

The Ultimate Tableau Workbook

Get Up Get Started In 4 Hours

By: Shashank Kalanithi





Framing the Course

Thank you for downloading my Tableau Workbook. My hope is that by the time you're done reading this you'll know enough to start figuring out Tableau on your own. This course requires no prior experience and is designed to get you off the ground.

This course comes with an accompanying video located here
<https://www.youtube.com/watch?v=Gl2lg-TtRJo&t=>

I believe that there is no better way to truly learn a concept than to apply it as soon as you learn it. To help you with this, we'll be applying the concepts we learn step by step as we go along.



Framing the Course

This course won't make you an expert at Tableau but should get you off the ground.

Like a plane, I believe that one of the hardest parts of learning is just starting, and I hope to help you take off and become self-sufficient.



Key

You'll notice a colored bar at the top of each page. The color of this bar represents the purpose of the page as shown below.

Orange is for information about the course

Blue is for instructions in the guides

Yellow is for warnings and extra information you should consider

Red is for nerding out, the content here is purely for your enjoyment. You will not miss anything mandatory by skipping these sections.



About the Author

Although there are several people who have helped me on my journey, I would like to dedicate this book to my Mom who taught me that no matter your experience it's never too late to start a new journey in life.

As for myself, I'm a graduate from Emory University currently working as a Senior Data Analyst in Dallas, TX. I hope to become a data scientist in the near future.



What is Tableau

Tableau is a software company that has created a host of tools to explore, visualize, and present data. Their most popular product is Tableau Desktop which is a tool that allows you to quickly connect, visualize, and distribute any data you might have. At their core, the tools are supposed to help you derive insights from your data.

Tableau's current product offerings include:

- Tableau Desktop: Tableau's core product and what most people are referring to when they say "Tableau". This tool allows you to connect to most types of data and create professional-grade visualizations
 - Tableau Desktop Public Edition: A free version of the desktop software that allows you most of the functionality of the full version of Tableau Desktop, but all visualizations have to be published on Tableau's online public library
- Tableau Prep: A data cleansing software, Prep was designed to allow users to easily and visually inspect datasets and clean them systematically before they are visualized in Tableau Desktop
- Tableau Server/Online: Allows companies to distribute visualizations made on Tableau Desktop throughout the organization. Also has limited visualization creation abilities inbuilt
 - Tableau Data Management
 - Tableau Server Management



The Importance of Data Visualization

The importance of data isn't lost on anyone. Read the news, talk to your superior, or just look at the most valuable companies in the world today. It is not an exaggeration to say that Data is the Oil of the 21st Century. Many an individual take this as gospel and leave it at that without more deeply considering the implications of this metaphor. Like oil, data is not particularly valuable until it has been enriched. John D. Rockefeller did not become the richest man alive simply by mining oil, in fact that formed a small portion of his business portfolio. He realized that mining oil was hard work and heavily based on the luck of finding a big enough gusher before your capital ran out. The real money to be made was in refining oil, he could get oil from any number of suppliers, let them assume the risk of not finding anything, refine it, and sell it at much higher prices than he bought it for. Data is much the same way. Data without insights is as useless to you and me as crude freshly pumped from the ground.



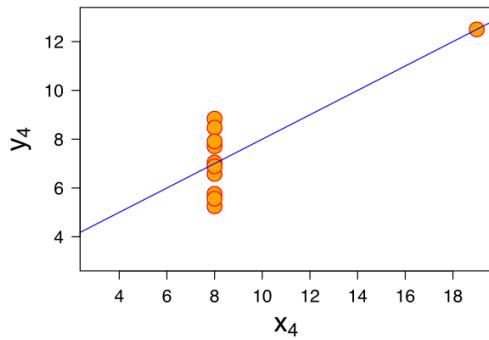
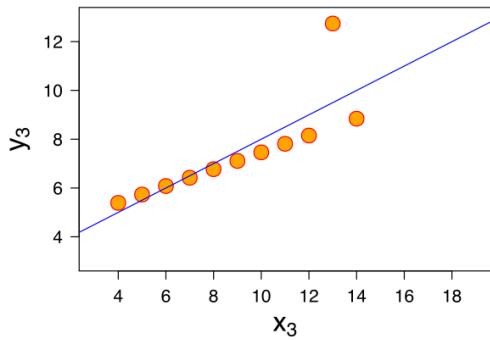
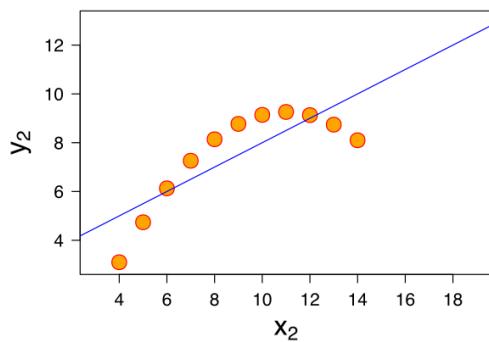
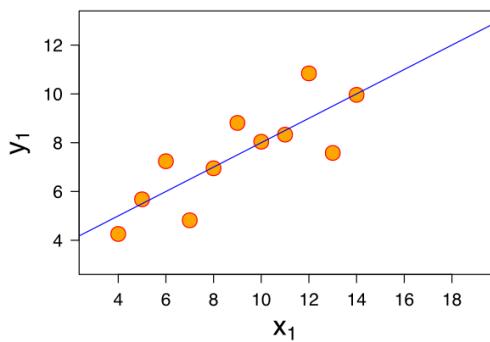
The Importance of Data Visualization

This is where data visualization comes in. Humans are hard-wired to look for patterns in nature, it's what's helped us simplify the infinitely complex world around us into something that we can actually manage to understand and control. Data visualization is simply the process of abstracting away the complexity of raw data and organizing it into a form which we can more easily consume.



The Importance of Data Visualization

To more clearly illustrate my point, look at the illustration below. Also known as Anscombe's quartet, all of the below graphs have the same values for measures of central tendency (mean, median, mode). If one were to simply calculate these metrics and not visualize the data, one could easily come to the wrong conclusion that the distributions for the data would all be the same.





What Makes Tableau so Great

Tableau is operating in a crowded space and needs to differentiate itself as a best-in-class tool in order to stand out from the crowd. Gartner has placed Tableau in the “Leader” section of their Magic Quadrant for the last eight years consecutively with consistent marks given to its “Ease of visual exploration and data manipulation” and “Customer enthusiasm”.

- Customer Enthusiasm: You only need to attend one Tableau user group to see how well-liked the tool is by its users. This enthusiasm ensures that answers to questions on the forum are forthcoming and that support for problems is easy to obtain. Tableau Conference 2019 had over 20,000 attendees from all over the world who came to learn about the newest release, connect with other Tableau users, and apply new and innovative tricks and tips to visualize and manage their data.



Shashank Kalanithi



Career Opportunities with Tableau

Tableau is a tool that is widely used across the world and job opportunities that directly work with Tableau are plentiful and well-paying.

Screenshot of a Google Chrome browser window showing the Glassdoor website. The search bar contains "tableau developer". The main content area displays a bar chart titled "Tableau Developer Salaries" with 2,660 salaries, updated April 13, 2020. The chart shows average base pay at \$81,514/yr, with categories for Low (\$62K), Average (\$82K), and High (\$108K) experience levels. A "Very High Confidence" badge is present. Below the chart, related job titles like Computer Architect (\$73K) and Business Intelligence Developer (\$82K) are listed.

Screenshot of a Google Chrome browser window showing the ZipRecruiter website. The search bar contains "Search for Jobs" and the keyword "TABLEAU DEVELOPER". The main content area displays a bar chart titled "Tableau Developer Salary" for Yearly pay, showing a national average of \$114,559/year. A "Browse More Salaries" section asks "What Is the Average Tableau Developer Salary by State?" and a "Get New Jobs Emailed to You Daily" section offers 289+ Tableau Developer Jobs within 25 miles of Irving, TX, with a "Get Notified" button.



Browse More Salaries
What Is the Average Tableau Developer Salary by State?

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289+ Tableau Developer Jobs
Within 25 miles of Irving, TX

Enter your email Get Notified

By clicking the button above, I agree to the ZipRecruiter Terms of Use and acknowledge I have read the Privacy Policy, and agree to receive email job alerts.

Tableau Developer Salary Comparison by Location

Nationwide	\$114,559
United States	\$114,559

Nearby Tableau Developer Jobs

Within 25 miles of Irving, TX

[Sr. Tableau Developer NEW!](#)



Who I've Seen Use Tableau

Account Manager

- Explore areas of biggest concern when servicing an account

Supply Chain Director

- Automate the weekly report out to a C-Level executive

Warranty Manager

- Monitor a specialized warranty metric to ensure product quality was maintained

Data Analyst

- Drive insights, clean data, explore data, communicate findings



Ease of visual exploration and VizQL

Tableau was formed in the early 2000's as a spinoff of a project given to Stanford by the Department of Defense. The project yielded a new language called VizQL™.

VizQL™ forms the core of Tableau and was revolutionary in how it was able to translate dragging and dropping elements on the screen into fully interactive visualizations that allowed the user to more easily translate thought into action. As you create a Tableau visualization, you'll realize that the software is designed to easily allow you to dive deeper and deeper into the data and uncover patterns that you might have not seen before. Additionally VizQL™ unifies the process of creating visualizations so that you can quickly change how you want to visualize the data without fundamentally changing anything about the structure of your data.



The Hyper Database System

In version 10.5 Tableau released the Hyper database system. This was the product of an acquisition that Tableau had made in 2016 from the Technical University of Munich.

Traditionally database engines (the underlying software that reads, deletes, creates, and updates the database) optimized for retrieving the data from the database because that was by far the slowest part of any data process. As modern computer hardware had gotten exponentially cheaper (CPUs and memory specifically), the importance of both retrieving and processing the data has become more important. Hyper takes advantage of the dozens of cores on modern computers and more efficient query optimization to read, write, update, and process data faster than most databases out there.

As a tool, Tableau not only allows for the presentation of data, but for the analysis of data. For anyone who has worked in analytics, pulling and manipulating considerable amounts of data can not only slow down the analytics process but also mess up your train of thought. Having a fast database makes analysis not only fast, but enjoyable



The Hyper Database System

Hyper has four main design principles:

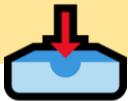
- One System
 - Is a general purpose database system that combines transaction processing, data ingestion, and data analytics
- One State
 - Transaction processing, data ingestion, and analytics are all on the same state so real-time analytics can be performed
- No Tradeoffs
 - Has SQL language support
 - Has transactional guarantees
- No Delays
 - Scales with available hardware resources



The Hyper Database System

Hyper compiles SQL code to Machine code and executes the machine code

- Traditional databases use interpreters instead of compilers
- You would normally write in Machine Code using C, but compiling C code to Machine Code can be slow
 - Tableau solves this by generating LLVM (low level virtual machine) code instead which compiles to Machine Code more quickly
 - Tableau writes its own VM for short running queries
 - Compilation is attractive now because historically, memory was so expensive that just retrieving the data was the slowest step, therefore efficient processing of the data once it was obtained was pointless
 - Query optimization is important but is inherently hard to figure out
- It's hard to compute
- Very few researchers globally specialize in query optimization because it's such a hard field to do research in
 - In buying Hyper, Tableau had access to Dr. Thomas Neumann who was one of the few people in the world doing research in query optimization
 - Modern CPUs have many cores
- Traditional parallelization only scales to a few cores
 - They're not good at load balancing
- Hyper uses morsel-driven parallelization to utilize a large number of cores
 - Hyper divides the processing task into very small components (morsels) and each core just takes on a morsel whenever it can so you're always using as many cores as possible



How to Install Tableau

There are two versions of Tableau Desktop that you can download in order to complete the exercises in this book:

- Tableau Desktop: This is the full version of Tableau's Desktop app and can be found here: <https://www.tableau.com/products/desktop/download> You can use it as part of a two week free trial, or activate it by connecting to your organization's Tableau Server or inputting your license key (usually provided by your IT department)
- Tableau Desktop Public: This is the completely free version of Tableau desktop. It is limited in the variety of data sources that it can access and that all visualizations created on it can only be saved on Tableau's public gallery. It can be downloaded here: <https://public.tableau.com/en-us/s/download>



Objectives: Section 1

For the first two parts of this course we will be analyzing data from the Chicago Department of Transportation to see where most filming is done in the city.

The dataset is available here:

<https://bit.ly/shashanktableaucourse>



Connect to Data

When you open Tableau, you will be greeted with a screen similar to the one shown below

1. This is a sample of the data sources that you'll be able to connect to, look for the type of data source that you want and click on it to connect to it
 - You can also copy data from another application and paste it here to quickly create a data source on the fly. (Just hit CTRL + V while on this screen or on a blank sheet)
2. These are your previous workbooks. As you create more, they will be shown here for easy access
3. Content to get you started with Tableau. There is a limitless supply of tutorials for free at kb.tableau.com
4. This is where the "Viz of the Day" normally appears. These are curated visualizations that are made in Tableau and released on Tableau Public

You can return to this screen or connect to another data source at any time by clicking on the Tableau logo on the upper left of the screen

The screenshot shows the Tableau software interface. On the left, there's a dark sidebar with the 'Connect' section expanded, listing various data source types like 'Tableau Server', 'To a File', 'To a Server', and 'Saved Data Sources'. A red box labeled '1' highlights the 'Saved Data Sources' section, which contains links to 'Sample - Superstore' and 'World Indicators'. The main workspace is titled 'Open' and contains a 'Discover' panel on the right with sections for 'Training', 'Resources', and 'Blog'. At the bottom, there's a 'Sample Workbooks' section with cards for 'Superstore', 'Regional', and 'World Indicators', and a 'See the latest' section featuring a COVID-19 dashboard. Red boxes labeled '2', '3', and '4' point to the 'Discover' panel, the 'Sample Workbooks' section, and the 'See the latest' section respectively.



Connect to Data

1. Click on “Microsoft Excel” under the “Connect” menu
2. Select the workbook you want to connect to: Chicago Filming Dataset

The screenshot shows the Tableau Public application window. On the left, the 'Connect' pane is visible with a red box around the 'Microsoft Excel' option, labeled '1'. In the center, the 'Open' pane displays a file browser window titled 'Tableau Course'. A red box highlights the 'Chicago Filming Dataset.xlsx' file, labeled '2'. To the right, the 'Discover' pane shows a sidebar with links like 'How-to Videos', 'Overview', and 'VIZ OF THE DAY'. At the bottom, there are 'Resources' and 'Live Training' sections.

Tableau Public - Book1

File Data Help

91% Sat 4:09 PM Shashank Kalanithi

Connect

1

Open

Discover

Chicago Filming Dataset.xlsx

Information

Created Feb 24, 2020 at 5:03 PM

Excel Workbooks (*.xlsx *.xlsm) Open

New Folder Options Cancel

To a File

Microsoft Excel

Text file

JSON file

PDF file

Spatial file

Statistical file

To a Server

OData

More...

VIZ OF THE DAY

A Gardener's Planting Guide

Resources

Blog - Get insights faster with Explain Data

Sample Data Sets

Live Training

Current Status

Save locally. Work with big data. Connect to more data sources.

Upgrade Now

Update to 2020.1.2 Now



Connect to Data

A Tableau data source can only be constructed a table at a time. As such, when you import an Excel document with multiple sheets you'll be asked to select one at a time to import. For now we'll just import a single sheet.

3. Drag the sheet “Chicago Filming Permits onto the area marked “Drag sheets here”

- When we start creating more complicated data sources the area in orange is where you'll import all of your data and form your joins and unions.

The screenshot shows the Tableau Public interface with the following details:

- Connections:** Chicago Filming Dataset (Microsoft Excel) is selected.
- Sheets:** The list includes "Chicago Filming Permits" (selected and highlighted with a red border), "Cost and Revenue Data", "Ward Data", and "New Union".
- Right Panel:** A large orange rectangular area is labeled "Drag sheets here". A red arrow points from the number "3" to the "Chicago Filming Permits" sheet in the list, indicating the next step in the process.
- Bottom Navigation:** Includes "Data Source", "Sheet 1", and other standard Tableau navigation icons.



Tableau Data Source Page

When you connect to most data sources in Tableau you'll be brought to this screen, this is the Data Source Page.

Creating a data source is the first step of any visualization and importing data is the first step of creating a data source. If you're lucky, most data you import will be in a format you can immediately use to start working, but if that's not the case, this is the page you will use to get your data to a workable format.

Tableau Public File Data Window Help

Tableau Public - Book1

Connections Add

Chicago Filming Dataset Microsoft Excel

Sheets

Use Data Interpreter
Data Interpreter might be able to clean your Microsoft Excel workbook.

