IN THIS CHAPTER

- Differentiating among business intelligence, data analytics, and data visualization
- Grasping key Tableau terminology
- Discovering Tableau Desktop and Tableau Prep installation prerequisites
- Tackling data selection fundamentals

Chapter 1
Learning Tableau Lingo

There is much hype about data, and the use of business intelligence, data analytics, and data visualization tooling gets plenty of hype as well. Although there are many enterprise business intelligence tools on the market, Tableau stands out among the leaders for being bundled as a single platform for business intelligence, analytics, and visualization.

In this chapter, you start exploring the Tableau landscape by discovering the main Tableau terminology you need to familiarize yourself with regarding business intelligence, data analytics, and data visualization functionality. In addition, you can dip your toes into what it takes to install Tableau applications and the various file-based output types produced depending on the Tableau product.

What Is Tableau?

Tableau is a business intelligence platform that helps users see and understand their data using highly visual representations. Unlike other enterprise business intelligence platforms, Tableau incorporates business intelligence, data analytics, data science, data mining, and data visualization into a single solution. As a result, its capabilities are considered the broadest and deepest for data evaluation on the market.

In 2019, Salesforce acquired Tableau. At the time, Tableau's focus on data was big but not all-encompassing. It included enterprise data applications, data management and governance, visual analytics, and end-to-end storytelling. As with every other platform on the market, machine learning (ML) and artificial intelligence (AI) have become entrenched in the platform. Salesforce's Einstein AI engine is built into Tableau to help accelerate data analytics predictions, provide a strong recommendation engine, and afford an advanced workflow while touting a low-code development environment.

Tableau is not a single product but is rather a suite of products that includes Tableau Desktop, Tableau Prep, and Tableau Server or Tableau Cloud. Chapter 2 describes the purpose of each in more detail, but in brief, people use Tableau Desktop to create their data models. In contrast, Tableau Prep facilitates data preparation. And when users are ready to collaborate with others, they must publish their outputs from Desktop and Prep to Tableau Server or Tableau Cloud.

Tableau and Business Intelligence

The term *business intelligence* refers to taking in the big picture of an organization's activities and goals, from the collection and analysis of data to the presentation and dissemination of the data using a single platform. A look at the big picture is precisely what you get with Tableau. This best-in-breed platform allows users like yourself to customize views of their data to make data-driven decisions at speed and scale.

Why do folks like you and me need an enterprise business intelligence (BI) solution to organize data? The more data you have, the more difficult it is to dig in and get the information quickly. Making informed decisions requires various capabilities, from data mining to visualizations and analytics. With business intelligence solutions, you get everything under a single umbrella. The key benefits of business intelligence are plentiful, but here are the main ones:


REMEMBER

- **Provide a platform for faster analysis:** BI platforms perform heavy-duty data processing, leading to quick calculations and the creation of stunning visualizations. Assuming that you've connected to your data source and you have already gone about prepping the data with a robust data model, Tableau can accelerate the visualization and analysis process by as much as 100 times as conducting data analysis and business intelligence activities manually, especially when integrating many data sources into a single repository.
- **Create business efficiency and driving decisions:** Leaders can benchmark results with speed and agility when a business intelligence platform offers a holistic view of operations. It's easy to spot opportunities and find those

needle-in-a-haystack moments. Instead of spending hours poring through datasets, users can filter, aggregate, and forecast using Tableau data analytics and visualization options, thereby cutting down the time to make decisions from months, weeks, or days to perhaps even minutes. Talk about saving time!

- **Drive customer and employee experience satisfaction:** What is the worst possible thing for an organization to experience? Sure, most say financial loss. But financial loss results from two factors: lack of customer satisfaction and low employee morale. A primary culprit is the inability of customers and employees to access data quickly; it impacts their entire experience of interacting with the organization, internally and externally. Investing in business intelligence solutions that present a 360-degree view from all data sources can lead to less time worrying about analysis paralysis and more time innovating. The opportunity costs are often measurable in loyalty and, yes, financial rewards.
- **Have data you trust:** When you have many data sources, organizations try to figure out ways to control the disorganized chaos. When you have thousands of Excel or CSV files, a good tactic is to centralize them in a single data repository. But wait a moment: How do you connect the dots — that is, discover the relationships between the data in those files? The answer is to use a business intelligence solution. Relationships exist if the data is like-kind, and you can create potential single-point data sources, hence the use of governed data repositories in a business intelligence platform such as Tableau. Trusted data is not limited to the one-off files; engagement rules apply to relational and nonrelational database stores with tens of millions of records.

