

Tableau Desktop Certified Associate: Exam Guide

Develop your Tableau skills and prepare for Tableau certification with tips from industry experts



Dmitry Anoshin, JC Gillet, Fabian Peri,
Radhika Biyani and Gleb Makarenko

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Dmitry Anoshin
JC Gillet
Fabian Peri
Radhika Biyani
Gleb Makarenko



BIRMINGHAM - MUMBAI

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Contributors

About the authors

Dmitry Anoshin is an expert in analytics with 10 years of experience. He started using Tableau as a primary BI tool in 2011 as a BI consultant at Teradata. He is certified in both Tableau Desktop and Tableau Server. He leads probably the biggest Tableau user community, with more than 2,000 active users. This community has two to three Tableau talks every month led by top Tableau experts, Tableau Zen Masters, Viz Champions, and more. In addition, Dmitry has previously written three books with Packt and reviewed more than seven books. Finally, he is an active speaker at data conferences and helps people to adopt cloud analytics.

Jean-Charles (JC) Gillet is a seasoned business analyst with over 7 years of experience with SQL at both a large-scale multinational company in the United Kingdom and a smaller firm in the United States, and 5 years of Tableau experience. He has been holding Tableau and SQL office hours for multiple years to share his expertise with his colleagues, as well as delivering SQL training. A French national, JC holds a master's degree in executive engineering from Mines ParisTech and is a Tableau Desktop Certified Associate.

In his free time, he enjoys spending time with his wife and daughter (to whom he dedicates his work on this book), and playing team handball, having competed in national championships.

Fabian Peri's interest in decision analysis started after joining his first fantasy basketball league in 2006. His love for data analysis led him to pursue an MBA in information systems at the University of Tulsa, and then an MS in predictive analytics from Northwestern University. Since graduating, he has primarily worked in risk analysis and management for companies such as Amazon, GE Capital, and Wells Fargo. He is currently focused on using visualization to explore and interpret vast quantities of data.

Radhika Biyani is currently working as a recruitment insights analyst with Amazon. Before this, she worked as an analytics consultant with Version 1, where she consulted on several large-scale BI and analytics projects with clients across various industry verticals such as HR, finance, utility, supply chain, and more. She holds a master's degree in business analytics and has many certifications, including Tableau Qualified Associate. She enjoys attending meetups and is an active member of many meetup groups, including Tableau User Group Dublin.

Gleb Makarenko began using Tableau in 2018 and quickly fell in love with how intuitive and easy to use the software was. He was able to easily adapt to its interface and create powerful visualizations. That is when he decided to get certified on Tableau software in order to receive proper credentials that he could use on his resume, as well as learn about the intricacies of the software that he wasn't using at the time. With a bit of effort and research, Gleb was able to complete the examination. And he recommends the same to anyone who is serious about working with Tableau.

About the reviewers

Shweta Sankhe-Savale is the co-founder of Syvylyze Analytics. Being one of the leading experts on Tableau, Shweta has translated her expertise to successfully rendering analytics and data visualization services and training for numerous clients across a wide range of industry verticals.

Shweta is an empaneled trainer for Tableau Software APAC and conducts private and public Tableau training sessions across Singapore, Malaysia, Hong Kong, Australia, and India. She has successfully trained 2,000+ participants from 150+ companies, making her one of the foremost trainers on Tableau.

Shweta is also a published author with Packt Publishing, with a book titled *Tableau Cookbook: Recipes for Data Visualization*.

Marleen Meier has worked in the field of data science and BI since 2013. Her experience includes Tableau training, proof of concepts, implementations, project management, user interface designs, and quantitative risk management. In 2018, she was a speaker at the Tableau conference, where she showcased a machine learning project. Marleen uses Tableau, combined with other tools and software, to get the best business value for her stakeholders. She is also very active within the Tableau community and was one of the Dutch Tableau user group leaders before she moved to Chicago.

Marleen is also a published author with Packt Publishing, with a book titled *Mastering Tableau 2019.1*.

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Preface

There is no doubt that data is a key asset for organizations, and it is important to treat data right in order to get the most out of it. Tableau is a best-of-breed technology currently on the market that allows us to work with data, slice it, and do complex data analysis on the fly. However, it requires you to understand the key concepts of data analytics and how to *drive* Tableau in order to deliver value. Moreover, as we are working in a competitive environment, we should constantly improve our skills and learn new technologies, new features, and new data analysis methods to be on the cutting edge.

The goal of this book is to prepare you for the Tableau Desktop Certified Associated exam. This book is written by people who passed this exam and they will share their experience and resources so that you can also successfully pass the exam.