Chicago Filming Permits Cost and Revenue Data Ward Data New Union

Chicago Filming Permits (Chicago Filming Dataset)

Chicago Filming Permits

Sortfields Data source order Show aliases Show hidden fields 1,000 rows

Abc Chicago Filming Permits Application Number	Abc Chicago Filming Permits Application Type	Abc Chicago Filming Permits Application Descri...	Abc Chicago Filming Permits Work Type	Abc Chicago Filming Permits Worktype Descript...	Abc Chicago Filming Permits Application Status	Abc Chicago Filming Permits Current Milestone	Abc Chicago Filming Permits Application Start ...	Abc Chicago Filming Permits Application End D...	Abc Chicago Filming Permits Application P...
DOT1164885	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	10/7/2019	10/7/2019	9/30/2019
DOT1164883	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	10/5/2019	10/5/2019	9/30/2019
DOT1164881	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	10/4/2019	10/4/2019	9/30/2019
DOT1164882	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	10/4/2019	10/4/2019	9/30/2019
DOT1156808	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/17/2019	9/17/2019	9/12/2019
DOT1155863	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/16/2019	9/16/2019	9/11/2019
DOT1155721	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/15/2019	9/15/2019	9/10/2019
DOT1155501	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/14/2019	9/14/2019	9/10/2019
DOT1155085	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/13/2019	9/13/2019	9/9/2019
DOT1146705	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/8/2019	9/8/2019	8/21/2019
DOT1150743	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/7/2019	9/7/2019	8/29/2019
DOT1146704	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/7/2019	9/7/2019	8/21/2019
DOT1146706	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/6/2019	9/6/2019	8/21/2019
DOT1123836	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	8/18/2019	8/18/2019	7/3/2019
DOT1120505	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	8/18/2019	8/18/2019	7/12/2019
DOT1142755	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	8/17/2019	8/17/2019	8/13/2019

Go to Worksheet X

Data Source Sheet 1

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Filters 0 | Add



Tableau Data Source Page

1. This is a list of your connections. A connection would be something like a database or an Excel workbook. This is the first step in importing data to create your data source.
2. This is a list of sheets associated with your current connection

The screenshot shows the Tableau Public interface with the following numbered annotations:

1. Connections: Shows the 'Chicago Filming Dataset' (Microsoft Excel) connection.
2. Sheets: Shows the available sheets: 'Chicago Filming Permits', 'Cost and Revenue Data', 'Ward Data', and 'New Union'.
3. Back/Forward/Refresh buttons.
4. Home icon.
5. Preview area showing the 'Chicago Filming Permits' sheet.
6. Filters button.
7. Data grid showing application details.

Application Number	Application Type	Application Description	Work Type	Worktype Description	Application Status	Current Milestone	Application Start Date	Application End Date	Application Period
DOT1164885	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	10/7/2019	10/7/2019	9/30/2019
DOT1164883	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	10/5/2019	10/5/2019	9/30/2019
DOT1164881	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	10/4/2019	10/4/2019	9/30/2019
DOT1164882	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	10/4/2019	10/4/2019	9/30/2019
DOT1156808	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/17/2019	9/17/2019	9/12/2019
DOT1155863	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/16/2019	9/16/2019	9/11/2019
DOT1155721	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/15/2019	9/15/2019	9/10/2019
DOT1155501	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/14/2019	9/14/2019	9/10/2019
DOT1155085	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/13/2019	9/13/2019	9/9/2019
DOT1146705	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/8/2019	9/8/2019	8/21/2019
DOT1150743	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/7/2019	9/7/2019	8/29/2019
DOT1146704	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/7/2019	9/7/2019	8/21/2019
DOT1146706	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/6/2019	9/6/2019	8/21/2019
DOT1123836	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	8/18/2019	8/18/2019	7/3/2019
DOT1120505	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	8/18/2019	8/18/2019	7/12/2019
DOT1142755	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	8/17/2019	8/17/2019	8/13/2019



Tableau Data Source Page

3. This refresh button allows you to refresh a data source that is live or that has been modified
 4. This dropdown allows you to toggle through your connections
 5. This is your canvas which allows you to create your data source by bringing in different sheets and combining them

Tableau Public - Book1

File Data Window Help

1 Chicago Filming Permits (Chicago Filming Dataset)

2

3

4

5

6 Filters 0 | Add

7

Connections Add
Chicago Filming Dataset Microsoft Excel

Sheets
 Use Data Interpreter
Data Interpreter might be able to clean your Microsoft Excel workbook.
Chicago Filming Permits Cost and Revenue Data Ward Data New Union

Sort fields Data source order

Show aliases Show hidden fields 1,000 rows

Application Number	Application Type	Work Type	Application Status	Current Milestone	Application Start Date	Application End Date	Application P
DOT1164885	DOT_SE	Filming	Closed	Complete	10/7/2019	10/7/2019	9/30/2019
DOT1164883	DOT_SE	Filming	Closed	Complete	10/5/2019	10/5/2019	9/30/2019
DOT1164881	DOT_SE	Filming	Closed	Complete	10/4/2019	10/4/2019	9/30/2019
DOT1164882	DOT_SE	Filming	Closed	Complete	10/4/2019	10/4/2019	9/30/2019
DOT1156808	DOT_SE	Filming	Closed	Complete	9/17/2019	9/17/2019	9/12/2019
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DOT1155501	DOT_SE	Filming	Closed	Complete	9/14/2019	9/14/2019	9/10/2019
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DOT1150743	DOT_SE	Filming	Closed	Complete	9/7/2019	9/7/2019	8/29/2019
DOT1146704	DOT_SE	Filming	Closed	Complete	9/7/2019	9/7/2019	8/21/2019
DOT1146706	DOT_SE	Filming	Closed	Complete	9/6/2019	9/6/2019	8/21/2019
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DOT1120505	DOT_SE	Filming	Closed	Complete	8/18/2019	8/18/2019	7/12/2019
DOT1142755	DOT_SE	Filming	Closed	Complete	8/17/2019	8/17/2019	8/13/2019

Go to Worksheet

Data Source Sheet 1



Tableau Data Source Page

6. This is where you set your “Data Source Filters”. These are filters that limit your data before you perform any other calculations on it and can help improve performance
7. This is the Data Grid and by default displays the first 1,000 rows of your data. You can change the textbox in blue to display more data

The screenshot shows the Tableau Public interface with the following numbered callouts:

1. Connections pane: Shows the "Chicago Filming Dataset" connected via Microsoft Excel.
2. Sheets pane: Shows the available sheets: "Chicago Filming Permits", "Cost and Revenue Data", "Ward Data", and "New Union".
3. Top-left toolbar: Shows the back, forward, and search icons.
4. Top-right toolbar: Shows the refresh, cloud, and search icons.
5. Data Grid: Displays the "Chicago Filming Permits" sheet with 1,000 rows of data. The columns include Application Number, Application Type, Application Description, Work Type, Worktype Description, Application Status, Current Milestone, Application Start Date, Application End Date, and Application Type.
6. Top-right corner: Shows the "Filters" section with 0 rows selected.
7. Bottom right corner: Shows the "Rows" dropdown set to 1,000.

Application Number	Application Type	Application Description	Work Type	Worktype Description	Application Status	Current Milestone	Application Start Date	Application End Date	Application Type
DOT1164885	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	10/7/2019	10/7/2019	9/30/2019
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DOT1164881	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	10/4/2019	10/4/2019	9/30/2019
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DOT1150743	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/7/2019	9/7/2019	8/29/2019
DOT1146704	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/7/2019	9/7/2019	8/21/2019
DOT1146706	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	9/6/2019	9/6/2019	8/21/2019
DOT1123836	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	8/18/2019	8/18/2019	7/3/2019
DOT1120505	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	8/18/2019	8/18/2019	7/12/2019
DOT1142755	DOT_SE	DOT Special Event Pe...	Filming	Filming	Closed	Complete	8/17/2019	8/17/2019	8/13/2019



Connect to Data

Now that we've connected to our first data source, let's go to our first sheet and make a visualization

4. Select "Sheet 1" near the bottom of the screen to go to your workspace

Screenshot of the Tableau Public interface showing the Chicago Filming Permits dataset.

The interface includes:

- Top navigation bar: Tableau Public, File, Data, Window, Help.
- Header: Tableau Public - Book1, Sun 3:01 PM, Shashank Kalanithi.
- Connections pane: Chicago Filming Dataset (Microsoft Excel).
- Sheets pane: Chicago Filming Permits, Cost and Revenue Data, Ward Data, New Union.
- Tableau Public ribbon: Home, Data, View, Analysis, Tools, Window, Help.
- Central workspace: A table titled "Chicago Filming Permits (Chicago Filming Dataset)" with columns: Application Number, Application Type, Application Description, Work Type, Worktype Description, Application Status, Current Milestone, Application Start Date, Application End Date, and Application Period.
- Bottom navigation bar: Data Source, Sheet 1 (highlighted with a red box), and other icons.



Connect to Data

Your screen should look something like this.

The screenshot shows a Tableau Public dashboard titled "Sheet 1". The interface includes a top navigation bar with links for File, Data, Worksheet, Dashboard, Story, Analysis, Map, Format, Window, and Help. On the right side, there's a status bar showing battery level (64%), time (Sun 10:09 AM), and user name (Shashank Kalanithi). The main workspace is currently empty, with three large rectangular areas labeled "Drop field here". To the left, a sidebar provides data navigation and filtering options. The "Data" section has a dropdown set to "Chicago Filming Permits (Chicago)". Below it are sections for "Pages", "Filters", and "Rows". The "Dimensions" section lists numerous fields such as Application Description, Application End Date, Application Expired Date, Application Finalized Date, Application Issue Date, Application Name, Application Number, Application Process Date, Application Start Date, Application Status, Application Type, Boundaries - ZIP Codes, Comments, Current Milestone, Detail, Direction, Emergency Contact Name, Last Inspection Date, Last Inspection Result, Last Inspection Type, Last Inspection Year, Location, and Parking Meters Bagged. The "Measures" section lists Census Tracts, Community Areas, Last Inspection Number, Latitude, Longitude, Street Number From, Street Number To, Total Fees, Waived Fees, Wards, Latitude (generated), Longitude (generated), and Number of Records. At the bottom, there are tabs for "Data Source" and "Sheet 1", along with standard browser-style navigation buttons.



Tableau Workspace

The Tableau workspace can be a little intimidating at first glance but is actually quite easy to understand. Here I'll give you a quick overview of what is what on the Tableau Workspace.

This screenshot shows the Tableau Public workspace interface. At the top, there's a navigation bar with links for File, Data, Worksheet, Dashboard, Story, Analysis, Map, Format, Window, and Help. The title bar indicates the file is titled "Tableau Public - Book1". The main area is divided into several sections:

- Data:** A sidebar containing a search bar and lists of dimensions and measures. Dimensions include Application Description, Application End Date, Application Expired Date, Application Finalized Date, Application Issue Date, Application Name, Application Number, Application Process Date, Application Start Date, Application Status, Application Type, Boundaries - ZIP Codes, Comments, Current Milestone, Detail, Direction, Emergency Contact Name, Last Inspection Date, Last Inspection Result, Last Inspection Type, Last Inspection Year, Location, and Parking Meters Bagged. Measures include Census Tracts, Community Areas, Last Inspection Number, Latitude, Longitude, Street Number From, Street Number To, Total Fees, Waived Fees, Wards, Latitude (generated), Longitude (generated), and Number of Records.
- Pages:** A section showing a single page named "Sheet 1".
- Filters:** A section where filters can be applied.
- Marks:** A section where marks like Color, Size, and Text can be defined.
- Sheet 1:** The main canvas area where fields can be dropped to create visualizations. It has three empty drop zones labeled "Drop field here".
- Bottom Navigation:** Includes tabs for Data Source, Sheet 1, and other sheet options, along with standard browser controls for back, forward, and search.



Tableau Workspace

1. Here is your list of columns split into two categories “Dimensions” and “Measures”
2. This is where your sheets and dashboards will show up
3. Here is a list of all of the data sources you’re connected to

The screenshot shows the Tableau Public interface with various components highlighted by red numbers:

- 1**: Dimensions and Measures lists on the left side.
- 2**: Data Source button at the bottom left.
- 3**: Connected data source list in the top left.
- 4**: Top navigation bar with back, forward, and search icons.
- 5**: Marks card in the top right.
- 6**: Columns and Rows sections in the top right.
- 7**: Sheet 1 canvas area.
- 8**: Top right corner showing battery level, time, and user information.



Tableau Workspace

4. Here are some of the basic controls for your Tableau workspace



Open the Connect Menu to connect to other data sources

← → Undo and Redo. Tableau has unlimited undos and redos for a given work session (every time you open a workbook)



Add a data source



Create a new sheet/dashboard



Duplicate your current sheet or dashboard

The screenshot shows the Tableau Public interface with various controls and data panels highlighted by red numbers:

- 1: Dimensions panel (left side)
- 2: Measures panel (left side)
- 3: Data tab in the top navigation bar
- 4: Top-left toolbar icons
- 5: Marks card in the top-right toolbar
- 6: Columns and Rows sections in the top-right toolbar
- 7: Sheet 1 workspace area
- 8: Top-right status bar



Manipulating our Data

Let's get back to our data.

Although Tableau intelligently handles data imports, sometimes data is improperly recognized. When this happens it's important for you to understand your data well enough to recognize the error so that it can be corrected.

1. Drag the Measure [Wards] from the Measures section to the Dimensions section (highlighted in blue)

The screenshot shows the Tableau Public interface with the following details:

- Dimensions:** A list of dimensions including Application Description, Application End Date, Application Expired Date, Application Finalized Date, Application Issue Date, Application Name, Application Number, Application Process Date, Application Start Date, Application Status, Application Type, Boundaries - ZIP Codes, Comments, Current Milestone, Detail, Direction, Emergency Contact Name, Last Inspection Date, Last Inspection Result, Last Inspection Type (with a red box around it), Last Inspection Year, Location, Parking Meters Bagged, and Placement.
- Measures:** A list of measures including Census Tracts, Community Areas, Last Inspection Number, Latitude, Longitude, Street Number From, Street Number To, Total Fees, Waived Fees, and Wards (which is also highlighted with a red box).
- Sheet 1:** The main workspace where data can be拖 (dragged) into columns and rows.
- Toolbars and Headers:** Standard Tableau navigation and analysis tools, along with system status (96% battery, Sat 4:25 PM, Shashank Kalanithi).



Dimensions vs. Measures

-4 Kinds of Data-

What did we just do? We changed one of the fields (columns) in our dataset from a Measure to a Dimension.

Data in Tableau is classified as either a:

- Dimension
 - Dimensions are any qualitative data
 - Examples of qualitative data include names, colors, and cities
 - This is mostly data that cannot be or is not numerical
- Measure
 - Quantitative data, anything that can be numerically measured
 - Population or profit

Additionally, data can be either:

- Discrete
 - Represented by a blue pill or font in Tableau
 - Discrete data is data that cannot be infinitely divided like names or zip codes, there is no 75251.5 zip code
- Continuous
 - Represented by a green pill or font in Tableau
 - Continuous data is data that can be (theoretically) infinitely divided such as profits or latitudes/longitudes



Dimensions vs. Measures

-4 Kinds of Data-

Given that we can divide data into these four types, we therefore have:

Discrete Dimensions	Product Name
Continuous Measures	SUM(Profit)
Continuous Dimensions	YEAR(Order Date)
Discrete Measures	SUM(Profit)

The most common forms of data are Discrete Dimensions and Continuous Measures. If you think about it this makes sense, most things that can be measured like profits and latitudes can be divided infinitely while most dimensions, which can be thought of as ways to categorize data are not infinitely divisible.



Making Your First Visualization: Table

The most basic visualization in Tableau is the Table. If you've ever used a pivot table in Excel then you'll notice that the interface in Tableau actually will imitate certain behaviors of a pivot table.

1. Drag the [Application Start Date] Dimension to 'Columns'
2. Drag the [Wards] dimension to 'Rows'
3. Drag the [Number of Records] Measure to 'Text' under the 'Marks Card'

Congratulations you've made your first visualization in Tableau. Although tables are necessary and very useful, they are generally not the best way to visualize your data. Next I'll show you how easy Tableau makes it to iterate through multiple visualizations.

The screenshot shows the Tableau Public interface with the following steps highlighted:

1. A red arrow points from the "Dimensions" shelf to the "Wards" dimension, which is currently selected.
2. A red arrow points from the "Measures" shelf to the "SUM(Number of Records)" measure, which is currently selected.
3. A red arrow points from the "Marks" card to the "Text" button, indicating the selection of the text mark type.

The visualization is titled "Sheet 1" and displays the following data:

Wards	Application Start Date						
	2012	2013	2014	2015	2016	2017	2018
Null	2	1	4	4	2	8	1
1	70	60	58	60	91	97	53
2	88	67	62	91	94	77	48
3	65	68	28	78	85	59	72
4	74	57	56	88	100	90	66
5	14	11	6	31	33	34	12
6	1		1	1	5	11	7
7		3	8	3	1	16	2
8	1	3		7	6	14	4
9		2	7	6	2	4	
10		3	3	2	3	8	5
11	35	37	49	43	79	50	42
12	19	17	14	29	25	45	20
13							1
14	1	2		1	2	1	
15	2	4		3	5	1	
16	1		10	3	2	5	2
17	1	2	5		1	3	1
18	2	4	1		1	1	
19	2	2	5	5	5	11	8
20	6	11	10	22	21	18	7
21	1		1	1	4	6	1
22	1	2		13	9	11	2
23	1	3	1		3	2	
24	37	57	50	73	130	128	43
25	131	126	86	160	217	166	117
26	15	9	20	17	19	31	30
27	111	88	129	182	191	165	137
28	151	111	87	164	192	213	85
29	14	4	3	7	8	16	17
30	1	2	6	7	18	10	14
31	5	1	1	3	3	11	5
32	120	60	41	50	90	58	38
33	4	7	14	12	14	24	12
34	2	2	2			3	
35	10	5	7	15	12	21	24
36	2	1		1	2		

Tableau Public - Book1

Data Analytics Pages Columns Rows Wards

Chicago Filming Permits ...