Connecting Big Data with Business Intelligence

Make no mistake: The term *big data* is undoubtedly a catch-all buzzword. It pops up a lot in this book. It's meant to encompass five aspects of a business intelligence activity: data volume, data velocity, data veracity, data value, and data variety. Big data brings together *unstructured data* (data with no organized convention), *semi-structured data* (data that has some logical order but isn't necessarily formalized), and *structured data* (data that is formalized or organized). Each of these data types maintains some level of these five attributes:

- **Volume:** The amount of data that exists
- **Velocity:** The speed at which data is generated and moves

- **Veracity:** The quality and accuracy of data available
- **Value:** The credibility, in monetary and nonmonetary terms, that the data provides
- **Variety:** The diversity of data types available within the dataset

Big data is paramount for business intelligence solutions such as Tableau because businesses constantly create more data, practically by the minute. These businesses must keep up with the data deluge. A good business intelligence platform such as Tableau grows with the increasing demands; however, if the data is not maintained, your ability to handle data visualizations and the associated data sources also becomes impaired. Therefore, it's essential to implement good data hygiene and maintenance practices.

Analyzing Data with Tableau

Don't get business intelligence confused with data analytics. Business intelligence platforms use data analytics as a building block to tell the complete story. A data analyst or scientist evaluates the data using the treasure trove of tools built into Tableau, from advanced statistics to predictive analytics or machine learning solutions to identify patterns and trends.

Tableau offers that end-to-end data analytics experience so that the analyst, scientist, and collaborator can complete the entire data life cycle, from gathering, prepping, analyzing, collaborating, and sharing data insights. The big difference between Tableau and its competitors is the self-service nature of the offering, allowing users to ask questions or predict the kind of visualizations the user may require without manually completing the work, thanks to the predictive Einstein AI engine.

Like the three-year-old child asking "Why?" all the time, as you ask more questions and the platform learns, Tableau builds an analysis output while simultaneously learning from the output. The result is an opportunity for the system to understand why something happens and what can happen next. Business intelligence platforms take the resulting models and algorithms and break these results into actionable language insights for data mining, predictive analytics, and statistics. The final product is data analytics, the byproduct of answering a specific question (or set of questions). The collection of questions helps the organization move forward with its business agenda.

Visualizing Data

Raw data that is transformed into useful information can only go so far. Assume for a moment that you were able to aggregate ten data sources whose total record count exceeded 5 million records. As a data analyst, your job was to try to explain to your target audience what the demographics study dataset incorporates among the 5 million records. How easy would that be? It's not simple to articulate unless you can summarize the data cohesively using some data visualization.

Data visualizations are graphical representations of information and data. Suppose you can access visual elements such as charts, graphs, maps, and tables that can concisely synthesize what those millions of records include. In that case, you are effectively using data visualization tools to provide an accessible platform to address trends, patterns, and outliers within data.


TIP

For those who are enamored with big data, the use of data visualization tools helps users analyze massive amounts of data quickly by applying data-driven decisions using graphical representations rather than requiring users to parse through lines of text one by one.

Understanding Key Tableau Terms

Before you begin drinking from the terminology firehose, I want to set the record straight on a few things. Tableau has its own product-specific terminology, but there are also terms you can't escape no matter what business intelligence and data analysis tool you use, whether it's Microsoft Excel, Microsoft Power BI, IBM Cognos, or others. In this section, I review the most critical Tableau-specific terminology, not the entire business intelligence dictionary.

Data source

A *data source* in Tableau comes from anywhere that Tableau can extract, transport, and load relational and nonrelational data. Sources of data used by Tableau are often divided into the four classifications, with some examples of several:

- **Files:** `.csv`, `.txt`, Excel
- **Relational databases:** Oracle, SQL Server, DB2

- **Cloud databases and virtualization platforms:** Microsoft Azure SQL, Google Big Query, Amazon Aurora, Denodo
- **ODBC datastores:** Datastores using ODBC-related connections

Figure 1-1 shows an overview of the abundant number of data sources you can connect to in Tableau Desktop.