So, why is it important to obtain a Tableau certification? Well, the certification not only assesses our knowledge of Tableau, but it evaluates our ability to comfortably work with data and communicate with people using powerful visualization techniques. Moreover, it requires an understanding of overall **Business Intelligence (BI)** solutions and their role in an organization.

The idea behind Tableau is to democratize access to data. In other words, business users will use Tableau's functionalities to slice and dice data; connect various systems, databases, and files; visualize data; build dashboards; and explore data.

As a professional Tableau developer, you should know how to connect data, explore it, and slice and dice it. Often, you will have to build a dashboard or tell a story with data. It is good to know the best practices for data visualization in order to make your work effective. In some cases, you should calculate new metrics and leverage Tableau with table calculations or level of detail calculations. Sometimes, parameters can help you to filter data and add self-service functionality. Finally, you should have some knowledge of statistics and know how to use built-in functionalities for forecasting, trend lines, and clustering. You should know about Tableau Server and how to share and publish your work. This book will help you to cover all of these areas and not only prepare for the exam, but also help you to improve your overall skills in analytics.

This book will help you to prepare for the Desktop Specialist and Desktop Certified Associate certifications. In addition, it will provide you with the foundational knowledge for Desktop Professional. Based on my experience, Desktop Specialist isn't anywhere near as valuable as Desktop Associate.

Before diving into the Tableau lessons, let's review the success stories of the authors and learn more about their Tableau journeys in their own words.

Dmitry Anoshin, Tableau Desktop and Server Qualified Certified:

"I have worked with Tableau since 2011. Most of the time, I was working on data warehouse projects and used Tableau as a primary BI tool. I didn't spend much time on great visualizations and complex calculations. Also, I was responsible for Tableau Server deployment and support. My employer never asked me to complete a Tableau certification. Just recently, I was involved in Tableau communities and user groups and decided to pass the exam and fill the gaps in my knowledge. After some preparation, I was able to pass the Tableau Desktop Qualified Certification and Tableau Server Qualified Certification. It wasn't easy and it took a lot of extra effort. But it is totally worth it. Now, I feel more confident in my skills and can demonstrate my knowledge to my colleagues and employer."

Gleb Makarenko, Tableau Desktop Qualified Associate Certified:

"I began using Tableau in 2018 and quickly fell in love with the intuitiveness and ease of use of the software. I was able to easily adapt to its interface and create powerful visualizations. I decided to get certified on Tableau software to receive proper credentials that I could use on my resume, as well as learn intricacies that I wasn't using at the time. With a bit of effort and research, I was able to complete the examination and would recommend doing the same to anyone who is serious about working with Tableau."

JC Gillet, Tableau Desktop Qualified Associate Certified:

"I have worked with Tableau since 2014. For the first few years of my career, I was using Tableau mostly for its map feature, as I found this was a very efficient way to convey insights. I started to use it almost exclusively in 2018 as it was my new team's BI tool. Once you get past its few quirks, it is a really powerful and easy-to-use platform. It seemed like a natural step for me to take the certification exam once I found myself being the local expert on Tableau. Now, I hold a widely recognized qualification that I can use to promote myself to my current and future employers. I even learned a few things while taking the exam!"

Fabian Peri, Tableau Desktop Qualified Associate Certified:

"I was first introduced to Tableau in 2015 as a graduate student. It was recommended to me by my professor for a data visualization assignment. After a few days of use, I understood how it could help the stakeholders at my company gain insights from vast quantities of data. Since then, Tableau has been my preferred visualization tool. Although I have been working with Tableau for years, I was hesitant to take the Tableau certification exam because I did not know if it would be of any use. During my last job search, I realized that a Tableau certification would set me apart from other candidates. After reading numerous resources I passed the certification exam – the entire process was a great learning experience. In addition, it gave me confidence in my skills as a Tableau developer."

Radhika Biyani, Tableau Desktop Qualified Associate Certified:

"I was first introduced to Tableau in 2016 as a master's student while working on a data visualization assignment. I fell in love with it and, since then, it has been my preferred visualization tool. When I started using it on a day-to-day basis for my clients in an analytics consultant capacity, I knew that being Tableau Certified would help me gain the trust of any new or potential clients easily. I got certified in 2017 and studying for the certification helped me learn certain nuances of the tool that I wasn't familiar with, despite using Tableau on a day-to-day basis. These made my work faster, more efficient, and better and I still use those skills in my job to date. I would totally recommend the Tableau exam to anyone who wants to take their skills to the next level!"

Now that we have covered what the certification is in general and have learned why it is important to prepare for and pass the Tableau exam, it's time to learn about the key topics of Tableau that will help you to successfully prepare for the Tableau Desktop Certified Associate exam and pass it with a score of more than 75 percent in less than 2 hours. Good luck!