Dimensions Application Start Date Application Status Application Type Boundaries - ZIP Codes Comments Current Milestone Detail Direction Emergency Contact Name Last Inspection Date Last Inspection Result Last Inspection Type Last Inspection Year Location Parking Meters Bagged Placement Primary Contact City Primary Contact First Primary Contact Last Primary Contact Middle Primary Contact State Primary Contact Street Primary Contact Street 2 Primary Contact Zip Street Closure Street Name Suffix Wards Work type Worktype Description Zip Codes

Measures Total Fees Waived Fees Latitude (generated) Longitude (generated) Number of Records Measure Names

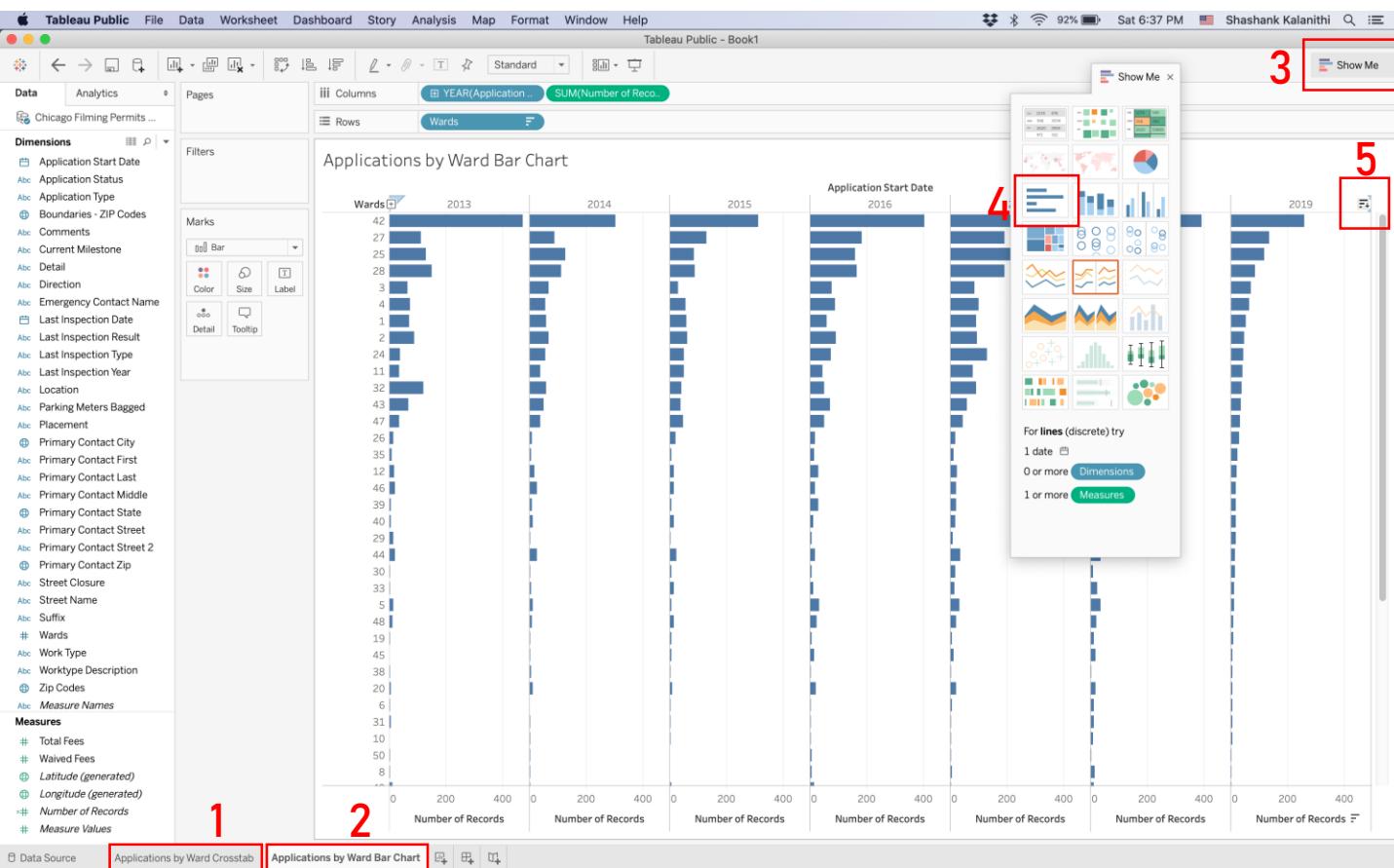
324 marks 51 rows by 7 columns SUM(Number of Records): 11,629



Making Your First Visualization: Bar Chart

Although basic, Bar Charts are some of the most effective visualizations you'll have in your toolbox. Don't skip on a bar chart just because it might not be as visually stunning as another visualization you have

1. Double-click “Sheet 1” and rename to “Applications by Ward Crosstab”, then right-click and click “Duplicate”
2. Rename your new sheet to “Applications by Ward Bar Graph”
3. Click the “Show Me” button
4. Click on the bar graph option
5. Sort the data in descending order by the year 2019





Making Your First Visualization: Bar Chart

Congratulations, in a few clicks you've created a completely different type of chart. The ability to easily duplicate sheets and see what charts can be made will allow you to try all the different charts in Tableau in rapid succession to find what works best for you.

The screenshot shows the Tableau Public interface with the following numbered callouts:

- 1: Data Source button at the bottom left.
- 2: Applications by Ward Crosstab sheet tab at the bottom left.
- 3: Show Me button at the top right.
- 4: A floating visualization pane showing various chart types, with a red box highlighting the bar chart icon.
- 5: A red box highlighting the "For lines (discrete) try" section in the Show Me pane.

The main view displays a bar chart titled "Applications by Ward Bar Chart". The chart has "Wards" on the Y-axis and "Number of Records" on the X-axis, grouped by year (2013, 2014, 2015, 2016, 2019). The Y-axis lists wards from 1 to 48. The X-axis shows the count of records for each ward per year. The chart uses a blue color scheme for the bars.

Bottom navigation bar:

- Data Source
- Applications by Ward Crosstab
- Applications by Ward Bar Chart
- 324 marks 51 rows by 7 columns SUM(Number of Records): 11,629



Making Your First Visualization: Geospatial

1. Create a new sheet by clicking on the new sheet button
2. Drag [Latitude] and [Longitude] into rows and columns respectively
 - Don't use [*Latitude (generated)*] or [*Longitude (generated)*]
3. Drag [Application Number] into the Details box on the Marks card
4. Select “Add All Members”

The screenshot shows the Tableau Public interface with a map of the Great Lakes region (Wisconsin, Michigan, Illinois, Indiana) as the background. A warning dialog box is open in the center, asking what to do about adding members to a shelf. The 'Add all members' button is highlighted with a red box and the number 4. The dialog also contains 'Filter and then add', 'Disable automatic updates and then add', and 'Do not add' options.

Red numbered callouts point to specific elements:

- 1: Points to the 'Sheet 4' tab at the bottom of the interface.
- 2: Points to the 'Latitude' and 'Longitude' fields in the 'Measures' section of the data pane.
- 3: Points to the 'Application Number' field in the 'Dimensions' section of the data pane.
- 4: Points to the 'Add all members' button in the warning dialog.

The data pane on the left lists various dimensions and measures, including:

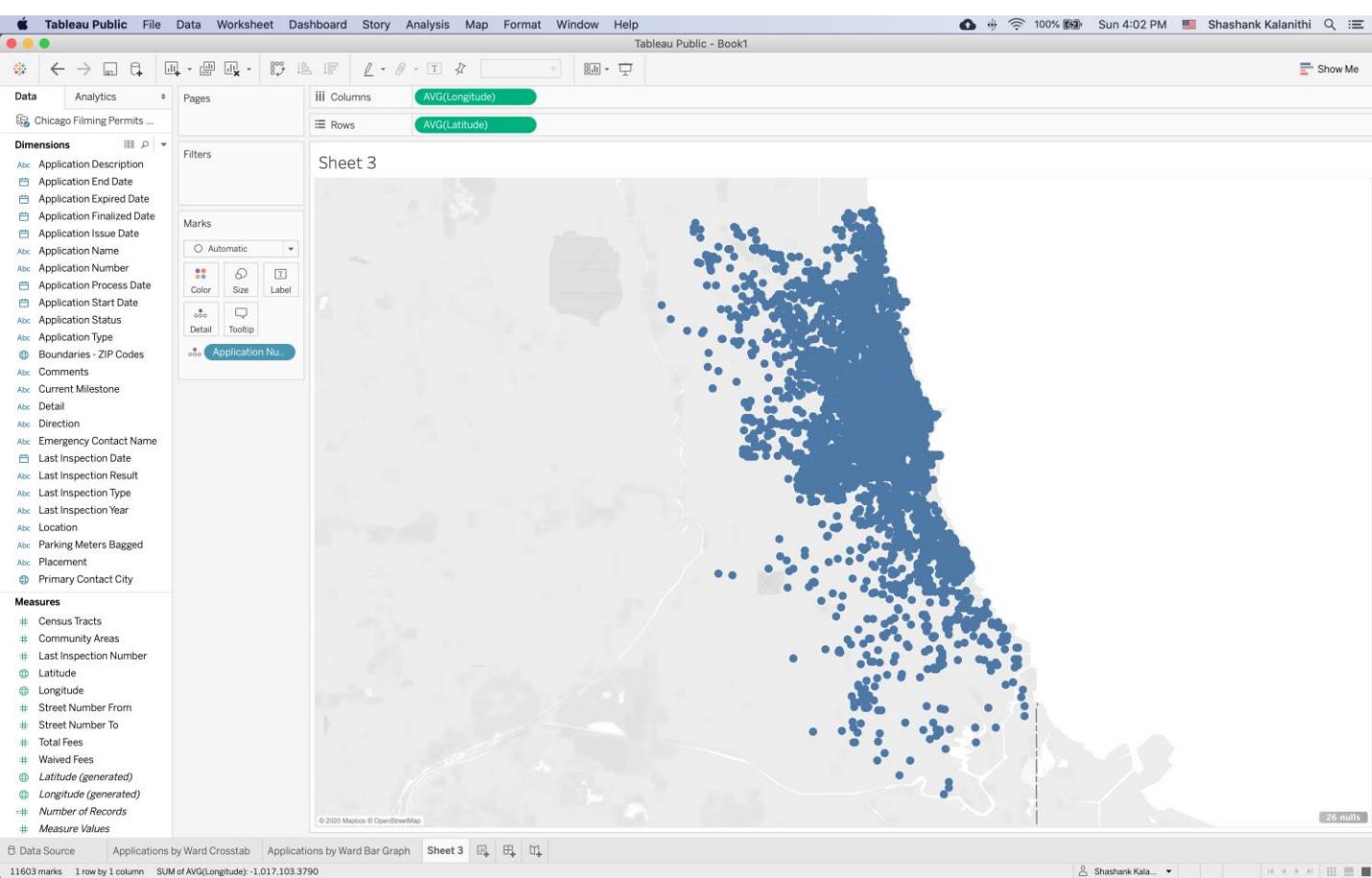
- Dimensions: Application Description, Application End Date, Application Expired Date, Application Finalized Date, Application Issue Date, Application Name, Application Number (highlighted with a red box), Application Process Date, Application Start Date, Application Status, Application Type, Boundaries - ZIP Codes, Comments, Current Milestone, Detail, Direction, Emergency Contact Name, Last Inspection Date, Last Inspection Result, Last Inspection Type, Last Inspection Year, Location, Parking Meters Bagged, Placement, Primary Contact City, Primary Contact First, Primary Contact Last, Primary Contact Middle, Primary Contact Middle, Primary Contact State, Primary Contact Street, Primary Contact Street 2, Primary Contact Zip.
- Measures: Census Tracts, Community Areas, Last Inspection Number, Latitude (highlighted with a red box), Longitude (highlighted with a red box), Street Number From.

The top menu bar includes: Tableau Public, File, Data, Worksheet, Dashboard, Story, Analysis, Map, Format, Window, Help, Show Me.



Making Your First Visualization: Geospatial

Once you have something like this you're ready to move onto the next step, if your graph looks different the next few pages can help you troubleshoot



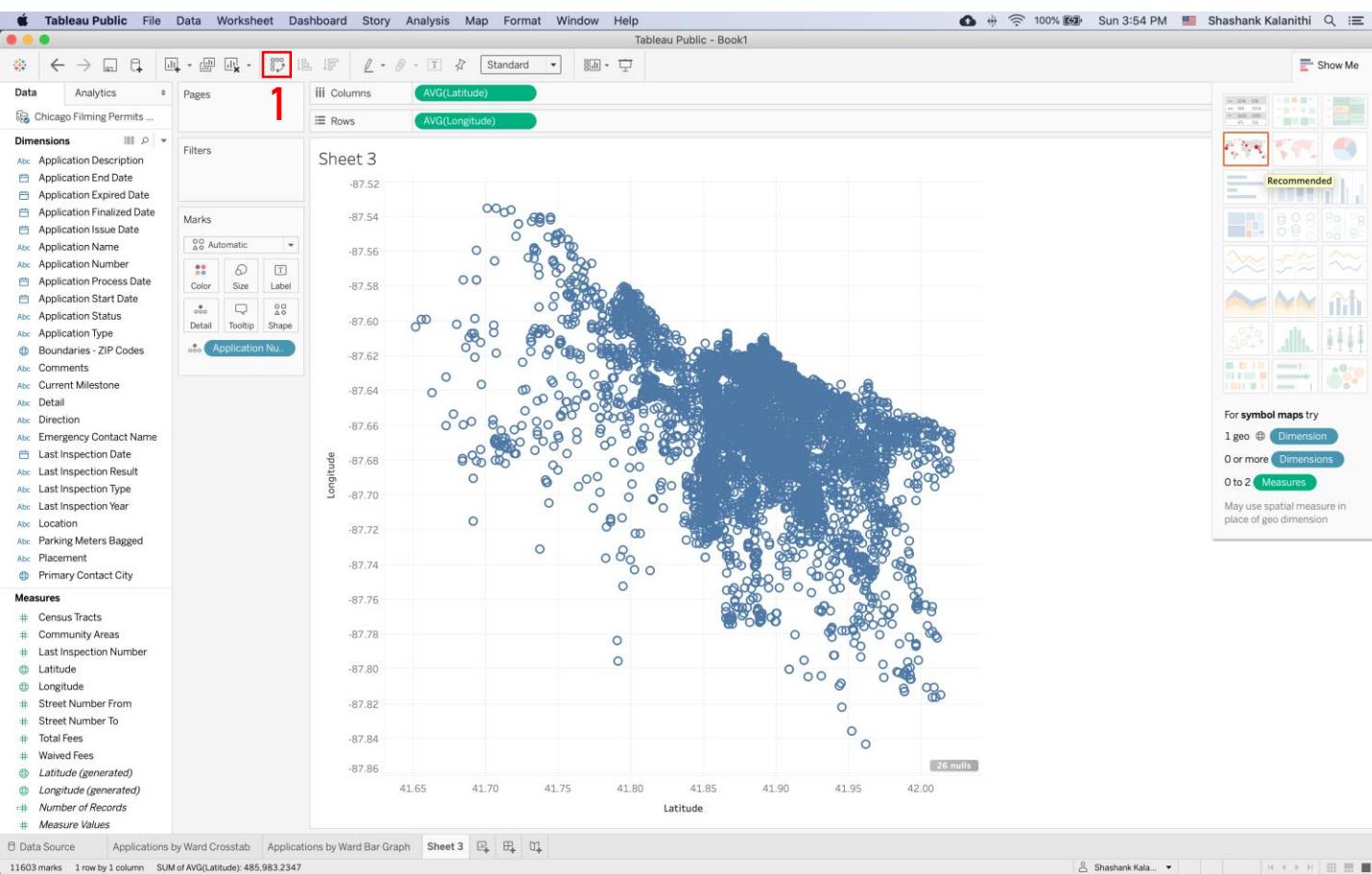


Making Your First Visualization: Geospatial

If you see something like the graph below, don't worry, that most likely just means that you reversed the [Latitude] and [Longitude]. There are two ways to fix this:

1. Click on the “Swap Rows and Columns” button on the toolbar.

This will swap the [Latitude] and [Longitude] in the Rows and Columns shelves which will allow Tableau to recognize that you're trying to make a map not a scatterplot