A Tableau data source may contain multiple data connections to different databases or files, as described previously. The connection information includes where the data is located, such as the filename and path of the network location, or perhaps details on connecting to the data source, such as the database server name and the authentication credentials. Regardless, many data sources can connect in a single instance of Tableau. Still, categorically, they connect to some file or server connection, whether local or cloud based.

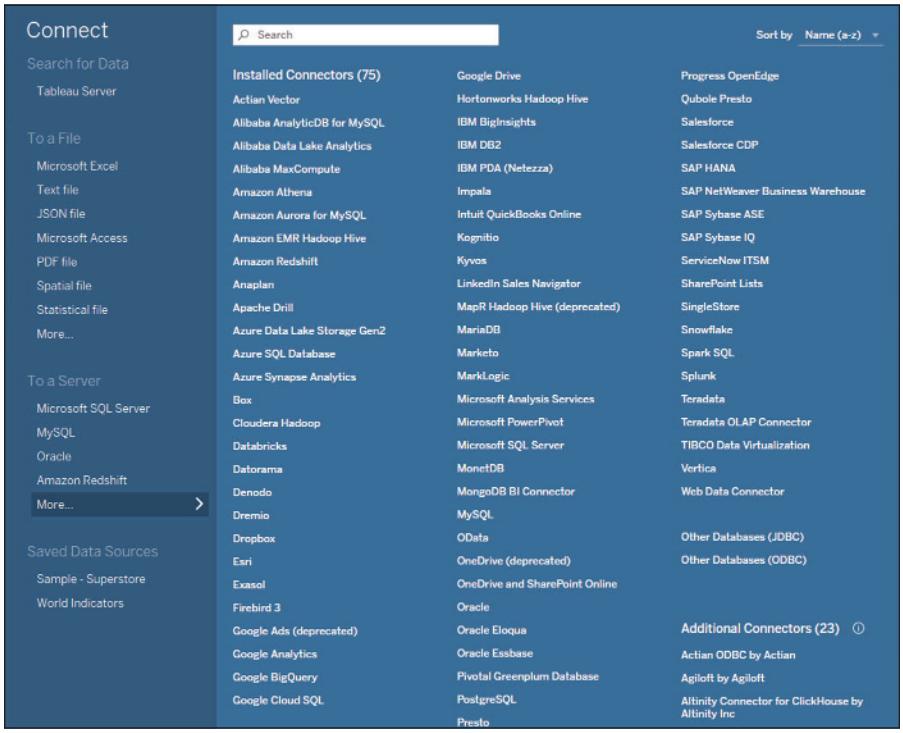


FIGURE 1-1: A sampling of Tableau data sources.

Data type

Going down the data path a bit more, a data field, which is part of a data source (see more details in the next section), must always have a data type. A *data type* reflects whether the field is a number, a type of date, or a string. For example, every area code is an integer (703); a date of birth represents a date (01/01/23); and a state on the U.S map ("Virginia") is a string. Users can identify the data type they are looking for as part of the data field in the Data pane. Each data type also includes one of several icons, including those represented in Figure 1-2. Although the examples are not exhaustive, you see a few common examples of data type icons mapped against their respective data types. The complete list of Tableau data types includes

- Text (string) value
- Date value
- Date & Time value
- Numerical value
- Boolean value (relational data only)
- Geographic value (map data)
- Cluster groups