Who this book is for

This book is for business analysts, BI professionals, and data analysts who want to get certified as a Tableau Desktop Associate and solve a range of data science and BI problems using this example-rich guide. Each chapter is packed with self-assessment questions so that you can become well versed with Tableau Desktop's offerings. Some prior experience of Tableau Desktop is expected.

What this book covers

Chapter 1, *Building Your Data Model*, will help to understand how to connect to your data and use Tableau's data modeling capabilities.

Chapter 2, *Working with Worksheets*, will show you how to use the data that you have prepared to begin building your visualizations in order to share insights. This chapter will demonstrate how to use Tableau's worksheets to conduct your analysis.

Chapter 3, *Analyzing Data Using Charts*, teaches you about the various chart types that are available in Tableau. The chapter will also discuss how formatting can help create more effective visualizations.

Chapter 4, *Visualizing Geographic Data*, dives deeper into map visuals and will enable you to understand more about the mapping capabilities in Tableau. This chapter will explain how to create, navigate, and customize maps.

Chapter 5, *Understanding Simple Calculations in Tableau*, helps you to create simple calculations that can be leveraged across the various visuals that we have read about in the previous chapters.

Chapter 6, *Tableau Table Calculations*, looks at more advanced table calculations, where the results of the calculations observed in this chapter will be used for building further calculations.

Chapter 7, *Level of Detail Expressions*, covers the three types of level of detail expressions available in Tableau and explains how they can be used to aggregate data at a level that is either more granular or less granular than the specified dimensions.

Chapter 8, *Leveraging Analytics Capabilities*, covers some of Tableau's analytics tools, enabling you to create reference lines or bands, cluster data in similar buckets, identify trends, and forecast what your data will look like in the future.

Chapter 9, *Building Your Dashboards*, will walk you through features and best practices that will help you to build actionable and informative dashboards.

To get the most out of this book

Readers without any prior knowledge of Tableau can get the most out of this book.

Download the example code files

You can download the example code files for this book from your account at www.packt.com. If you purchased this book elsewhere, you can visit www.packtpub.com/support and register to have the files emailed directly to you.

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The code bundle for the book is also hosted on GitHub at <https://github.com/PacktPublishing/Tableau-Desktop-Certified-Associate-Exam-Guide>. In case there's an update to the code, it will be updated on the existing GitHub repository.

We also have other code bundles from our rich catalog of books and videos available at <https://github.com/PacktPublishing/>. Check them out!

Download the color images

We also provide a PDF file that has color images of the screenshots/diagrams used in this book. You can download it here: http://www.packtpub.com/sites/default/files/downloads/9781838984137_ColorImages.pdf.

Conventions used

There are a number of text conventions used throughout this book.

CodeInText: Indicates code words in text, database table names, folder names, filenames, file extensions, pathnames, dummy URLs, user input, and Twitter handles. Here is an example: "Mount the downloaded `WebStorm-10*.dmg` disk image file as another disk in your system."

Bold: Indicates a new term, an important word, or words that you see on screen. For example, words in menus or dialog boxes appear in the text like this. Here is an example: "Select **System info** from the **Administration** panel."



Warnings or important notes appear like this.



Tips and tricks appear like this.

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1

Section 1: Getting Started with Tableau

In this section, you will learn about the concepts of Tableau and how to install Tableau Desktop.

This section comprises the following chapter:

- Chapter 1, *Building Your Data Model*

1 Building Your Data Model

Data analysis and visualization go hand in hand. Tableau allows users to perform in-depth data analysis and share results via interactive visualizations. Tableau includes numerous data modeling capabilities that allow users to make sense of data and to obtain meaningful insights, without having to deal with advanced database concepts. Data modeling is an important concept, and the more data you are working with, the more important it is.

As the amount of information we work with grows, we need to be able to efficiently perform analysis. Data modeling allows us to not only prepare for our analysis but to also make it as efficient as possible. At the end of the day, we use data to help us make better decisions. Spending time learning how we can model the data will help us identify what questions we can answer, and how to answer them. Regardless of the size of the data you are working with, Tableau will help you glean insights with ease.

This chapter will explain how to connect to your data and use Tableau's data modeling capabilities to begin your analysis.

The following topics will be covered in this chapter:

- Initial preparation
- Connecting to your data
- Building your data model
- Preparing your data

Technical requirements

This chapter uses the Global Superstore dataset, which can be found at https://www.tableau.com/sites/default/files/getting_started_data_sets.zip.

Once extracted, you will see two files:

- Global Superstore Orders 2016
- Global Superstore Returns 2016



We believe that following along is the best way to learn and become comfortable with any application. Follow along using the examples provided in this chapter, or find a dataset that you are interested in.