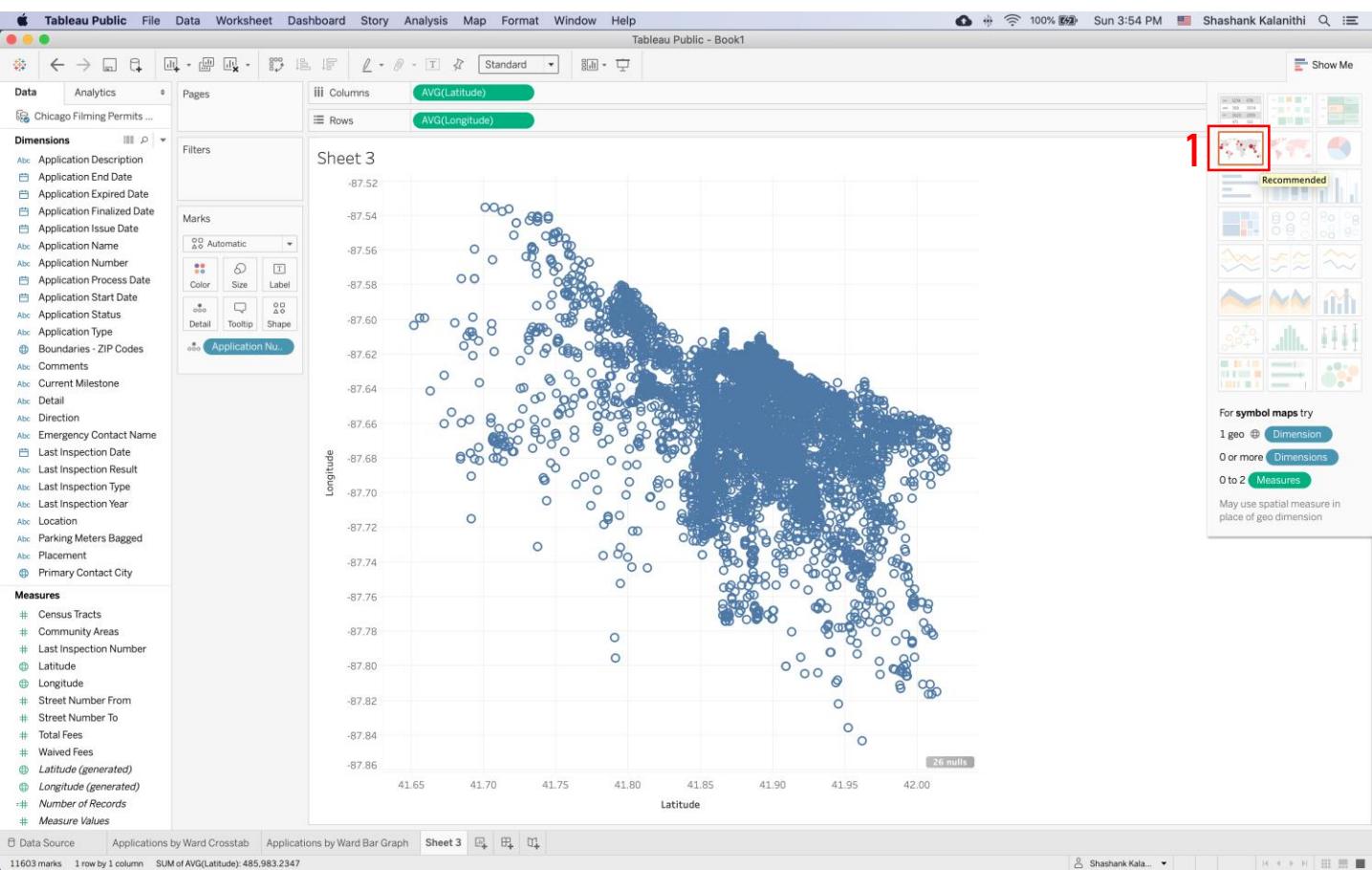




Making Your First Visualization: Geospatial

This is the second way to fix the graph.

1. Click on the “Symbol Maps” visualization type under the “Show Me” menu

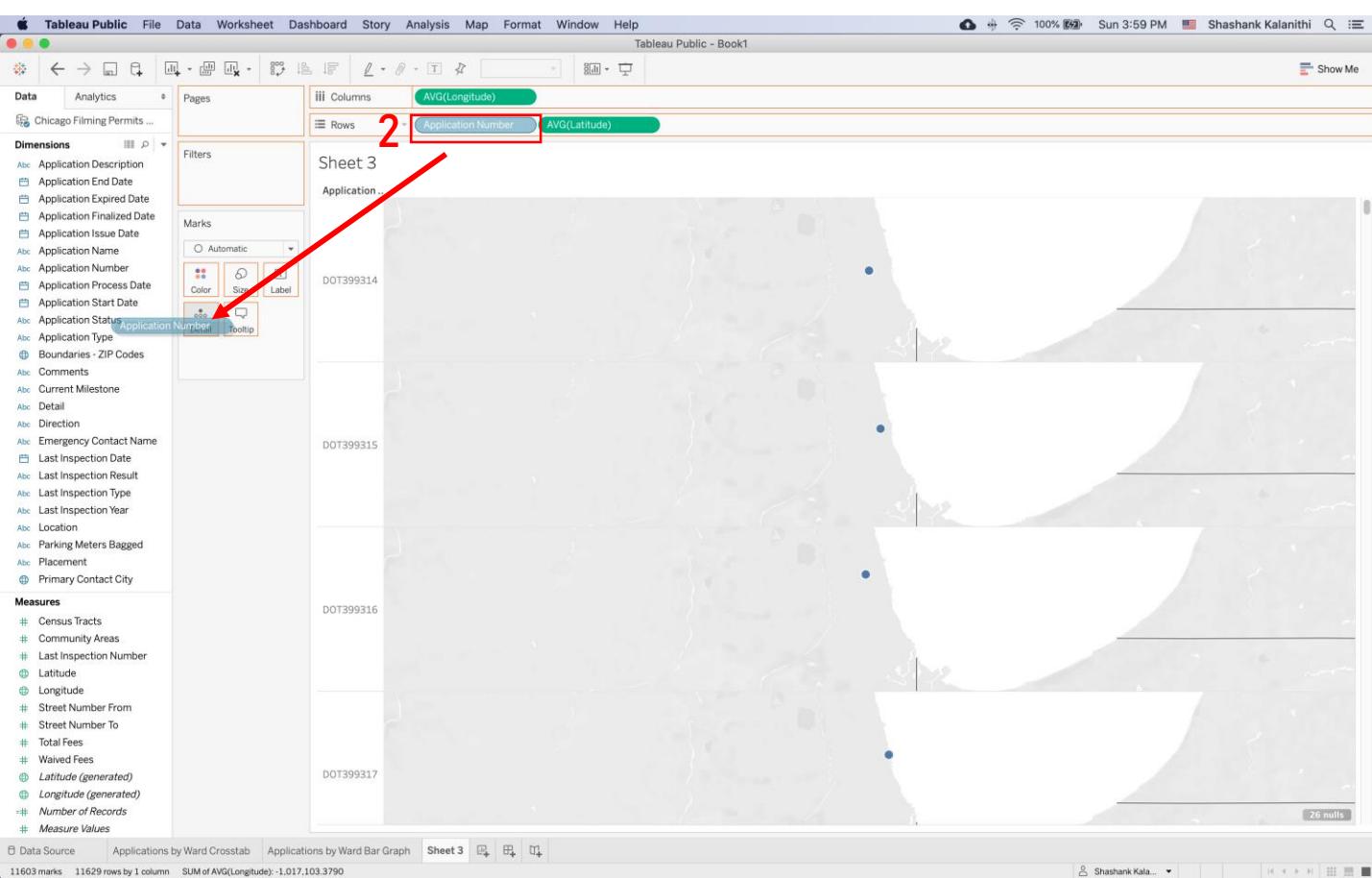




Making Your First Visualization: Geospatial

2. Drag the [Application Number] Measure from the Rows Shelf where Tableau put back to the Details Card where we want it

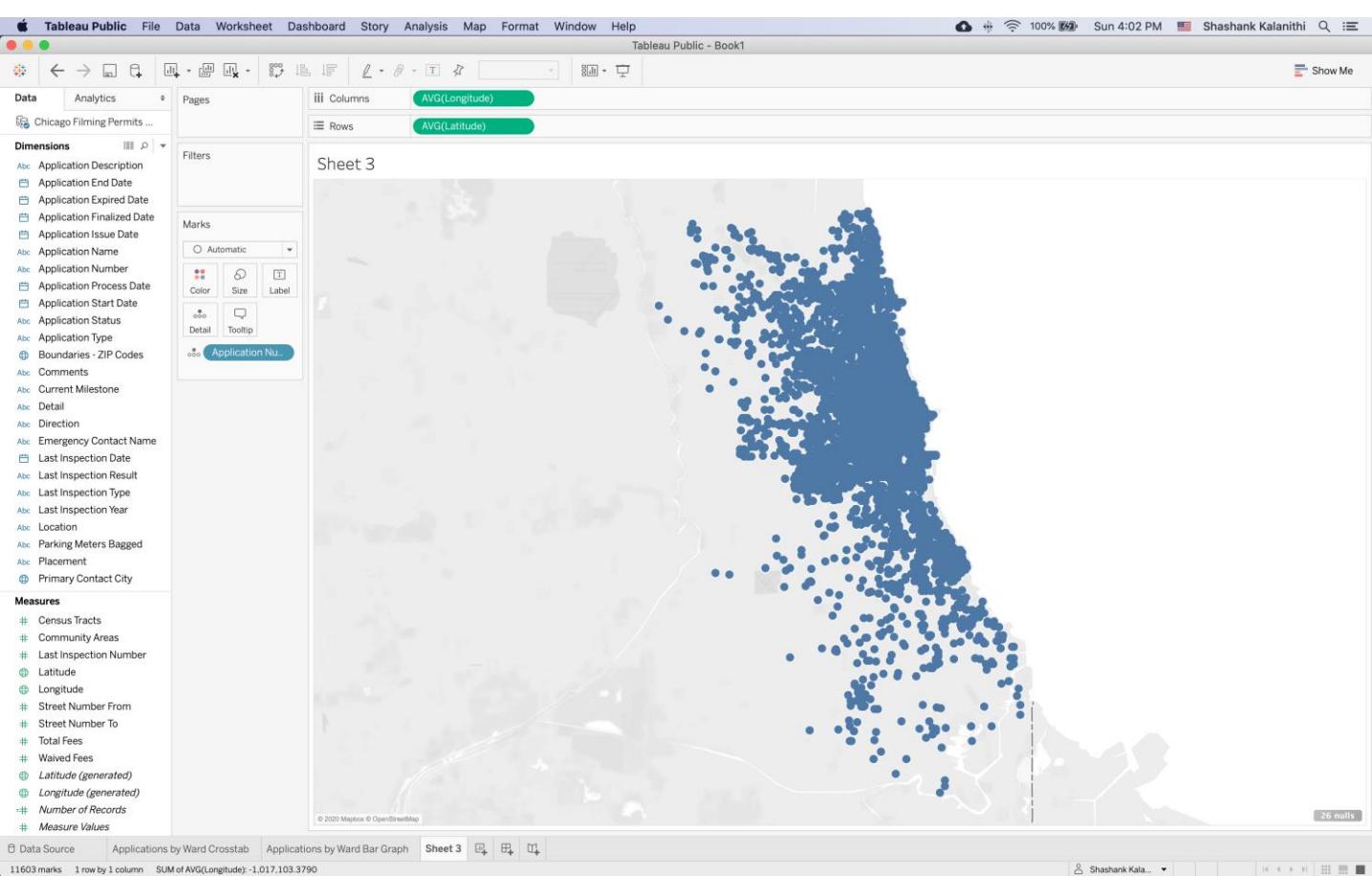
This will explicitly tell Tableau what visualization you're looking for and it will reorganize your data to produce that visualization





Making Your First Visualization: Geospatial

Make sure your graph now looks like this



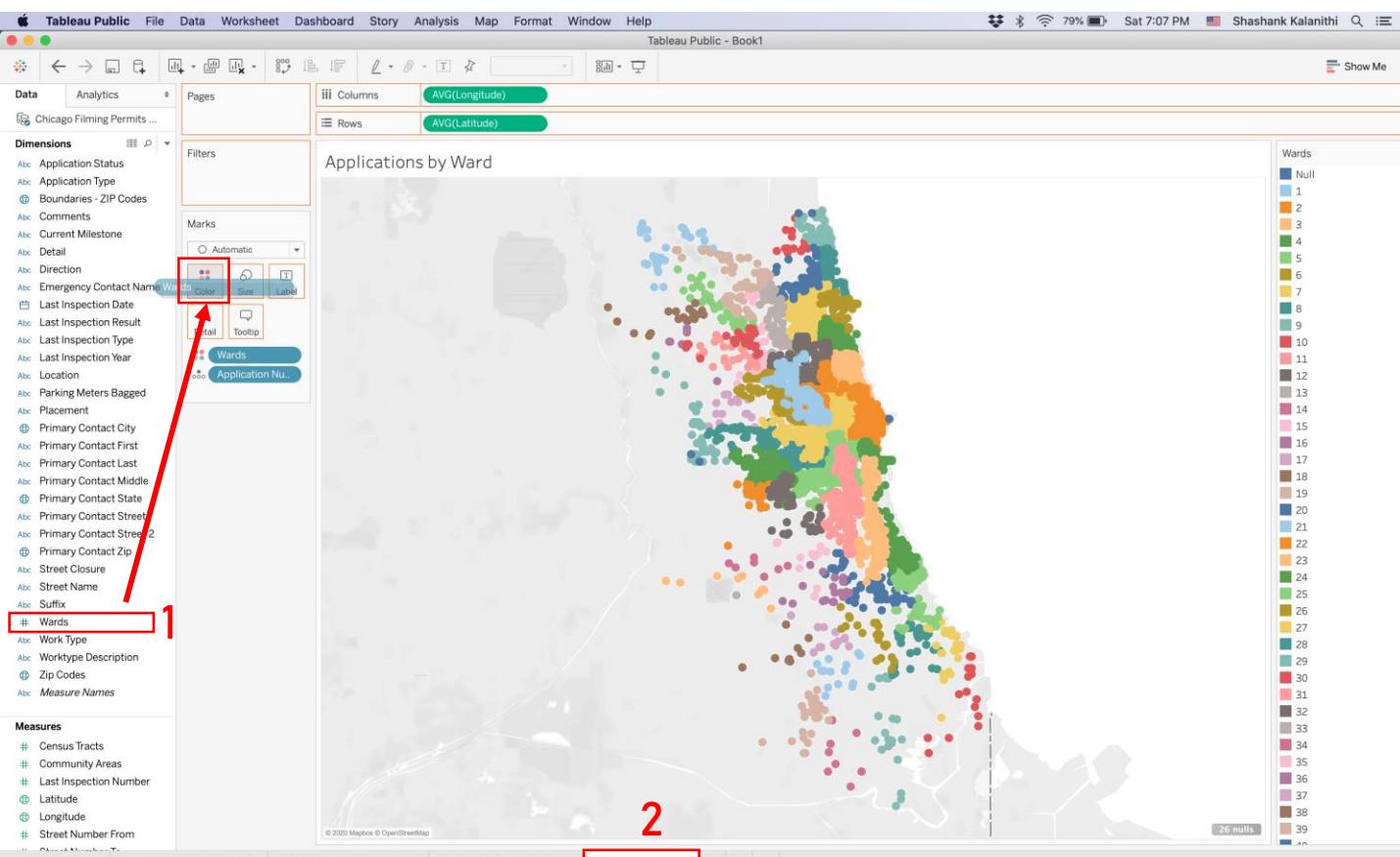


Making Your First Visualization: Geospatial

5. Drag [Wards] into colors

- Again click on “Add All Members” to bring in all 50 wards

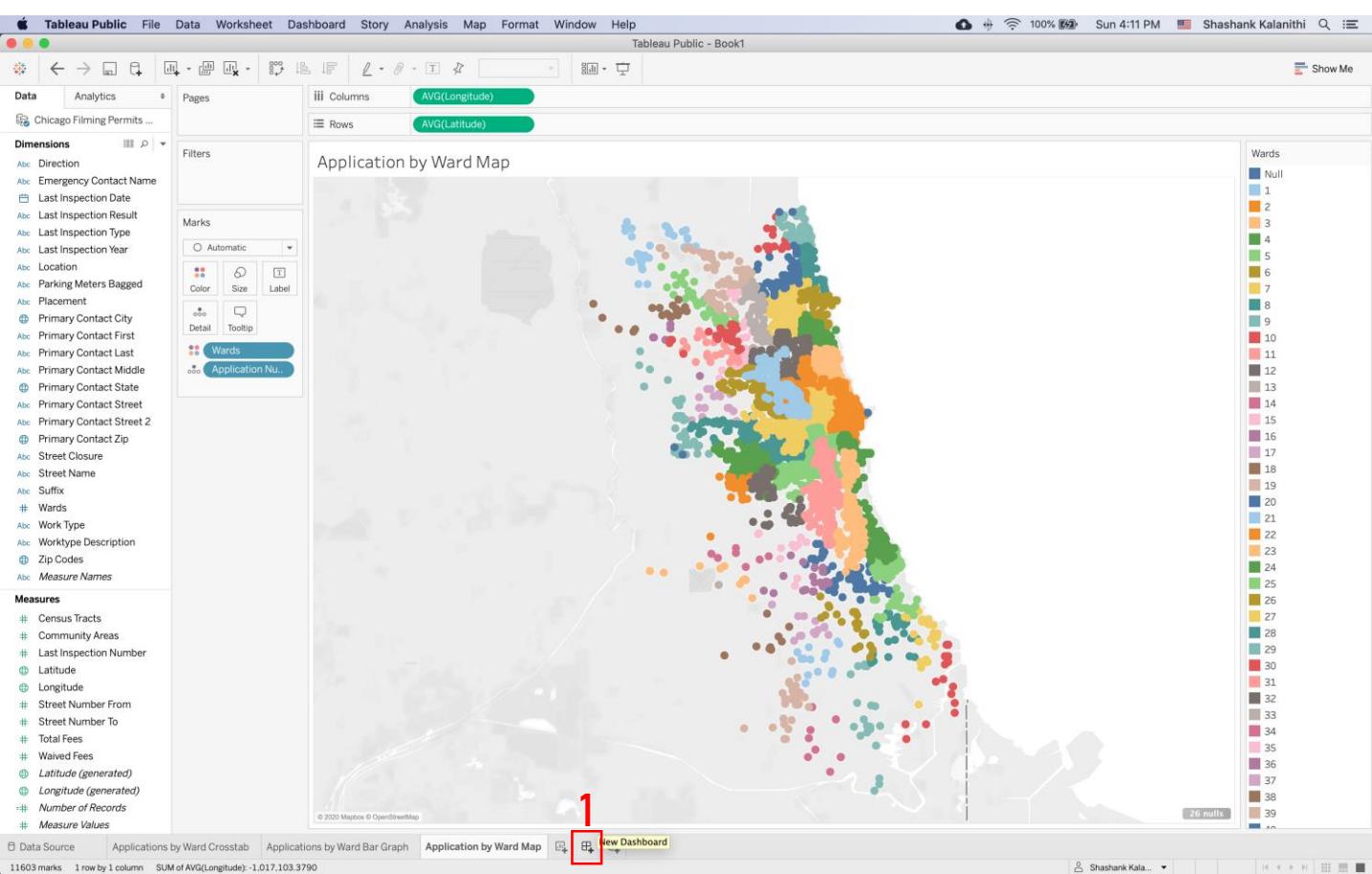
6. Rename this sheet to “Application by Ward Map”