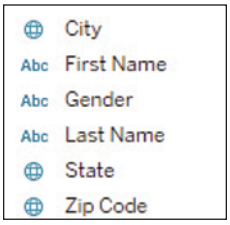
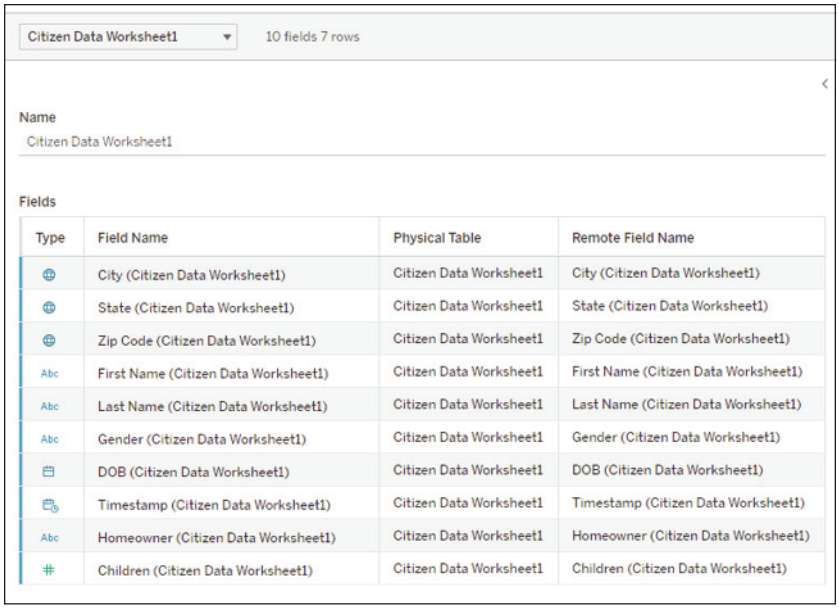


FIGURE 1-2: Examples of data types icons.

Data fields

Every time you connect a data source to Tableau, the connection presents the users with one or more tables from said source. A table includes many data fields composed of a collection of several data types.

As shown in Figure 1-3, data fields are explicitly defined as dimensions or measures as the Tableau database is created. Based on data integrity and quality, Tableau automatically organized the data fields. All data fields containing text date or Boolean values are dimensions by default. On the other hand, fields containing numerical values are measures. The next section talks about how Tableau deals with dimensions and measures.


Citizen Data Worksheet1 10 fields 7 rows

Name
Citizen Data Worksheet1

Fields

Type	Field Name	Physical Table	Remote Field Name
	City (Citizen Data Worksheet1)	Citizen Data Worksheet1	City (Citizen Data Worksheet1)
	State (Citizen Data Worksheet1)	Citizen Data Worksheet1	State (Citizen Data Worksheet1)
	Zip Code (Citizen Data Worksheet1)	Citizen Data Worksheet1	Zip Code (Citizen Data Worksheet1)
Abc	First Name (Citizen Data Worksheet1)	Citizen Data Worksheet1	First Name (Citizen Data Worksheet1)
Abc	Last Name (Citizen Data Worksheet1)	Citizen Data Worksheet1	Last Name (Citizen Data Worksheet1)
Abc	Gender (Citizen Data Worksheet1)	Citizen Data Worksheet1	Gender (Citizen Data Worksheet1)
	DOB (Citizen Data Worksheet1)	Citizen Data Worksheet1	DOB (Citizen Data Worksheet1)
	Timestamp (Citizen Data Worksheet1)	Citizen Data Worksheet1	Timestamp (Citizen Data Worksheet1)
Abc	Homeowner (Citizen Data Worksheet1)	Citizen Data Worksheet1	Homeowner (Citizen Data Worksheet1)
#	Children (Citizen Data Worksheet1)	Citizen Data Worksheet1	Children (Citizen Data Worksheet1)

FIGURE 1-3: Examples of data fields.

Dimensions and measures

In Tableau, dimensions and measures are both data field types. If the field type contains non-numeric data, Tableau references the field as a dimension. Examples include the day of the week, a product category, or geographic data. These variable types don't allow you to complete mathematical equations. Here's an example of an equation with variable types:

State + City / Country = Invalid

All these items are strings because you can't add a state plus a city and divide it by a country to get some magical answer, right?

In Tableau, you can drag each of these fields into a view, which is the part of the Tableau canvas where a visualization is created. Tableau creates headers for each data field. That means you can think of each field as a category, or a dimension

of data. If the dimension of data is placed in a row, the header label is vertically placed. The label is horizontally placed if the dimension is placed in a column. An example of data placed in both rows and columns is displayed in Figure 1-4.

