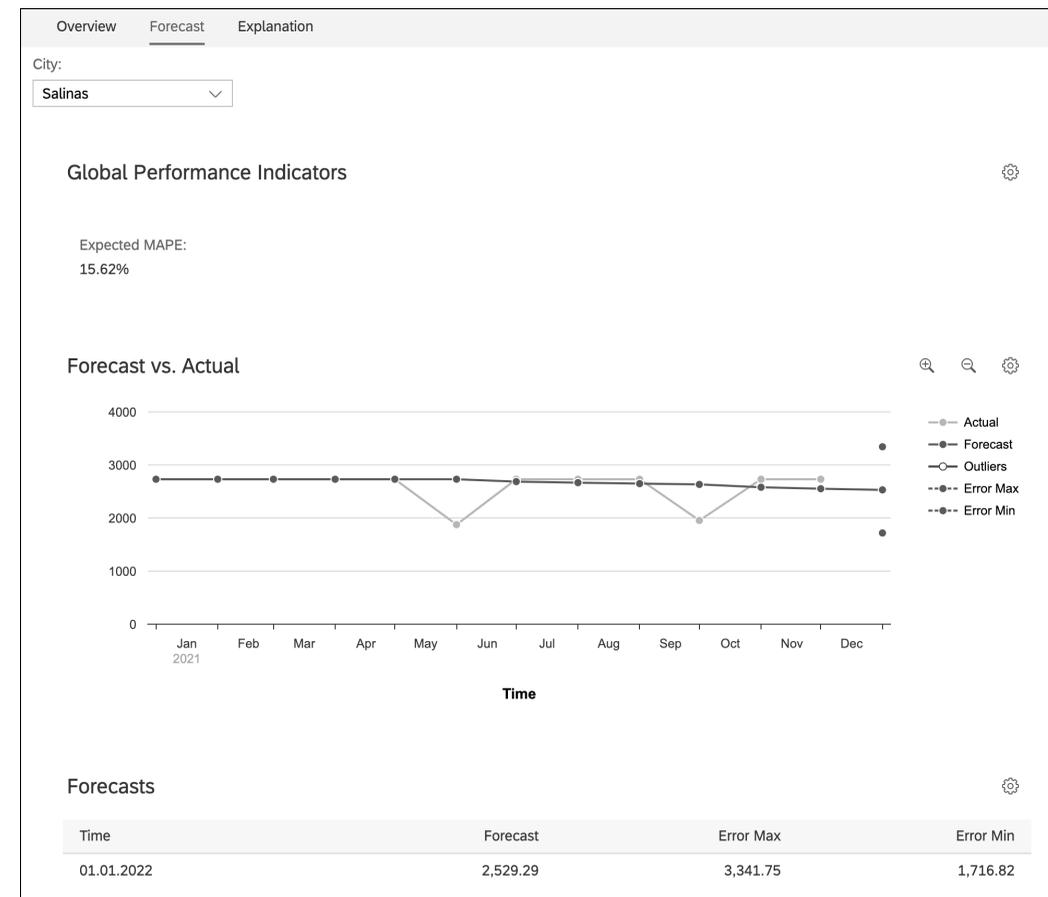


Figure 7.32 Detailed Analysis of Salinas

The **Forecasts** area on the same page shows the exact values that were calculated. Next to the **Forecast** column, you'll also see the upper and lower bounds of potential developments (**Error Max** and **Error Min**). Based on historic developments, SAP Analytics Cloud estimates the revenue in Salinas to range somewhere between these values.

**Forecasts**

The **Explanation** tab provides more statistical information about the analysis of each segment. The **Time Series Breakdown** graph shows how values develop over time and is especially interesting when conducting multiple forecasts, as shown in Figure 7.33. The **Target Statistics** highlight statistical key figures that were calculated during the model training process, as shown in Figure 7.34.