Making a Dashboard

1. Click on the “New Dashboard” button
2. Navigate to the new Dashboard you created





Making a Dashboard

You might notice that the space dedicated to your dashboard (outlined in blue) might be small or awkwardly sized (depending on how Tableau was used/configured on your machine. This is how you change that:

3. Under “Size” > “Range” select “Automatic”

This will dynamically resize the space your dashboard takes depending on the size of the device it's viewed on

The screenshot shows the Tableau Public interface with a dashboard open. The dashboard has a blue border. On the left, the 'Layout' tab is selected. In the sidebar, under 'Size', the 'Range' dropdown is highlighted with a red box. The dropdown menu shows 'Range', 'Fixed size', 'Automatic', and 'Range'. Below the dropdown, 'Width' is set to 650 px and 'Height' is set to 860 px. A red number '3' is overlaid on the 'Width' input field. The main workspace is empty and displays the placeholder text 'Drop sheets here'.



Making a Dashboard

- Double click the “Applications by Ward Crosstab” and Applications by Ward Map” sheet on the left side of the window to add them to the dashboard

Screenshot of Tableau Public showing the process of creating a dashboard.

The interface includes:

- Dashboard** tab selected.
- Layout** tab open.
- Default** device preview selected.
- Size**: Custom size (1300 x 800).
- Sheets** pane:
 - Applications by Ward Crosstab (selected, highlighted with a red border).
 - Applications by Ward Bar Chart
 - Applications by Ward Tree Map
 - Applications by Ward
- Objects** pane:
 - Horizontal
 - Vertical
 - Text
 - Image
 - Web Page
- Tiled** and **Floating** options.
- Show dashboard title** checkbox.

The main workspace displays two sheets:

- Applications by Ward Crosstab**: A data table showing the number of applications per ward from 2013 to 2019. The table has columns for Wards and years (2013-2019), with data points ranging from 1 to 131.
- Applications by Ward**: A choropleth map of a geographic area (likely a city) where each ward is colored according to the number of applications. A legend on the right maps colors to ward numbers (e.g., Null, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34).

Bottom navigation bar:

- Data Source
- Applications by Ward Crosstab
- Applications by Ward Bar Chart
- Applications by Ward Tree Map
- Applications by Ward
- Dashboard 1
- Dashboard 2
- Dashboard 3
- Dashboard 4



How to Save Your Workbook

Nice! You've created your first Dashboard. Now you might want to save your work, and if you're using the full edition of Tableau it's as easy as clicking on "File" > "Save As" and saving your work. On Tableau Public, you only have the option of saving to Tableau's Public cloud. This means that anything you create on Tableau Public can be seen and shared with anyone.

Screenshot of the Tableau Public interface showing a dashboard with three visualizations:

- Applications by Ward Crosstab:** A table showing the number of applications per year (2013-2019) across different wards. The data is as follows:

	2013	2014	2015	2016	2017	2018	2019
1	12	1	4	4	2	8	1
2	70	60	58	60	91	97	53
3	88	67	62	91	94	77	48
4	65	68	28	78	85	59	72
5	74	57	56	88	100	90	66
6	14	11	6	31	33	34	12
7	1	1	1	5	11	7	
8	3	8	3	1	16	2	
9	1	3	7	6	14	4	
10	2	7	6	2	4		
11	35	37	49	43	79	50	42
12	19	17	14	29	25	45	20
13							
14	1	2		1	2	1	
15	2	4		3	5	1	
16	1		10	3	2	5	2
17	1	2	5		1	3	1
18	2	4		1		1	1
19	2	2	5	5	5	11	8
20	6	11	10	22	21	18	7
21	1		1	1	4	6	1
22	1	2		13	9	11	2
23	1	3	1		3		2
24	37	57	50	73	130	128	43
25	131	126	86	160	217	166	117
26	15	9	20	17	19	31	30
27	111	88	129	182	191	165	137
28	151	111	87	164	192	213	85
29	14	4	3	7	8	16	17
30	1	2	6	7	18	10	14
31	5	1	1	3	3	11	5
32	120	60	41	50	90	58	38
33	4	7	14	12	14	24	12
34	2	2	2			3	
35	10	5	7	15	12	21	24
36	2	1		1		2	
37	1	10		2	4	2	2
38	3	6	1	1	2	4	7
39	6	10	7	30	21	26	18

- Application by Ward Map:** A map of a geographic area divided into 43 wards, each colored according to the number of applications. The legend on the right shows the color mapping for Wards 1 through 43.
- Dashboard:** A summary view of the three applications above.

The "File" menu is highlighted with a red box, showing options like "New", "Open...", "Save to Tableau Public...", and "Save to Tableau Public As...".



Sheets, Dashboards, and Stories oh my!

You might have noticed the three buttons near the bottom of the screen when you were creating your dashboard. These are the three basic workspaces that you can use in Tableau

The screenshot shows the Tableau Public interface with a dashboard titled "Applications by Ward". The dashboard contains three main visualizations: a cross-tab, a bar chart, and a tree map. A legend on the right maps colors to wards from 1 to 37. A red box highlights the "Sheets" button at the bottom left, which is used to switch to a sheet workspace. Another red box highlights the "Dashboard" button at the bottom center, which is used to switch to a dashboard workspace. A third red box highlights the "Story" button at the bottom right, which is used to switch to a story workspace.

Tableau Public - Book1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Dashboard Default Phone Device Preview

Size Custom size (1300 x 800)

Sheets Applications by Ward Crosstab Applications by Ward Bar Chart Applications by Ward Tree Map Applications by Ward

Objects Horizontal Vertical Text Image Web Page Tiled Floating

Show dashboard title

Applications by Ward Crosstab Applications by Ward Bar Chart Applications by Ward Tree Map Applications by Ward Dashboard 1

Wards

Null
1
2
3
4
5
6
7
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9
10
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36
37

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74% Sat 7:20 PM Shashank Kalanithi Show Me



Sheets, Dashboards, and Stories oh my!



Sheet

- Used to create a single metric
- You must create sheets in order to use Dashboards



Dashboard

- Houses multiple Sheets
- Great for tracking metrics



Story

- Houses multiple Sheets and/or Dashboards
- Usually used for your final product
- Acts as a presentation, is used to show a data story
- Helps you present one of Seven Data Stories

The screenshot shows a Tableau Public dashboard titled "Applications by Ward". The dashboard contains four items:

- Applications by Ward Crosstab (Bar Chart)
- Applications by Ward Tree Map
- Applications by Ward (Crosstab)
- Applications by Ward (Map)

The "Applications by Ward" item is highlighted with a red box. The "Sheets" section of the sidebar is also highlighted with a red box, and a red arrow points from it towards the highlighted dashboard item.

Tableau Public - Book1

Dashboard Layout Default Phone Device Preview

Size Custom size (1300 x 800)

Sheets Applications by Ward Crosstab Applications by Ward Bar Chart Applications by Ward Tree Map Applications by Ward

Objects Horizontal Vertical Text Image Web Page

Tiled Floating Show dashboard title

Data Source Applications by Ward Crosstab Applications by Ward Bar Chart Applications by Ward Tree Map Applications by Ward Dashboard 1

Wards

Null
1
2
3
4
5
6
7
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Seven Data Stories

Change Over Time

- One of the most common stories, great for tracking performance
- Company profit over time

Drill Down

- Focuses on a potential cause of a phenomenon

Zoom Out

- Explains how something affects the bigger picture

Contrast

- Shows the difference between two categories

Intersection

- How do two seemingly unrelated categories relate
- Is there a correlation between the temperature in a region and the number of batteries sold

Factors

- Divides a phenomenon into categories
- Sales by battery category

Outliers

- Helps show and/or explain an anomaly
- Does a certain distributor buy more of a certain battery or not



Section 1: Done

Congratulations! You've completed the first part of this course. I believe there is no better way to learn than to do and hopefully the exercises you've done will give you a feel for how to use Tableau. As you use it for your own purposes you'll start to formulate questions that can generally be answered by going to:

kb.tableau.com

This is the official Tableau knowledge base and contains all of their documentation for users.



Section 1: Done

This is everything that we've learned so far!

- What is Tableau
- The Importance of Data Visualization
- What Makes Tableau so Great
- Ease of Visual Exploration and VizQL
- Hyper Database System
- How to Install Tableau
- Connecting to Static Data
- Anatomy of the Tableau Data Page
- Anatomy of the Tableau Workspace
- Cleaning Data
- Dimensions vs. Measures
- Tables
- Bar Charts
- Geospatial Data
- Basic Troubleshooting
- Resizing Dashboards
- Saving your Work
- Sheets, Dashboards, Stories
- Seven Data Stories



Objectives: Section 2

We're now going to try and create more advanced visualizations.

We'll continue to use the same dataset.

In Chicago, independent films only need to pay a permit price of \$25 per day per location, whereas big budget films need to pay \$250 per day per location. We're going to use this information to try and classify permits as either "Big Budget" or "Independent".



Objectives: Section 2

This section assumes you've completed Section 1 and have your workbook saves from there. If you don't you can download a copy I have from here:

<https://public.tableau.com/profile/shashank.kalanithi#/vizhome/ShashankTableauCourseSection1/Dashboard1>

Calculated Fields

There isn't a field in the dataset that tells us if a film is a Big Budget film or an Independent film, so we'll have to make our own field to determine this. This new field we're creating is called a "Calculated Field" because it is populated by values calculated from other fields.

The screenshot shows the Tableau Public interface with the following steps highlighted:

- Step 2:** The "Analysis" menu is open, and the "Create Calculated Field..." option is selected, indicated by a red box and the number 2.
- Step 3:** A new calculated field dialog box is open, showing the field name "Days Spent Shooting" and the formula "DATEDIFF('day', [Application Start Date], MAX([Application End Date], [Application Expired Date])) + 1". The formula is highlighted with a red box and the number 4.
- Step 5:** The "OK" button at the bottom right of the dialog box is highlighted with a red box and the number 5.

The interface also shows the "Data" pane on the left with various dimensions and measures listed, and the "Marks" pane where a calculated field has been added.

Calculated Fields

We know that Big Budget films get charged \$250 per day of shooting while Independents get charged \$25 per day of shooting. We also know what fees a movie was charged through the column [Total Fees]. Films can also have some fees waived which must be taken into account through the [Waived Fees] column. What we need to figure out now is how many days a movie was shooting for.

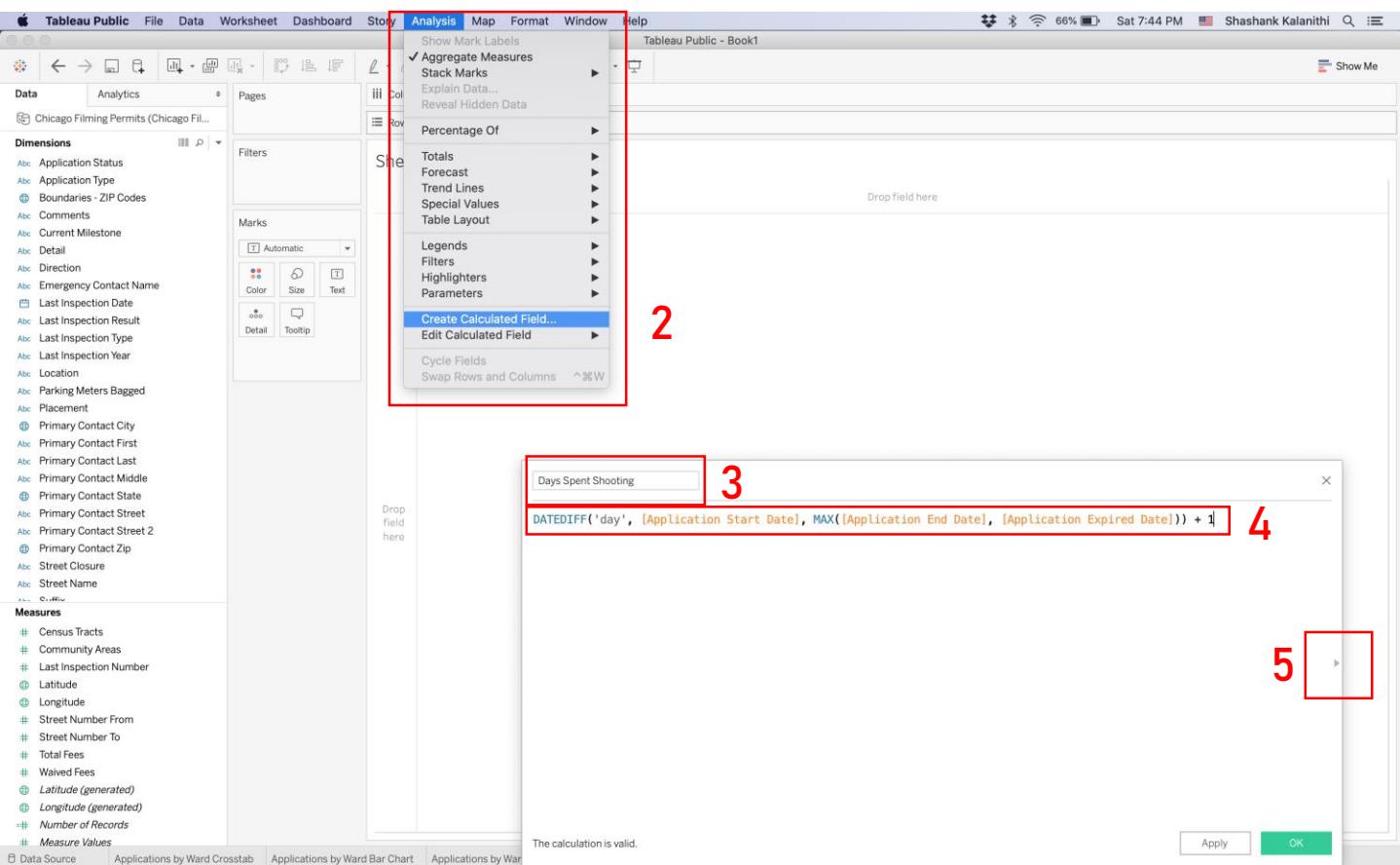
The screenshot shows the Tableau Public interface with the following steps highlighted:

- Step 1:** The Analysis menu is open, with the "Create Calculated Field..." option highlighted by a red box.
- Step 2:** The "Create Calculated Field..." dialog box is open, showing the field name "Days Spent Shooting" and the formula "DATEDIFF('day', [Application Start Date], MAX([Application End Date], [Application Expired Date])) + 1".
- Step 3:** The formula "Days Spent Shooting" is highlighted in the formula bar.
- Step 4:** The formula "DATEDIFF('day', [Application Start Date], MAX([Application End Date], [Application Expired Date])) + 1" is highlighted in the formula bar.
- Step 5:** The "OK" button in the bottom right corner of the dialog box is highlighted with a red box.

#

Calculated Fields

1. Create a new sheet
2. Under “Analysis” click “Create Calculated Field”
3. Name your new calculated field, “Days Spent Shooting”
4. Use the following formula
 - `DATEDIFF('day', [Application Start Date], MAX([Application End Date], [Application Expired Date])) + 1`
5. If you don't see a gray pop-up on the side of the Calculated Field window, then click this arrow to reveal it



Calculated Fields

You can see that a pop-up with the description of “DATEDIFF” pops up. DATEDIFF is a function that is designed to calculate the difference between two dates using whatever time period you want. (‘years’, ‘months’, ‘days’ etc.) You can see the bolded text in the description below shows you the different parameters you need to fill in this function with.