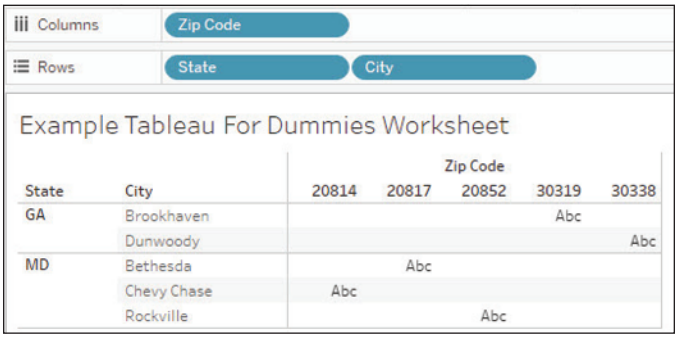


FIGURE 1-4: Rows and column data for dimensions in Tableau.

Measures are numerical data field types. Tableau assumes that these field types are continuous and tags these values by default. Examples of measures include temperature and financial instruments. Unlike independent dimensions, or values that do not rely on other data fields, measures are dependent because they allow you to do the math, as in the following example:

Age (20) + Age (1) / Age (3) = Age (7)

As with dimensions, if you drag a measure into a view, Tableau creates a continuous axis. If a measure is placed in a row, the axis is vertical, whereas a column is horizontal.

In Figure 1-5, you can see that each row (dimension) contains a state, city, and zip code. The column data looks at each value individually and then aggregates the data in the data setup. For example, three individual records in Bethesda, MD 20817 contain children identified. Aggregated, the measure is SUM (3).

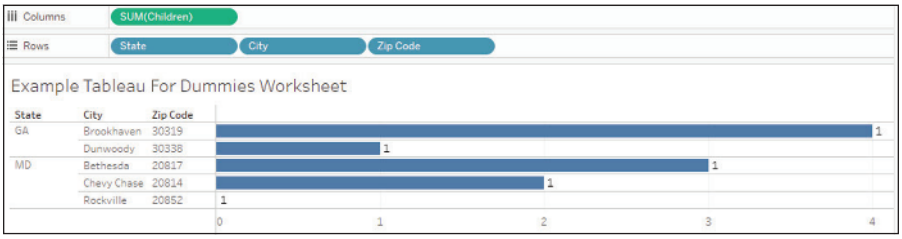


FIGURE 1-5: Rows and column data for measures in Tableau.

Continuous versus discrete

As you'll quickly realize, Tableau separates many concepts based on mathematical reasoning. If a field is based on mathematical representation, Tableau refers to this data as *continuous.* On the other hand, if the data is non-numeric, the data is known as *discrete.*

When it comes to continuous data, you are looking for data that is unbroken, whole, or without interruption. That means data that contains a range of values such as temperature, time, or monetary values. If the data can be added, averaged, or aggregated, and appear as a measure in Tableau, you can almost certainly assume that the value is continuous.

Discrete data is almost always individualized, separate, and unique data. You can have only a particular value. For example, do you have more than one shoe size at a time? Can you be at more than one place at a given location? How many distinct individuals can you claim on a personal tax return? The number 2.39 is not possible; 1, 2, or 3 is more like it.

With discrete data, you have no way to add, average, or aggregate the data points because the values will always be unique by default.

When dragged onto the Tableau View area, discrete data appears as a *blue pill* to form a discrete axis on a chart. Continuous data, on the other hand, appears as a *green pill* to form a continuous axis on a chart.

Filter

The capability for filtering data is one of the essential features of any business intelligence solution associated with big data. Tableau lets a user filter data, whether an individual view contains a few records or an entire data source with millions of records based on dimensions, measures, or values.

As with databases, filtering helps a user see only the data they need based on targeted criteria. When using Tableau filters, you can visualize the data in a readable, actionable format. The real benefit of filtering is to streamline data to limit the number of records for improved performance. An example filter would be to filter all the U.S. states with the word *New.* The result set would return a response of New Hampshire, New Jersey, New Mexico, and New York.

Various filter types are available in Tableau, including the extract, data source, context, dimension, measure, and user filters. You dive into filters a bit more in Chapter 7.

Aggregation

Combining data, also known as *aggregation*, is not uncommon in a business intelligence platform. In Tableau, aggregating measures or dimensions is pervasive. However, aggregation is often numerically focused, meaning focused on the use of measures. Suppose you add a measure to a view. In that case, the aggregation is applied to the specific measure by default, which varies based on context. Read on for an example.

Pretend for a moment that you're the CEO of a Fortune 100 company (think Walmart, Coca-Cola, or Exxon). One of your data analysts prepares a report for you that presents the minimum, maximum, summary, and average number of sales opportunities for a specific product in each region. The scenario would appear as follows (with the bold signifying each data field that is aggregated).