Initial preparation

Before connecting to your data, you need to do a few things. First, you must look for data that will answer your questions. Once you have validated that it exists, where it is stored and how to acquire access/permissions (if necessary). In most cases, you will be connecting directly to a database using a username and password. However, you can also connect to files such as Excel workbooks on your local machine. You can even use a combination of both if needs be.

The Global Superstore dataset

The Global Superstore dataset is data from a fictional global retail chain that sells office supplies. In the real world, you will most likely be connecting to databases; however, working with Excel files is similar – sheets in Excel are treated similarly to tables in a database. The data in these workbooks is similar to what you would see in a database.

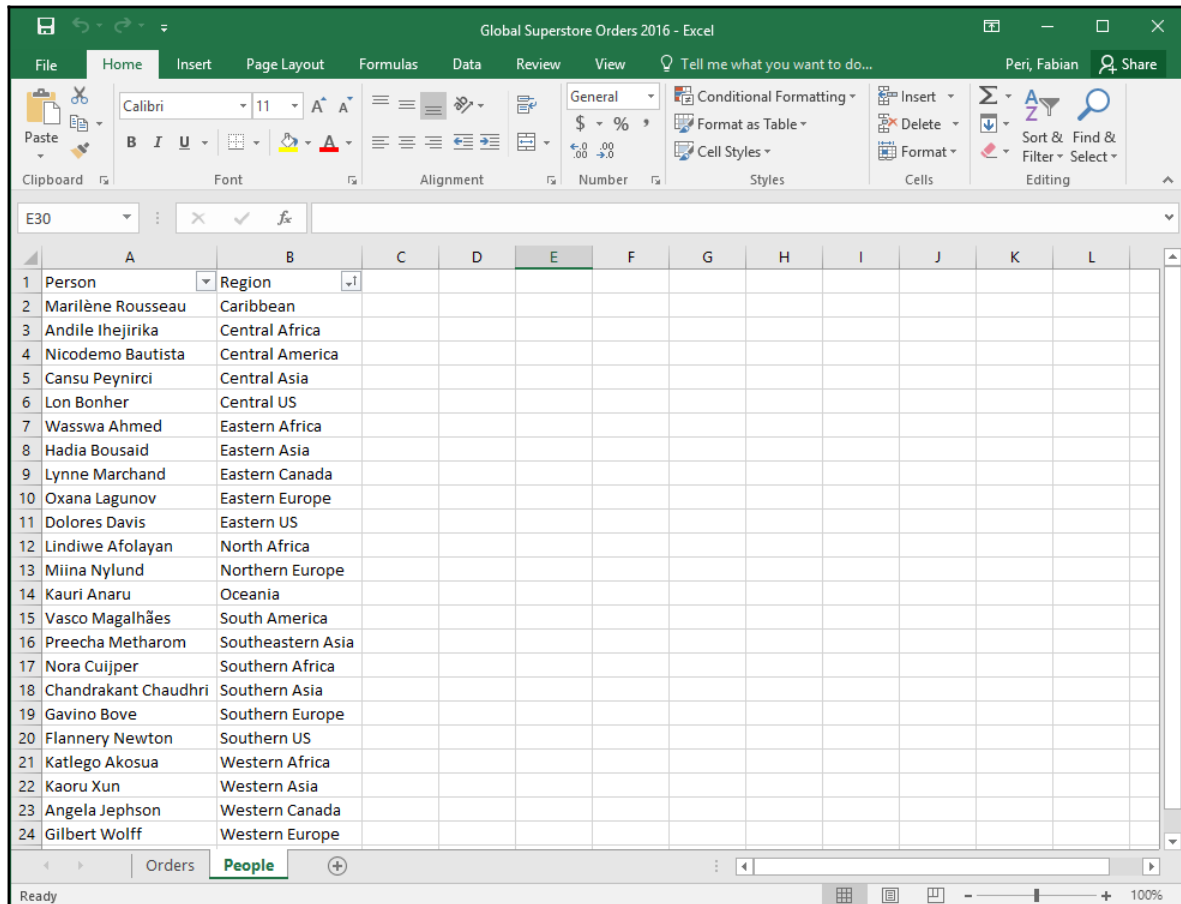
The Global Superstore dataset consists of one Excel workbook and one Excel CSV file:

- Global Superstore Orders 2016 (.xlsx)
Sheet 1: Orders
Sheet 2: People
- Global Superstore Returns 2016 (.csv)
Sheet 1: Global Superstore Returns 2016

The Orders sheet contains sales data where each record (Row ID) represents a single transaction:

Row ID	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment	Postal
2	40098 CA-2014-AB10015140-41954	11/11/2014	11/13/2014	First Class	AB-100151402	Aaron Bergman	Consumer	73120
3	26341 IN-2014-JR162107-41675	2/5/2014	2/7/2014	Second Class	JR-162107	Justin Ritter	Corporate	
4	25330 IN-2014-CR127307-41929	10/17/2014	10/18/2014	First Class	CR-127307	Craig Reiter	Consumer	
5	13524 ES-2014-KM1637548-41667	1/28/2014	1/30/2014	First Class	KM-1637548	Katherine Murray	Home Office	
6	47221 SG-2014-RH9495111-41948	11/5/2014	11/6/2014	Same Day	RH-9495111	Rick Hansen	Consumer	
7	22732 IN-2014-JM156557-41818	6/28/2014	7/1/2014	Second Class	JM-156557	Jim Mitchum	Corporate	
8	30570 IN-2012-TS2134092-41219	11/6/2012	11/8/2012	First Class	TS-2134092	Toby Swindell	Consumer	
9	31192 IN-2013-MB1808592-41378	4/14/2013	4/18/2013	Standard Class	MB-1808592	Mick Brown	Consumer	
10	40099 CA-2014-AB10015140-41954	11/11/2014	11/13/2014	First Class	AB-100151402	Aaron Bergman	Consumer	73120
11	36258 CA-2012-AB10015140-40974	3/6/2012	3/7/2012	First Class	AB-100151404	Aaron Bergman	Consumer	98103
12	36259 CA-2012-AB10015140-40974	3/6/2012	3/7/2012	First Class	AB-100151404	Aaron Bergman	Consumer	98103
13	28879 ID-2013-AJ107801-41383	4/19/2013	4/22/2013	First Class	AJ-107801	Anthony Jacobs	Corporate	
14	45794 SA-2012-MM7260110-41269	12/26/2012	12/28/2012	Second Class	MM-7260110	Magdelene Morse	Consumer	
15	4132 MX-2013-VF2171518-41591	11/13/2013	11/13/2013	Same Day	VF-2171518	Vicky Freymann	Home Office	
16	27704 IN-2014-PF1912027-41796	6/6/2014	6/8/2014	Second Class	PF-1912027	Peter Fuller	Consumer	
17	13779 ES-2015-BP1118545-42216	7/31/2015	8/3/2015	Second Class	BP-1118545	Ben Peterman	Corporate	
18	39519 CA-2012-AB10015140-40958	2/19/2012	2/25/2012	Standard Class	AB-100151402	Aaron Bergman	Consumer	76017
19	12069 ES-2015-PJ1883564-42255	9/8/2015	9/14/2015	Standard Class	PJ-1883564	Patrick Jones	Corporate	
20	22096 IN-2015-JS156857-42035	1/31/2015	2/1/2015	First Class	JS-156857	Jim Sink	Corporate	
21	49463 TZ-2015-RH9555129-42343	12/5/2015	12/7/2015	Second Class	RH-9555129	Ritsa Hightower	Consumer	
22	46630 PL-2013-AB600103-41494	8/8/2013	8/10/2013	First Class	AB-600103	Ann Blume	Corporate	
23	36260 CA-2012-AB10015140-40974	3/6/2012	3/7/2012	First Class	AB-100151404	Aaron Bergman	Consumer	98103
24	21586 IN-2012-JK1532527-41030	5/1/2012	5/2/2012	First Class	JK-1532527	Jason Klamczynski	Corporate	

The **People** sheet contains a mapping of persons to region:



	Person	Region
1	Person	Region
2	Marilène Rousseau	Caribbean
3	Andile Ihejirika	Central Africa
4	Nicodemo Bautista	Central America
5	Cansu Peynirci	Central Asia
6	Lon Bonher	Central US
7	Wasswa Ahmed	Eastern Africa
8	Hadia Bousaid	Eastern Asia
9	Lynne Marchand	Eastern Canada
10	Oxana Lagunov	Eastern Europe
11	Dolores Davis	Eastern US
12	Lindiwe Afolayan	North Africa
13	Miina Nylund	Northern Europe
14	Kauri Anaru	Oceania
15	Vasco Magalhães	South America
16	Preecha Metharom	Southeastern Asia
17	Nora Cuijper	Southern Africa
18	Chandrakant Chaudhri	Southern Asia
19	Gavino Bove	Southern Europe
20	Flannery Newton	Southern US
21	Katlego Akosua	Western Africa
22	Kaoru Xun	Western Asia
23	Angela Jephson	Western Canada
24	Gilbert Wolff	Western Europe

The Global Superstore Returns 2016 sheet contains order IDs for returned orders by region:

	Returned	Order ID	Region
1	Yes	CA-2012-SA20830140-41210	Central US
2	Yes	IN-2012-PB19210127-41259	Eastern Asia
3	Yes	CA-2012-SC20095140-41174	Central US
4	Yes	IN-2015-JH158207-42140	Oceania
5	Yes	IN-2014-LC168857-41747	Oceania
6	Yes	ID-2013-AB1001527-41439	Eastern Asia
7	Yes	ES-2015-RA1994545-42218	Western Europe
8	Yes	CA-2014-TB21280140-41724	Central US
9	Yes	ES-2014-JF15295120-41924	Southern Europe
10	Yes	IN-2014-NM1844527-41800	Eastern Asia
11	Yes	IN-2015-GB145307-42260	Oceania
12	Yes	ES-2012-SC208458-41070	Western Europe
13	Yes	TU-2013-SF10200134-41417	Western Asia
14	Yes	ID-2015-RD1993092-42140	Oceania
15	Yes	CA-2014-TC21295140-41800	Southern US
16	Yes	SF-2015-MV8190117-42362	Southern Africa
17	Yes	IN-2014-EM1382566-41850	Eastern Asia
18	Yes	ES-2015-CC1210045-42182	Western Europe
19	Yes	ES-2015-MM1792045-42199	Western Europe
20	Yes	IN-2015-DB1306027-42353	Eastern Asia
21	Yes	IN-2013-JC157757-41310	Oceania
22	Yes	CA-2015-RB19705140-42262	Eastern US
23	Yes	ES-2015-BB1154548-42336	Western Europe
24	Yes		

We have found the data we need for our analysis, we know where it's located, and have access to use it. Now we will move on to connecting to the data source with Tableau.



It is always a good idea to get an idea of the data you are working with by viewing a few records. If you are working with an Excel file, open it in Excel to get a feel for the dataset.

Connecting to your data

Before diving into your data, you have to connect to it. Tableau allows you to connect to numerous data sources. You can connect to files on your local machine, to databases on servers, or other database sources. Tableau allows users to connect to numerous data sources – for a full list, visit Tableau's website to view a comprehensive and up-to-date list. The types of data sources you can connect with are listed in the **Connect** pane of the start page. Files that you have recently connected to will appear on this page as well.

Depending on which version of Tableau Desktop you are using, you will have access to different built-in connectors. Search for your required connection type to connect to your data. If you are connecting to a commonly used connector then it is almost certain to be available. If the file or database that you need to connect to is not available in the **Connect** pane section, you can create a custom connection using **Other Databases (ODBC)** or a **Web Data Connector**. You can see a list of all of the native data connection types Tableau allows in the **Connect** pane by clicking on the **More...** button (under the **To a File** or **To a Server** sections):