The screenshot shows a Tableau Public interface with a calculated field dialog open. The calculated field is named "Days Spent Shooting" and contains the formula: 'day', [Application Start Date], MAX([Application End Date], [Application Expired Date])) + 1

A tooltip for the DATEDIFF function is displayed in a red box:

```
DATEDIFF(date_part, start_date, end_date, [start_of_week])
```

Text in the tooltip:

Returns the difference between two dates where start_date is subtracted from end_date. The difference is expressed in units of date_part. If start_of_week is omitted, the week start day is determined by the start day configured for the data source.

Example: DATEDIFF('month', #2004-07-15#, #2004-04-03#, 'sunday') = -3

The Tableau interface includes a Data pane with various dimensions and measures listed, and a Marks shelf with "Automatic" selected.

Calculated Fields

```
DATEDIFF('day', [Application Start Date],  
MAX([Application End Date], [Application Expired  
Date])) + 1
```

The yellow represents the base formula, all of the other components are there to serve this overall formula.

In our dataset, go row-by-row and find the difference between two dates and add 1 to that. We add 1 because if a film was filmed only on the 8th, then the start and end date are the 8th, and the DATEDIFF is 0 even though we spent 1 day filming.

This what the difference between our start date and end date should be calculated in. For us, we'd like to count 'days'.

This is the start date of our calculation, the day the application is to start which is usually the first day of shooting.

Calculated Fields

```
DATEDIFF('day', [Application Start Date],  
MAX([Application End Date], [Application Expired  
Date])) + 1
```

This part represents our end date, the date that shooting stopped. In this dataset like many you'll encounter, the information is not clear and the ending date is whichever comes later, [Application End Date] or [Application Expired Date].

Awesome! You've created your first calculated field. We have two more to create just remember that calculated fields are some of the most powerful parts of Tableau and any time spent learning new formulas and tricks with calculated fields is time well spent.

Calculated Fields

Now that we know the number of days that were spent shooting and the fees we need to figure out the fees per day.

1. Create another calculated field
2. Name it “Fees Per Day”
3. Use the following formula
 - $([\text{Total Fees}] - \text{ZN}([\text{Waived Fees}]))/[\text{Days Spent Shooting}]$
4. Click “OK”

The screenshot shows the Tableau Public interface with the following details:

- Dimensions:** Application Description, Application End Date, Application Expired Date, Application Finalized Date, Application Issue Date, Application Name, Application Number, Application Process Date, Application Start Date, Application Status, Application Type, Boundaries - ZIP Codes, Comments, Current Milestone, Detail, Direction, Emergency Contact Name, Last Inspection Date, Last Inspection Result, Last Inspection Type, Last Inspection Year, Location, Parking Meters Bagged, Placement.
- Measures:** Census Tracts, Community Areas, Days Spent Shooting (highlighted in green), Last Inspection Number, Latitude, Longitude, Street Number From, Street Number To, Total Fees, Waived Fees, Latitude (generated), Longitude (generated).
- Sheet 5:** A blank sheet with a "Drop field here" placeholder.
- Formula Editor:** A floating window titled "Fees Per Day" containing the formula $([\text{Total Fees}] - \text{ZN}([\text{Waived Fees}]))/[\text{Days Spent Shooting}]$. The formula is highlighted with a red border. The number "2" is displayed above the formula editor, and the number "3" is displayed to its right.
- Status Bar:** Shows "The calculation is valid."
- Buttons:** Apply, OK (highlighted in red).

Calculated Fields

([Total Fees] - ZN([Waived Fees]))/[Days Spent Shooting]

Alright onto number two!

The basic formula here is to divide the fees charged by the number of days spent shooting which we calculated in our first calculated field.

This ZN formula is a weird but very useful one. Basically it means *Zero if Null*. For the field [Waived Fees] there are what we call Null values. A Null value means no data exists in that cell (record). This isn't the same as a 0 or a blank as those are statements of value (0 doesn't mean no data). The reason we need the ZN formula is because if a record in the [Waived Fees] column is *Null* and we try and subtract it from [Total Fees] then we'll get a *Null* value, ZN will replace the *Null* with 0 so we get the real value we're looking for.

Calculated Fields

([Total Fees] - ZN([Waived Fees]))/[Days Spent Shooting]

An example of this would be:

[Total Fees] = 100

[Waived Fees] = Null

[Total Fees] - [Waived Fees] = Null

This is not what we're going for. If the [Total Fees] is 100 and there are no [Waived Fees] then we need an answer of 0. Therefore our formula evaluates as shown below:

[Total Fees] - ZN([Waived Fees]) = 100

Calculated Fields

Finally we need to take the information from the last calculated field and determine what type of movie we're looking at.

1. Create another calculated field
2. Name it "Independent or Big Budget"
3. Use the following formula
 - IF [Fees Per Day] = 25 THEN "Independent"
 - ELSEIF [Fees Per Day] = 250 THEN "Big Budget"
 - ELSE NULL
 - END
4. Click "OK"

The screenshot shows the Tableau Public interface with the following details:

- Dimensions:** Application Description, Application End Date, Application Expired Date, Application Finalized Date, Application Issue Date, Application Name, Application Number, Application Process Date, Application Start Date, Application Status, Application Type, Boundaries - ZIP Codes, Comments, Current Milestone, Detail, Direction, Emergency Contact Name, Last Inspection Date, Last Inspection Result, Last Inspection Type, Last Inspection Year, Location, Parking Meters Bagged, Placement.
- Measures:** Census Tract, Community Areas, Days Spent Shooting, Fees Per Day (highlighted in green), Last Inspection Number, Latitude, Longitude, Street Number From, Street Number To, Total Fees, Waived Fees, Latitude (generated).
- Calculated Field:** A new calculated field is being created with the name "Independent of Big Budget".
- Formula:**

```

IF [Fees Per Day] = 25
THEN "Independent"
ELSEIF [Fees Per Day] = 250
THEN "Big Budget"
ELSE NULL
END
  
```
- Validation:** The message "The calculation is valid." is displayed below the formula.
- Buttons:** Apply and OK buttons are visible at the bottom right.

Calculated Fields

```
IF [Fees Per Day] = 25 THEN "Independent"  
ELSEIF [Fees Per Day] = 250 THEN "Big Budget"  
ELSE NULL  
END
```

Now we need to output a label to help us determine whether a film is a Big Budget or an Independent film. An If-Then statement is a simple way to achieve the desired result.

If-Then statements follow this basic structure:

```
If (CONDITION1) Then (ACTION1)  
ElseIf (CONDITION2) Then (ACTION2)  
Else (ACTION3)  
End
```

Calculated Fields

```
IF [Fees Per Day] = 25 THEN "Independent"  
ELSEIF [Fees Per Day] = 250 THEN "Big Budget"  
ELSE NULL  
END
```

You can have any many “Elseifs” in your statements although you’re discouraged from making these too complicated as that can make edits to your logic hard to execute on.

This part is saying that “If the [Fees Per Day] are 25 then this calculated field equal “Independent””

“If the [Fees Per Day] are 250 then this calculated field equal “Big Budget””

You should always use a final “Else” statement to take care of any values you don’t expect, in our case we’ll just output a NULL for any other values

This tells Tableau you’re done with your statement and that there are no other conditions.

Calculated Fields Explained

What did we just do? We created three calculated fields.

Calculated fields are one of the most powerful tools in Tableau, they essentially allow you to add another column to your dataset that you can use to expand what your visualization actually shows

When you create a calculated field, the little icon that denotes the field type will have a little “=” icon next to it which tells you that it's a calculated field.

The screenshot shows the Tableau Public interface with a green callout highlighting the 'Days Spent Shooting' calculated field in the 'Measures' section of the data pane. A red line connects this highlighted field to a red box containing the '= #' symbol in the 'Marks' card on the right side of the screen. The 'Marks' card also includes options for Color, Size, and Text.

Tableau Public - Shashank Tableau Course Section 1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Chicago Filming Permits (Chicago Filming Dataset)

Dimensions

- Direction
- Emergency Contact Name
- Independent of Big Budget
- Last Inspection Date
- Last Inspection Result
- Last Inspection Type
- Last Inspection Year
- Location
- Parking Meters Bagged
- Placement
- Primary Contact City
- Primary Contact First
- Primary Contact Last
- Primary Contact Middle
- Primary Contact State
- Primary Contact Street
- Primary Contact Street 2
- Primary Contact Zip
- Street Closure
- Street Name
- Suffix
- Wards
- Work Type
- Worktype Description
- Zip Codes

Measures

- Census Tracts
- Community Areas
- Days Spent Shooting
- Fees Per Day
- Last Inspection Number
- Latitude
- Longitude
- Street Number From
- Street Number To
- Total Fees
- Waived Fees
- Latitude (generated)
- Longitude (generated)

Sheet 4

Drop field here

Drop field here

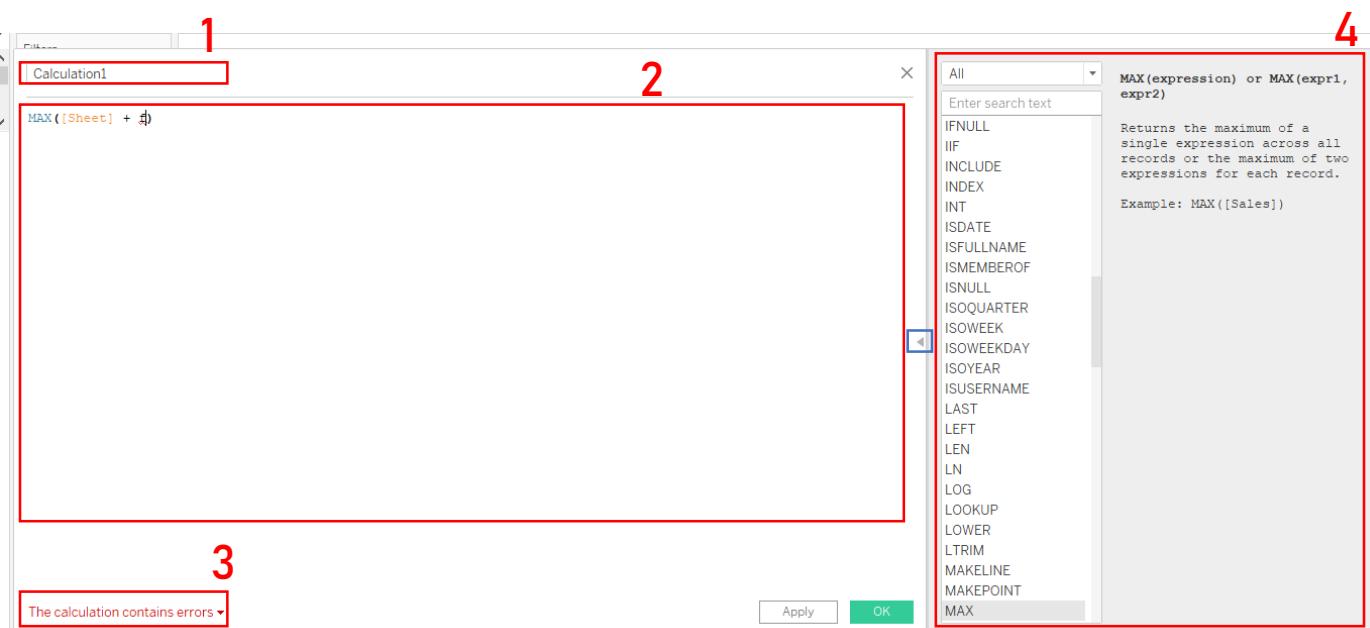
Drop field here

Data Source Applications by Ward Crosstab Applications by Ward Bar Graph Application by Ward Map Dashboard 1 Sheet 4

Calculated Fields Explained

To create a calculated field in the menu bar select “Analysis” then “Create Calculated Field...”, you’ll get an editor like the one shown below

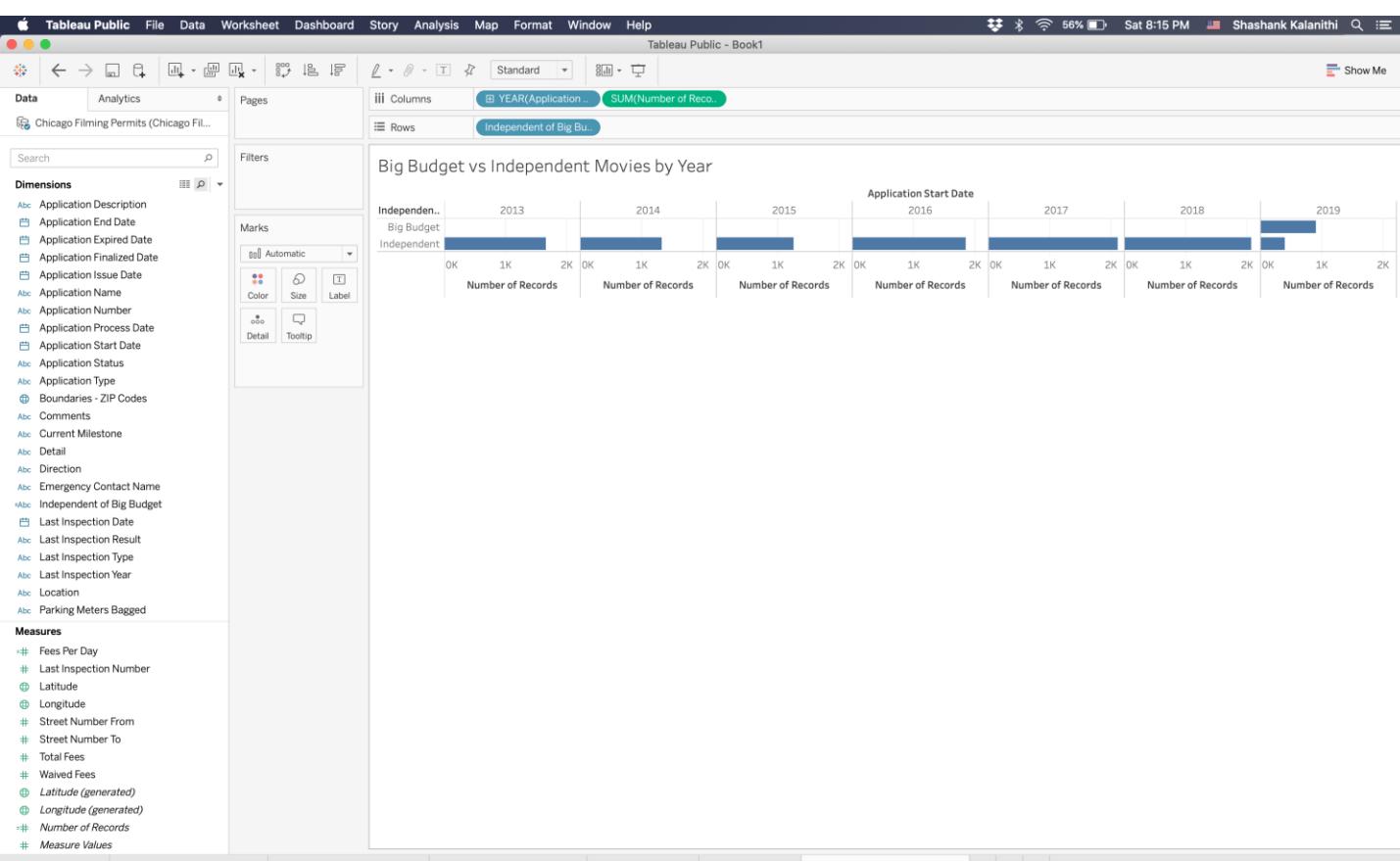
1. This is where you change the name of your calculated field
2. This is the editor that you put your calculation into
3. This will tell you if you calculation was done correctly or if it has errors
4. This area gives you a list, description, and example of every function available in Tableau. If you don’t see this section, click on the arrow inside the blue box below