> **Opportunity Value** = 20,000 **products sold** in five **varieties** across 4 **regions** with a customer population of 1,000,000 **households**.

You've now calculated the opportunity value by utilizing the aggregation functions, a way to calculate a set of values and derive a single value.

WARNING

There are limits to what you can aggregate. You can only limit data found in relational data sources. Multidimensional data sources contain data that has already been aggregated, which is impossible to complete. Furthermore, at this time, multidimensional data source aggregation is supported only in the Windows edition of Tableau Desktop.

Workbook and worksheet

Tableau hasn't deviated much from other industry-leading products when it comes to the name of file and formatting conventions. There is a Tableau *workbook*, the main Tableau file, which contains a collection of sheets. The collection of sheets represents the workbook much like that in Microsoft Excel or Microsoft Power BI. In Tableau, a *worksheet* is a single file within a workbook. A worksheet is an element within a dashboard or story.

Although the workbook represents the proverbial catalog of dashboards or stories, the worksheet is a single element or a view. Figure 1-6 represents an example of a single worksheet contained within a Tableau workbook.

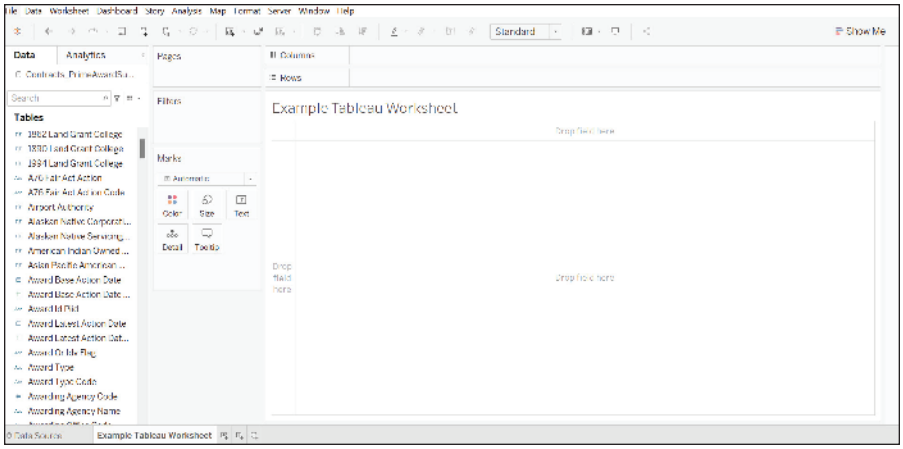


FIGURE 1-6: A Tableau worksheet.

REMEMBER

Here are points to consider when thinking about the use of workbooks and worksheets:

- A Tableau worksheet may contain a single view with many shelves, cards, legends, and analytics panes, which are included as part of a single sidebar on a single page to tell a story.
- When you add many worksheet pages to a workbook, you can generate a *dashboard,* which is a collection of views from many worksheets.
- As you create many worksheets within a workbook, you are compiling a *story,* which is a sequence of worksheets that paint a picture to fuse information.
- Most notably in Tableau Desktop, but also in Tableau Cloud, you can combine views of data by dragging and dropping fields onto the Tableau *shelves,* which are part of a worksheet and which help you create presentations.

In Chapter 7, you take a tour of a worksheet and workbook to see how to collect, organize, and extract data.

Gearing Up for the Tableau Journey

Now that you know the basic Tableau terminology, you can dance your way into installing Tableau. You may be scratching your head, asking "Aren't some instances of Tableau in the cloud?" The answer is yes. Tableau is not a single application; it's a suite of applications. Some Tableau applications still sit on your

desktop such as Tableau Desktop and Tableau Prep Builder, which are available for both Windows and Mac OS. Then, users have a choice to publish the data produced to either Tableau Cloud or Tableau Server. So, without further ado, you can start tiptoeing around the Tableau environments before you explore the entire Tableau portfolio in Chapter 2.