**Time series breakdown**

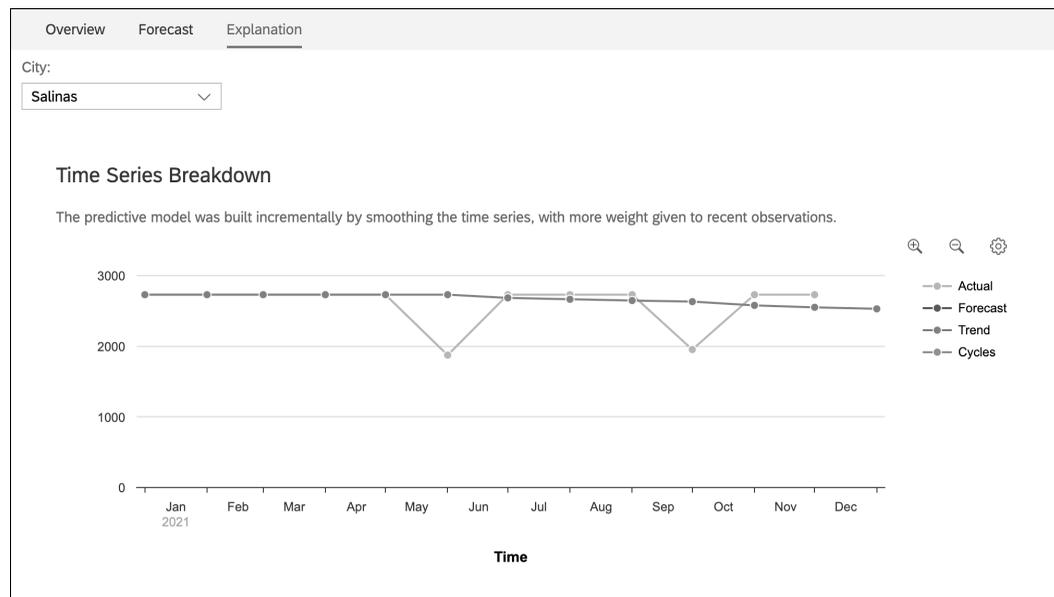


Figure 7.33 Time Series Breakdown for Salinas

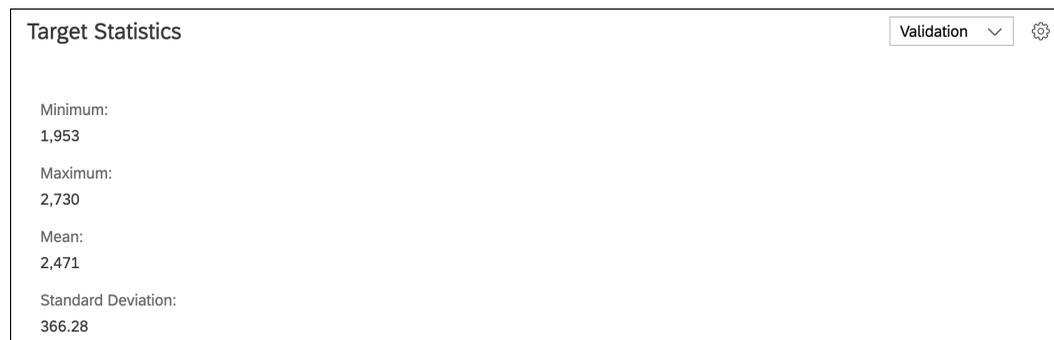


Figure 7.34 Target Statistics

**Publishing the model**

After you’ve finished evaluating the model, you can publish the results into a new dataset, which can be also visualized in a story. Click on the **Save Forecast** icon  at the top. A new dialog box will open you can enter a name, for instance, “Sales Data (Forecast).” Click on **OK** to confirm you want the dataset to be created. The model will now be applied and published as a dataset.

Because this process can take some time, you won’t receive direct feedback. However, you can again track the status of the model. Once completed, the model should have the **Applied** status, as shown in Figure 7.35.

Predictive Models (1)	
Name	Status
<input checked="" type="checkbox"/> Model 1	Applied

Figure 7.35 Model Status

Open the dataset we just created. During the model application process, **Dataset** three new columns were added to the original dataset, as shown in Figure 7.36. The **Forecast** column shows the forecasted value for each data point as generated by the model. Each segment (in this case, each city) was extended by one additional line for the date January 1, 2021. This line contains the forecasted value and a lower bound and upper bound.