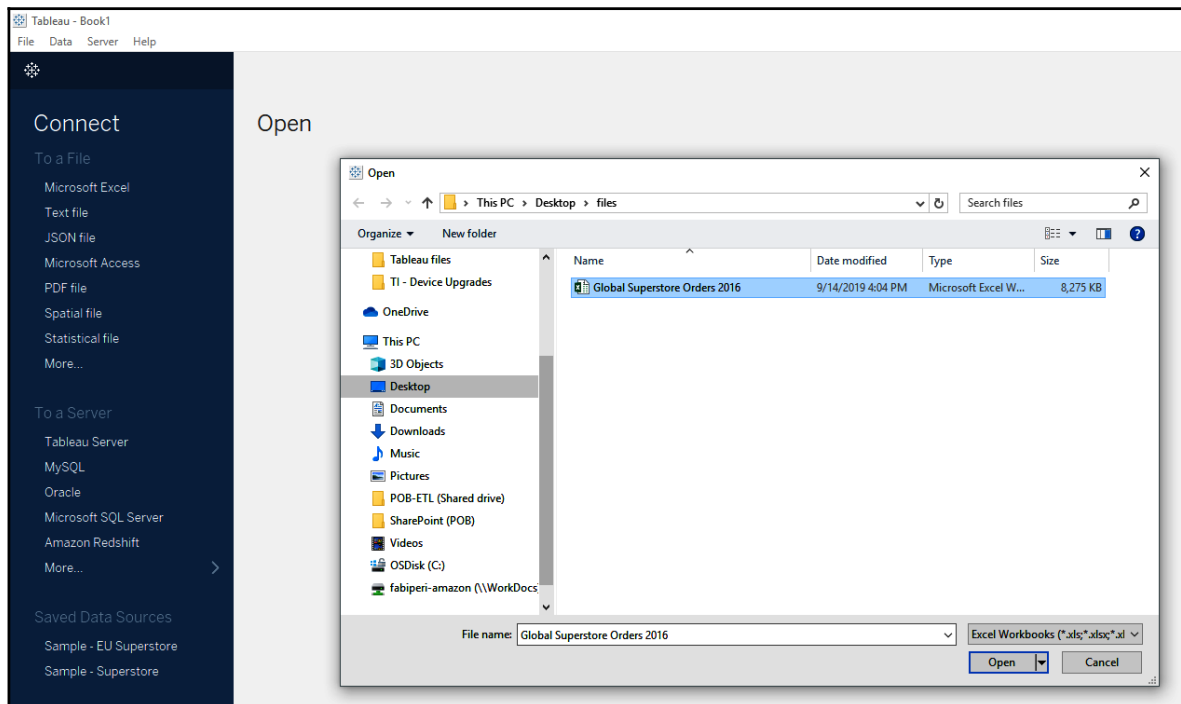


If the data source you want to connect to is not available in the **Connect** pane, do a little research online. There are often helpful suggestions made by the community that will help you solve questions or issues that you will run into.

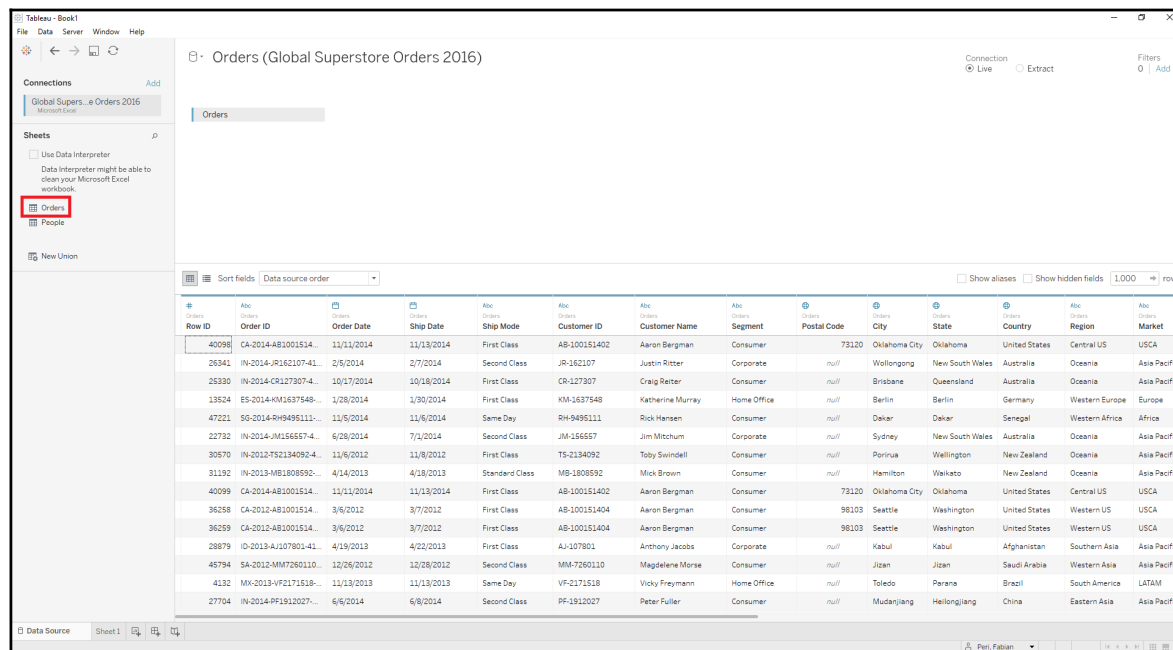
Now we will move on to connecting to the Global Superstore Orders dataset.

Connecting to the Global Superstore dataset

Click on the **Microsoft Excel** button in the **Connect** pane. It will be under the **To a File** section. Your file browser window will open. Navigate to and open the **Global Superstore Orders 2016** Excel file:



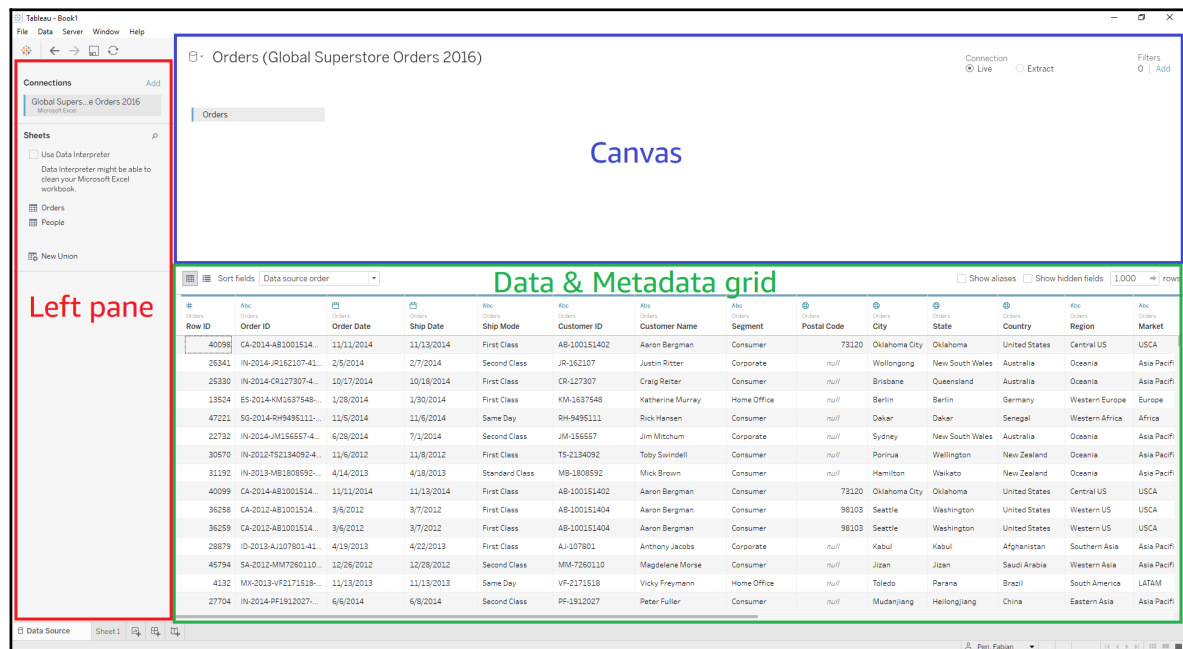
After connecting to the data source, you will be taken to the **Data Source** screen. From this screen, we can select which tables (in this case, sheets) that we want to use in our analysis:



Double click the **Orders** table icon in the **Connections** pane (under the **Sheets** section) or drag the **Orders** table icon to the canvas. You will then see orders in the canvas (rectangle name icon with a blue border to the left). You will also see a sample of 1,000 rows in the data grid. We previously mentioned how important it is to view your data before you start working with it. The data grid is an easy way to do this.

The **Data Source** page allows you to prepare the data for analysis. Once connected to a data source, you can make changes to how Tableau imports and interprets tables. Take a look at the preceding screenshot, which shows the **Data Source** page after connecting to and importing the orders sheet from the *Global Superstore Orders 2016* dataset.

There are four main sections of the **Data Source** page. These sections are highlighted in the following screenshot. Next, we will look at these sections in detail, starting with the left pane:

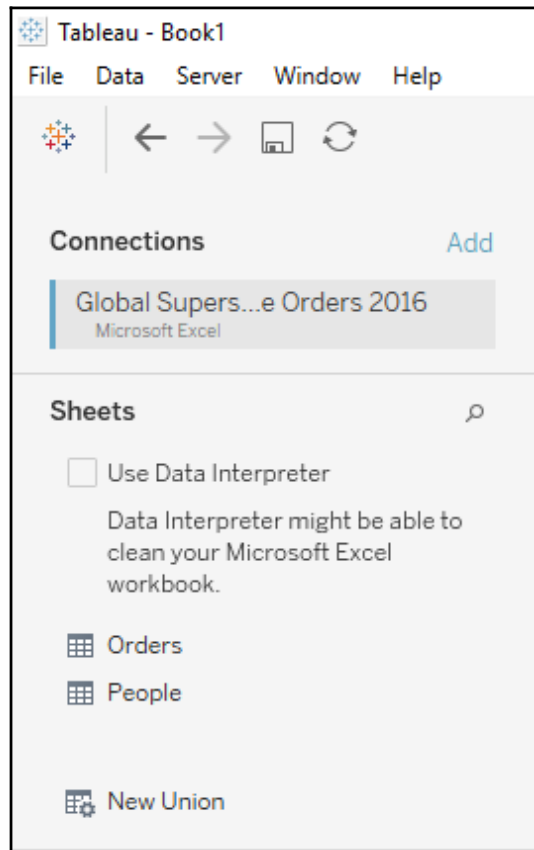


The left pane

The left pane shows connection details for the data sources you have connected to. This section allows you to add additional data source connections using the **Add** button.

When connected to flat files (for example, Excel), the **Connections** section will show the Excel workbook you are connected to with the sheets listed here. In the preceding screenshot, Global Superstore Orders 2016 is the Excel workbook and the sheets are Orders and People.

When connected to databases, the left pane will display the server name, the database, schema, and tables listed in the following screenshot:



If you hover over the right of the connection name, a down caret will appear. This allows us to make extra changes to the connection, such as renaming it.