Understanding installation prerequisites

Most users assume that Tableau is cloud-based because its owner, Salesforce, is a software-as-a-service (SaaS) platform. Although Tableau Cloud is indeed where users' Tableau files ultimately wind up, folks still need to do things on their desktops because cloud computing capacity can't necessarily handle the speed and scale of some data activities in Tableau. Take, for example, the creation of the data model or data preparation process. You can do these activities over the web, but the computing capacity required is expensive and labor intensive. The cost to perform the same activities on the desktop or a server is pennies on the dollar. That's why almost all vendors with a business intelligence product like Tableau have a desktop product for data modeling, data prep, and the first stage of reporting, visualizing, and dashboarding.

In this book, I cover three products: Tableau Desktop, Tableau Prep, and Tableau Cloud. Table 1-1 shows the prerequisites for working with Tableau in Windows or Macintosh OS. These are the absolute minimum. Suppose you want to blaze through your datasets without slipping and sliding with some long wait times while the numbers are crunching. In that case, I strongly recommend increasing your RAM and CPU capacity, commonly referred to as compute and memory utilization in business intelligence and cloud computing.

TABLE 1-1 Installation Prerequisites for Tableau Desktop, Tableau Prep, and Tableau Cloud

	Windows OS	Macintosh OS
Tableau Desktop	**OS Version:** Microsoft Windows 8/8.1 or higher (64-bit)	**OS Version**: macOS Mojave 10.14, macOS Catalina 10.15, and Big Sur 11.4+
	CPU: Intel Core i3 or AMD Ryzen 3 (Dual Core) Processor, including CPU support that integrates SSE 4.2 and POPCNT instruction sets	**CPU:** Intel processors, Core i3 (Dual Core) or newer, in which the CPU must support SSE4.2 and POPCNT instruction sets; another option is M1 processors under Rosetta 2 emulation mode
	RAM: 2GB or larger	**RAM:** 2GB or larger
	Disk Space: 2GB HDD or larger hard drive	Disk Space: 1.5GB minimum free disk space

(continued)

TABLE 1-1 *(continued)*

	Windows OS	Macintosh OS
Tableau Prep	**OS Version:** Microsoft Windows 8/8.1 (64-bit) **CPU:** Intel Core i3 or AMD Ryzen 3 (Dual Core), including CPUs; must support SSE4.2 and POPCNT instruction sets **RAM:** 4GB memory or larger **Disk Space:** 2GB HDD free or larger	**Operating System:** macOS Mojave 10.14, macOS Catalina 10.15, and Big Sur 11.4+ **CPU:** Intel processors, Core i3 (Dual Core) or newer, in which the CPU must support SSE4.2 and POPCNT instruction sets; another option is M1 processors under Rosetta 2 emulation mode **RAM:** 4GB memory or larger **Disk Space:** 2GB HDD free or larger
Tableau Cloud	**Web Browsers** Chrome on Windows, Mac, and Android Microsoft Edge on Windows Mozilla Firefox and Firefox ESR on Windows and Mac Apple Safari on Mac and iOS **Data Sources** Extracts of all data sources must have a compatible version of Tableau Desktop. Live connections must allow for a connection to many data sources hosted in the cloud and on-premises using the Tableau Bridge client. This requires meeting the minimum prerequisites of Tableau Desktop. **Storage** All plans require a minimum of 100GB (standard offering). **Internationalization** Tableau's products are Unicode enabled and compatible with data stored in most spoken languages.	

Getting familiar with Tableau file types and sources

Unless you are 100 percent responsible for the data creation process, you likely have limited control over data quality and the destiny of your data sources. As you embark on a data selection journey with Tableau, you need to consider numerous factors, from data type and source variety to suitable instrumentation and collection methodology. Selecting data is both an art and a science, as you'll realize over time.

TIP

Don't be blind to the fact that the data selection process is, first and foremost, determining what data types, sources, and instruments are appropriate to answer your research questions. You need to know what each field should contain, the data type the field must adhere to, and the output structure you need or want.

WARNING

Despite what Tableau and every other business intelligence vendor touts as intelligent data connections, the connectors are not all *that* smart. The quality and breadth of your data dictate the accuracy of the data connection. After you've connected to a data source, you'll need to create a data connection, but that's when the fun begins. Why? Because you'll still need to do a bit of cleanup to ensure that data sources accurately reflect the data types, the columns map, and even that the data translates appropriately. Integrity issues are not uncommon, so do not let your guard down and trust Tableau just because it advertises its data connectors as being the most intelligent on the market.