	Date	Revenue	City	Forecast	Error Min	Error Max
1	2021-01-01	6825	Agoura Hills	6719.5555555555!	null	null
2	2021-02-01	6825	Agoura Hills	6639.0277777777!	null	null
3	2021-03-01	6825	Agoura Hills	7105.7500000000!	null	null
4	2021-04-01	6825	Agoura Hills	6714.2222222222!	null	null
5	2021-05-01	5880	Agoura Hills	6633.6944444444!	null	null
6	2021-06-01	7754	Agoura Hills	7100.4166666666!	null	null
7	2021-07-01	6195	Agoura Hills	6708.8888888888!	null	null
8	2021-08-01	6825	Agoura Hills	6628.3611111111!	null	null
9	2021-09-01	6825	Agoura Hills	7095.0833333333!	null	null
10	2021-10-01	6825	Agoura Hills	6703.5555555555!	null	null
11	2021-11-01	6825	Agoura Hills	6623.0277777777!	null	null
12	2021-12-01	6825	Agoura Hills	7089.7500000000!	null	null
13	2022-01-01	null	Agoura Hills	6698.2222222222!	6297.125419263!	7099.319025181!

Figure 7.36 Extended Dataset

This dataset can now be used in a story as a data source and visualized. More information about creating stories can be found in Chapter 5, Section 5.2.

**7.3.2 Regressions and Classifications**

You can also use smart predict to classify datasets or create regressions. For these analyses, the following two scenarios are available: **Which predictive scenario?**

- The *classification* scenario can be used to ask business-related questions that have a binary response set (e.g., yes or no). You can, for example,

create forecasts that predict whether your customer will make an order with you within the next 3 months.

- If you want to analyze how a measure is influenced by individual factors and find out more about their impact, you can use the *regression* scenario. You can, for example, analyze which factors mainly influence your revenue and determine if their impact is positive or negative.

This book will not cover these scenarios in detail. In general, they follow the same procedure as described in the previous section, and most steps will be identical or similar. After you select a dataset, simply choose the target variable to be analyzed and exclude obvious influencers up front. After the model training process, smart predict will automatically generate an overview to evaluate the model. To use the results from the model, you can export the results into a dataset, which can then be visualized in a story.

## 7.4 Summary

SAP Analytics Cloud offers various functionalities to provide business users with easy access to machine learning capabilities. While smart assist tools do most of the work automatically, you can use the smart predict interface to create advanced predictive scenarios.

The smart assist functionality is tightly integrated into SAP Analytics Cloud and can be launched either in a story or from the home screen. For smart predict, users will work in a dedicated environment focused primarily on advanced users or experts.

Now, with this chapter, you've seen the third pillar of SAP Analytics Cloud. The next chapter will cover another pillar: the analytics designer. Similar to smart predict, this functionality targets more advanced users and enables them to create their own extended reports and dashboards.