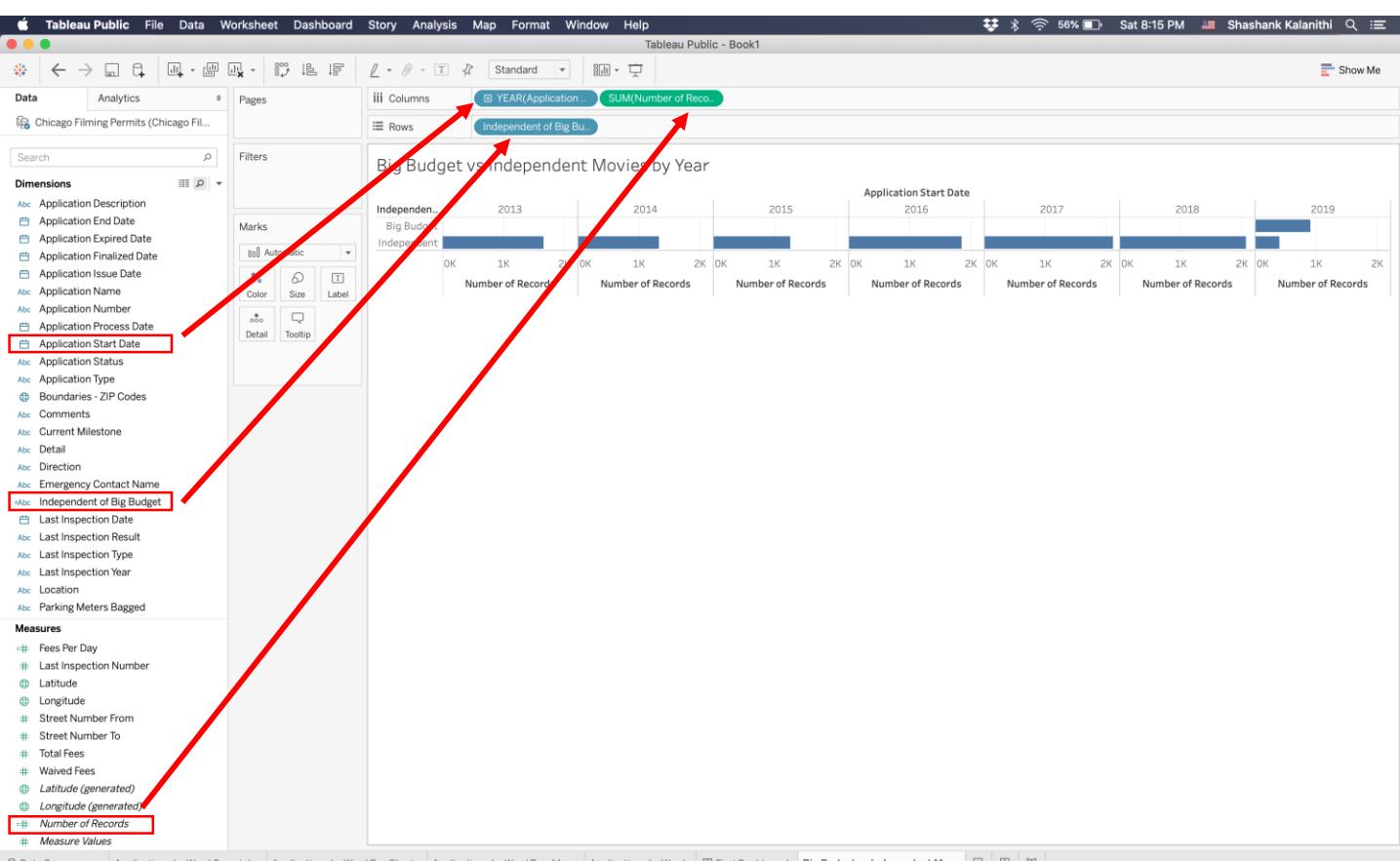
Exercise

Using what you've learned, recreate the sheet shown below





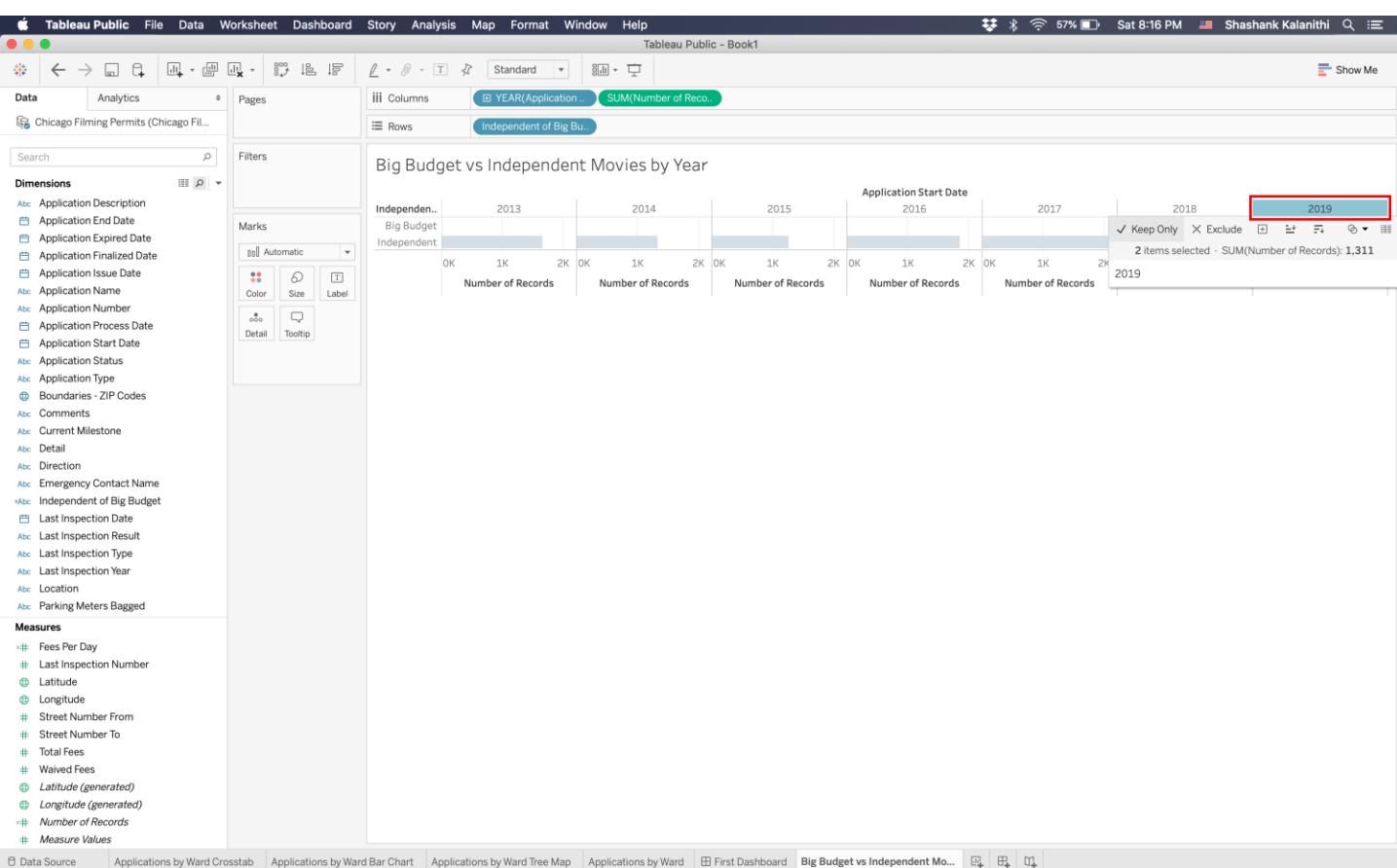
Exercise





How to Filter Data

Click on the 2019 value under “Application Start Date” and select “Keep Only”





How to Filter Data

You could also create a filter by dragging the 2019 value from the “Dimensions” shelf to the “Filter” card and selecting the blue “year” and “2019-”

The screenshot shows a Tableau Public dashboard titled "Big Budget vs Independent Movies by Year". The chart displays the number of records for independent movies across years 2013 to 2019. The dimensions used are Application Start Date, Application Type, and Application Status. The measures used are SUM(Number of Records) and COUNT(Record ID). The filters used are Application Start Date (2019) and Application Type (Independent). The chart shows a significant increase in the number of records for independent movies starting in 2016.

1. Dimensions shelf: Application Start Date

2. Filter dialog: Range of Dates - Years

Tableau Public - Book1

Big Budget vs Independent Movies by Year

Application Start Date

Number of Records

2013 2014 2015 2016 2017 2018 2019

OK 1K 2K OK 1K 2K OK 1K 2K OK 1K 2K OK 1K 2K

Independent Big Budget Independent

How do you want to filter on [Application Start Date]?
Range of Dates
Years
Quarters
Months
Days
Week numbers
Weekdays
Month / Year
Month / Day / Year
Individual Dates
Count
Count (Distinct)
Minimum
Maximum
Attribute



How to Filter Data

You could also create a filter by dragging the 2019 value from the “Dimensions” shelf to the “Filter” card and selecting the blue “year” and “2019-”

Sat 8:22 PM Shashank Kalanithi

Tableau Public - Book1

Analytics

Chicago Filming Permits (Chicago Fil...)

Search

Dimensions

- Application Description
- Application End Date
- Application Expired Date
- Application Finalized Date
- Application Issue Date
- Application Name
- Application Number
- Application Process Date
- Application Start Date
- Application Status
- Application Type
- Boundaries - ZIP Codes
- Comments
- Current Milestone
- Detail
- Direction
- Emergency Contact Name
- Independent of Big Budget
- Last Inspection Date
- Last Inspection Result
- Last Inspection Type
- Last Inspection Year
- Location
- Parking Meters Bagged

Measures

- Fees Per Day
- Last Inspection Number
- Latitude
- Longitude
- Street Number From
- Street Number To
- Total Fees
- Waived Fees
- Latitude (generated)
- Longitude (generated)
- Number of Records
- Measure Values

Columns: YEAR(Application Start Date), SUM(Number of Reco...)

Rows: Independent of Big Bu...

Filters

Marks

Independen... Big Budget Independent

Number

Color Size Label

Detail Tooltip

Big Budget vs Independent Movies by Year

Application Start Date

2016 2017 2018 2019

Number of Records Number of Records Number of Records Number of Records

Filter [Year of Application Start Date]

General Condition Top

Select from list Custom value list Use all

All None Exclude

Field: [Year of Application Start Date]
Selection: Selected 1 of 7 values
Wildcard: All
Condition: None
Limit: None

Filter to latest date value when workbook is opened

Reset Apply OK Cancel

Data Source Applications by Ward Crosstab Applications by Ward Bar Chart Applications by Ward Tree Map Applications by Ward First Dashboard Big Budget vs Independent Mo... 8 marks 2 rows by 7 columns SUM(Number of Records): 11,629



Changing Data Types

1. Right-click the date pill under Columns
2. Select the first Month option

The screenshot shows a Tableau Public dashboard titled "Big Budget vs Independent Mo...". A context menu is open over a date pill labeled "YEAR(Application Start Date)". The menu is divided into several sections:

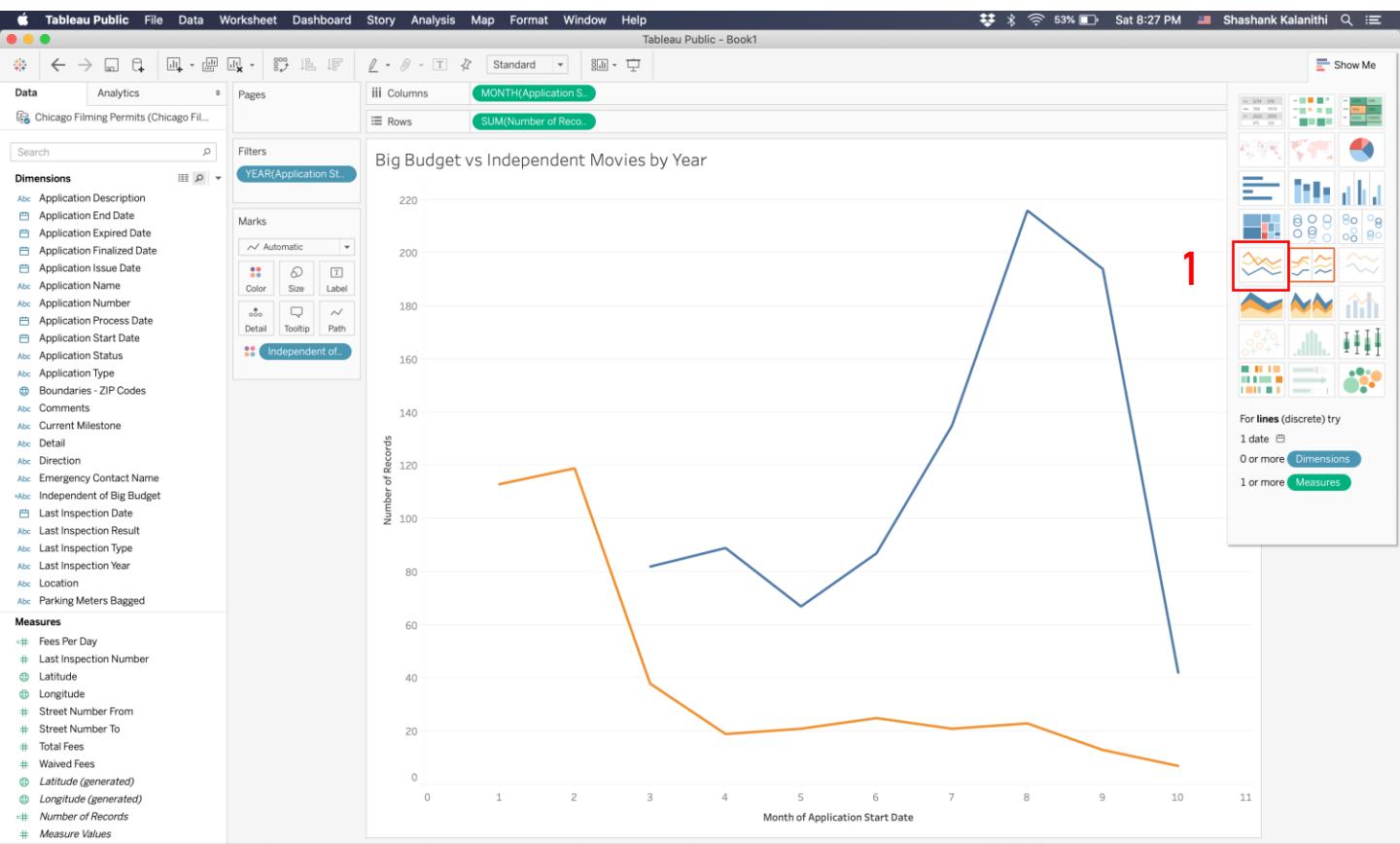
- Standard**: Contains options like "Edit Filter...", "Show Filter", and "Show Highlighter".
- Sort...**: Contains "Format..." and "Show Header".
- Independent**: Contains "Include in Tooltip" and "Show Missing Values".
- Dependent**: Contains "Show Header", "Include in Tooltip", "Show Missing Values", and "Show Header".
- Year**: Contains "Year" (selected), "Quarter" (Q2), "Month" (selected), "Day", and "More".
- Exact Date**: Contains "Attribute", "Measure", and "More".
- Discrete**: Contains "Continuous", "Edit in Shelf", and "Remove".

Red boxes with numbers 1 and 2 highlight specific items: box 1 highlights the "Year" section in the menu, and box 2 highlights the "Month" option within the "Year" section.



Line Graph

1. Under “Show Me” click on the first line graph option

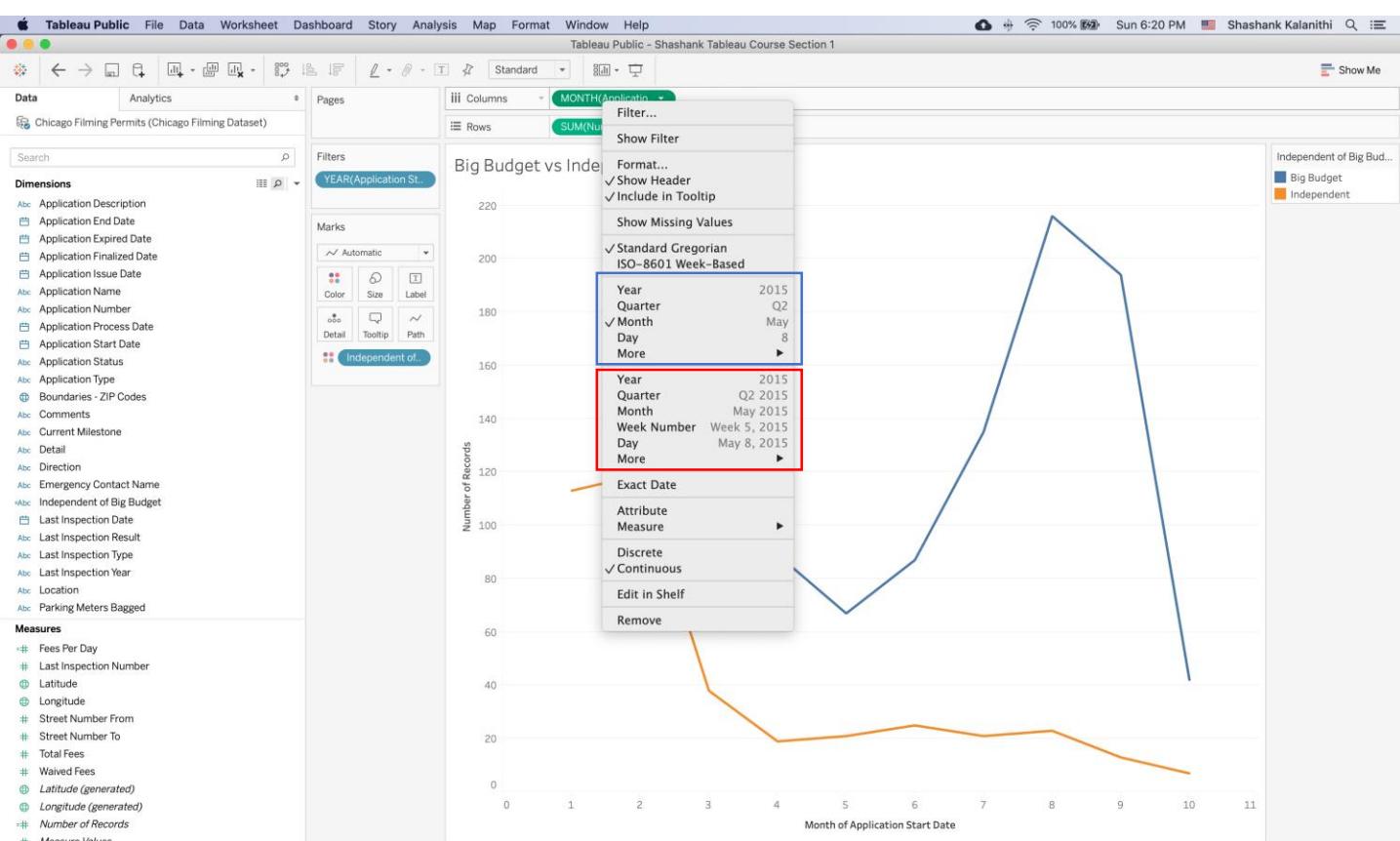




Warning! Dates and Line Graphs

Be careful which set of dates you use when you're creating line graphs.