As a closing note to this chapter, the rest of this section helps you become familiar with the various data file and source types that you'll get your hands on as you work with Tableau Desktop, Tableau Prep, and Tableau Cloud. The following list provides the spectrum of the most common options, also shown in Figure 1-7.

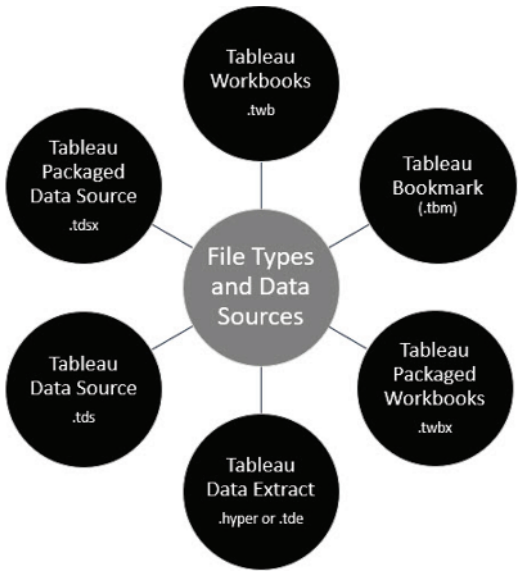


FIGURE 1-7: The most common Tableau file type and data source options.

- **Tableau workbooks (`.twb`):** The workbook is the most popular file format you'll get your hands on and is the default for most users. Workbooks contain worksheets, dashboards, stories, and other components.
- **Tableau bookmarks (`.tbm`):** A Tableau bookmark contains a single worksheet (not a workbook). You can easily share your work products, such as a single dashboard, story, report, or another component.
- **Tableau packaged workbooks (`.twbx`):** This file type contains the metadata about a workbook's constituents and data derived from a data source. Initially, a `.tde` file (see the next item in this list) includes the data extracted from the start. The output is the extension `.twbx`, which is used for Tableau packaged workbooks. Suppose you need to share a workbook with a user who does not have access to a live data connection. You can use the `.twbx` file instead of the traditional `.twb` file to connect to the data for easy connectivity.

  
  TIP

  A Tableau packaged workbook is also a great option if you must include information about images or geocoding.
- **Tableau extracts (`.hyper` or `.tde`):** The `.tde` is used only for data extract files, whereas there are other use cases for the `.hyper` extension. Local copies of a complete or a subset of data from a source get stored in this Tableau file type. This file type is location agnostic, meaning that nothing is tied to the data source, workbooks, dashboard, or other data assets. Because every asset is highly compressed, you often use these files when the goal is to help expedite connectivity for slow connections or those working in offline mode.
- **Tableau data source (`.tds`):** These files contain all the data-connection instructions, not the actual files themselves. Say you want to connect to a relational database like Oracle. The Tableau data source stores all the connection strings to the Oracle database, not to all the data inside the Oracle database. Undoubtedly, the Tableau data source is a bit more sophisticated than just a connection to the source; it also allows for the metadata and any user customizations to be stored, such as custom fields and table joins across systems.
- **Tableau packaged data source (`.tdsx`):** In contrast to a Tableau data source, a packaged data source contains information about a data source and the data. The extracted data is saved by applying for the `.tde` file extension; the source information is kept in a `.tds` file. You can shift the data around using a local file structure such as a text file or perhaps a `.hyper` file. You may

also want to utilize a Microsoft-based file such as an Excel file to shuffle the data to and from the source. Here's the catch: The Tableau Packaged Data source has a unique extension, `.tdsx`. When you need to share data about a specific data source, but the user does not have access to said source or the data, your best option is to use a packaged data source because it brings the connection and data together in one fell swoop.

REMEMBER

The subtle but significant difference between a `.tds` and `.tdsx` file type is that the information about the data, not the data itself, is held in the `.tds` file. Data is also available in the Tableau packaged data source file type, `.tdsx`.

Regardless of the file type or data source type used, you can save Tableau files in an associated folder in any Tableau Repository directory, which is automatically created in your My Documents folder on a Windows or Macintosh OS computer. You can save work files in other locations. Still, best practice is to save to a central location versus randomly saving to locations such as your desktop or an ad hoc network directory.