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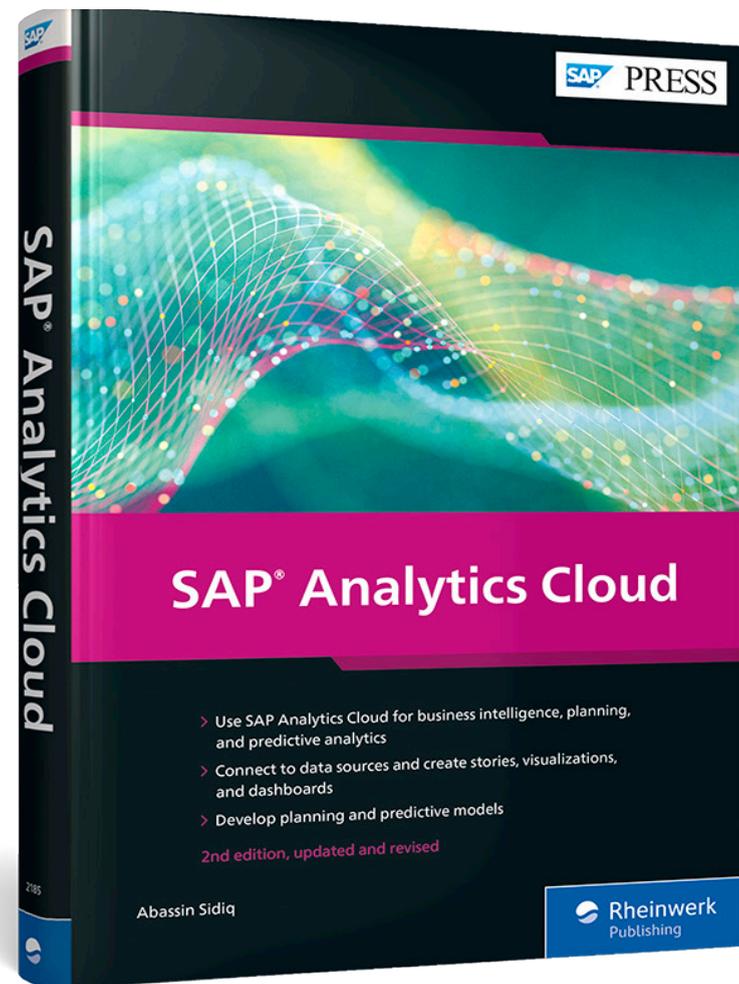
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**Abassin Sidiq** is a product manager of analytics at SAP. He has worked at SAP since 2012 and has been a part of product management for various analytics solutions since 2015. He has been part of SAP Analytics Cloud development since the product's inception. Abassin regularly represents SAP at conferences such as the DSAG Annual Congress, DSAG Technology Days, and SAP TechEd, where he hosts sessions about analytics and associated topics. He studied economics and business informatics at the Universität Mannheim and the Technische Universität (TU) Darmstadt. Before working in product management, he was a part of marketing and sales teams.

Abassin Sidiq

## SAP Analytics Cloud

423 pages, 2nd, updated and revised edition 2022, \$79.95  
ISBN 978-1-4932-2185-1



[www.sap-press.com/5415](http://www.sap-press.com/5415)

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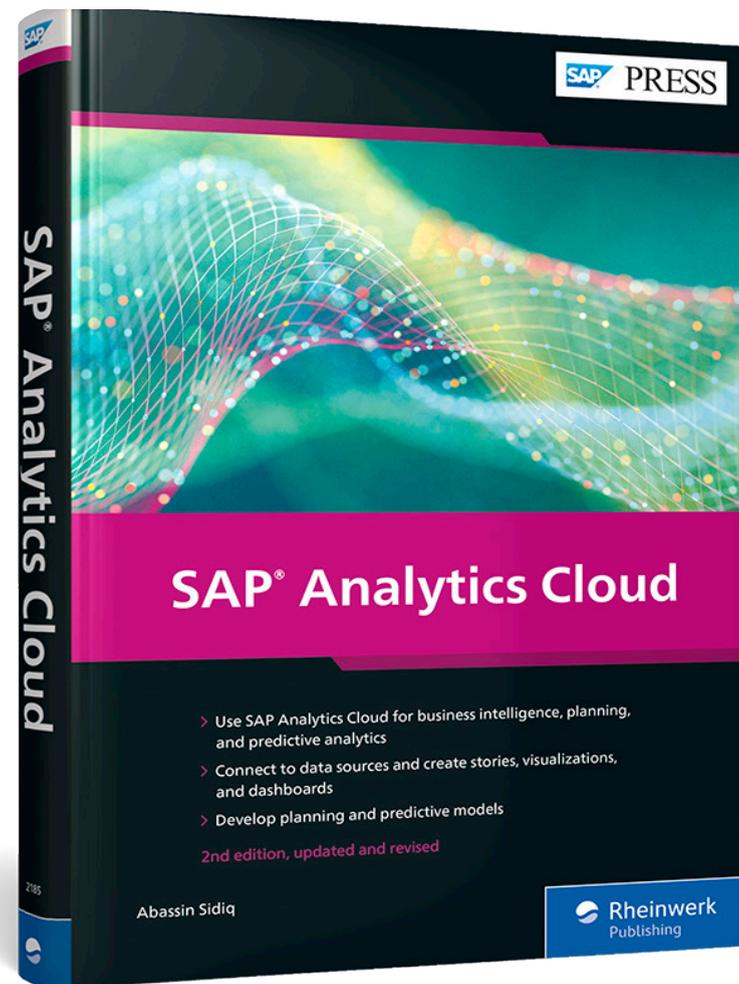
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