If you look carefully you might notice that there are two sets of date values when we right-clicked on our date pill. The top half highlighted in blue are discrete values and the bottom half highlighted in red are continuous.

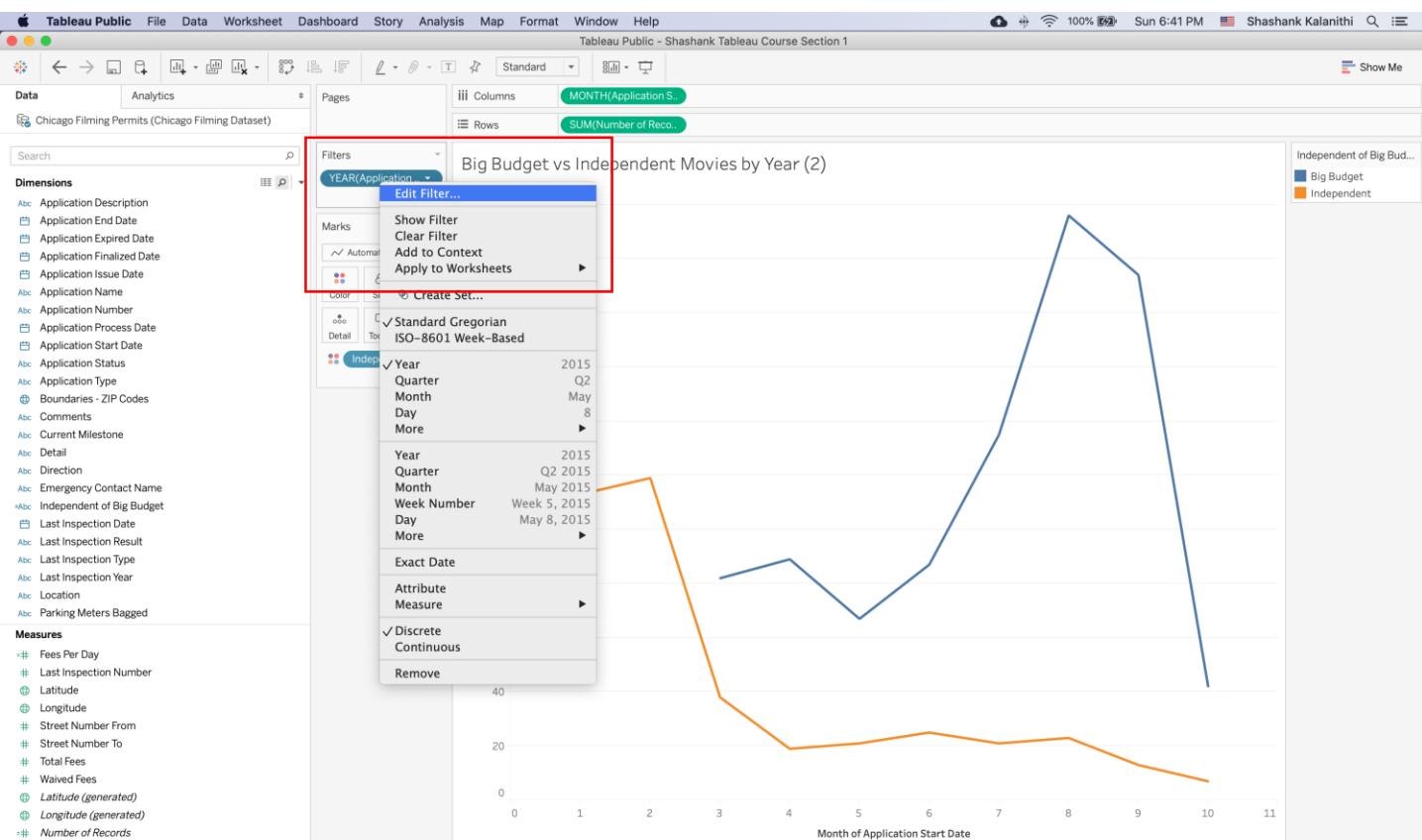




Warning! Dates and Line Graphs

Why is this important? To illustrate:

1. Duplicate this sheet so you don't lose your work
2. Right-click your filter
3. Select "Edit Filter..."
4. Select the year "2018" so that you include data from 2018 and 2019 now
5. Select "OK"

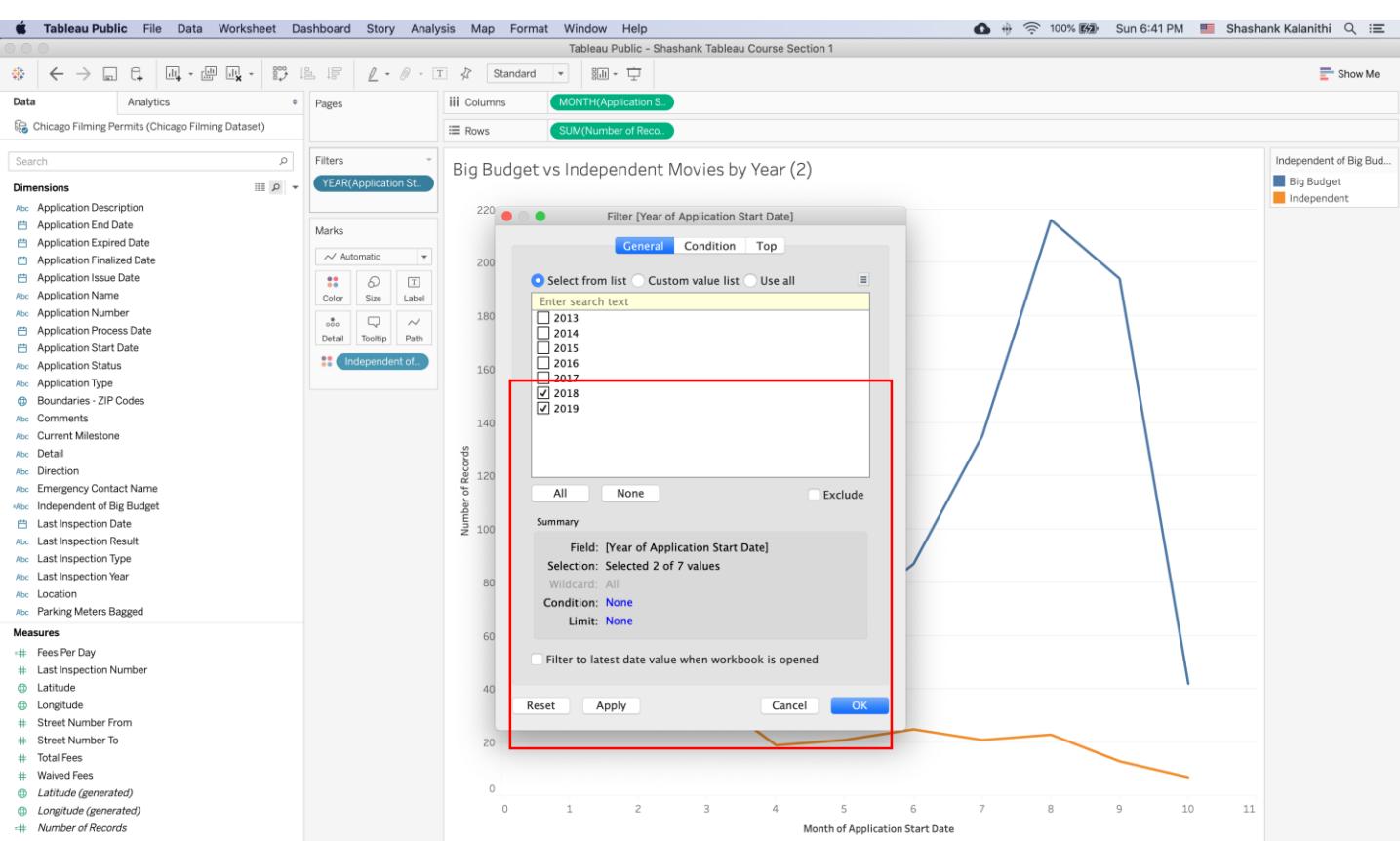




Warning! Dates and Line Graphs

Why is this important? To illustrate:

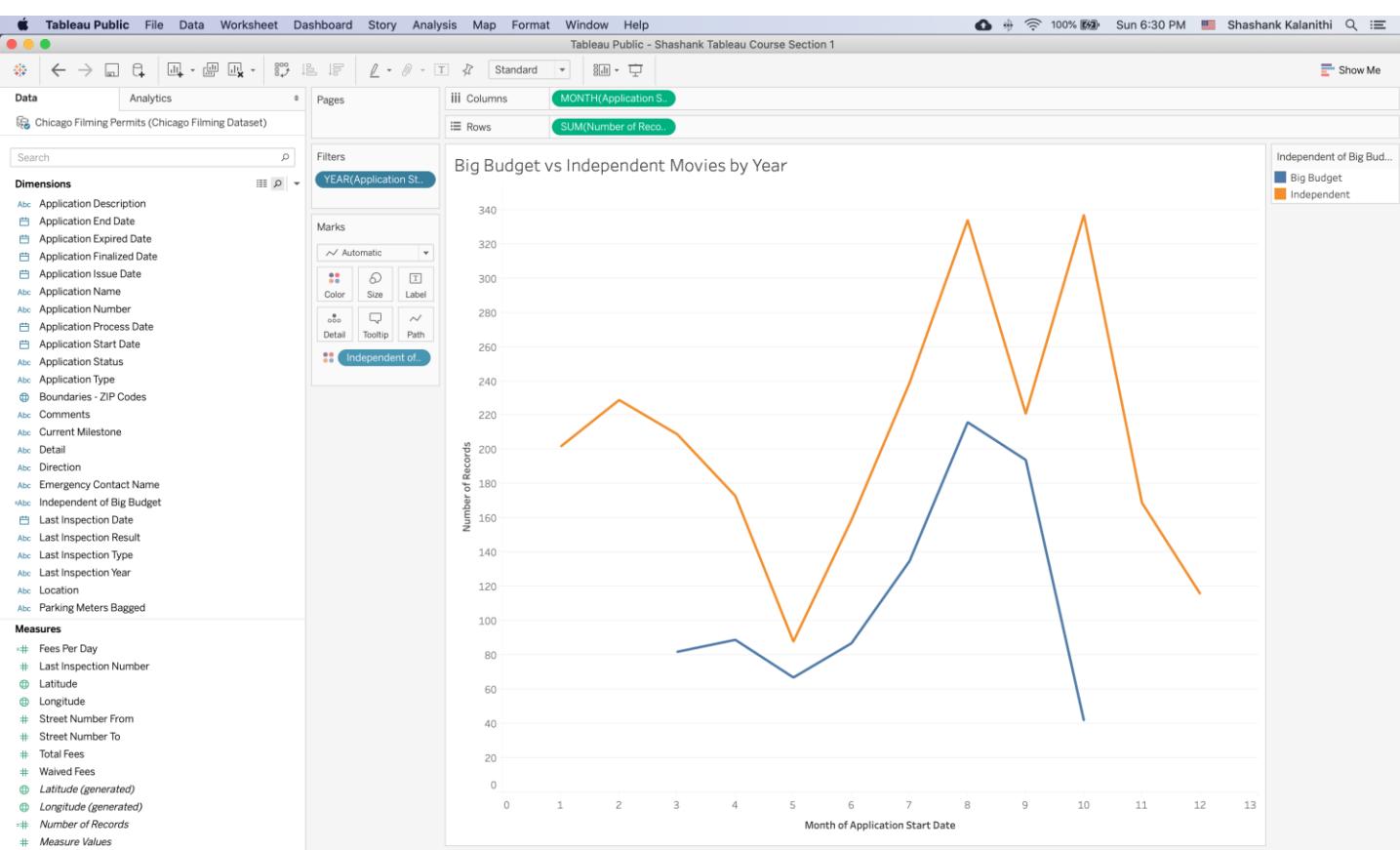
1. Right-click your filter
2. Select “Edit Filter...”
3. Select the year “2018” so that you include data from 2018 and 2019 now
4. Select “OK”





Warning! Dates and Line Graphs

You might notice that the x-axis of the graph has not changed at all. How can this be? We've added an entire year's worth of values to our graph. Right-click the date pill and you'll see why.

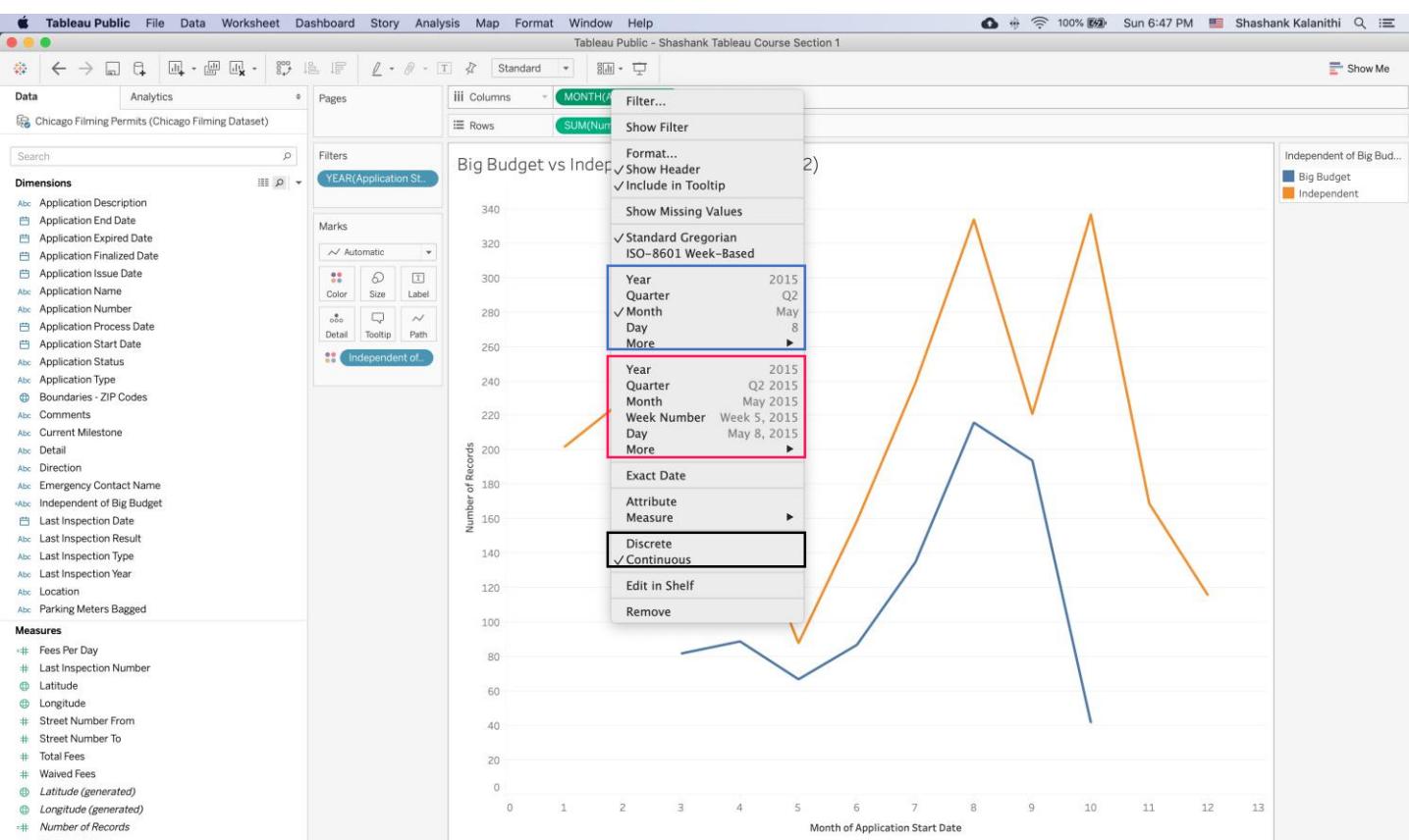




Warning! Dates and Line Graphs

Like we mentioned earlier, the **Blue** and **Red** boxes represent whether Tableau graphs the dates as Discrete or Continuous respectively. But what about the black box?

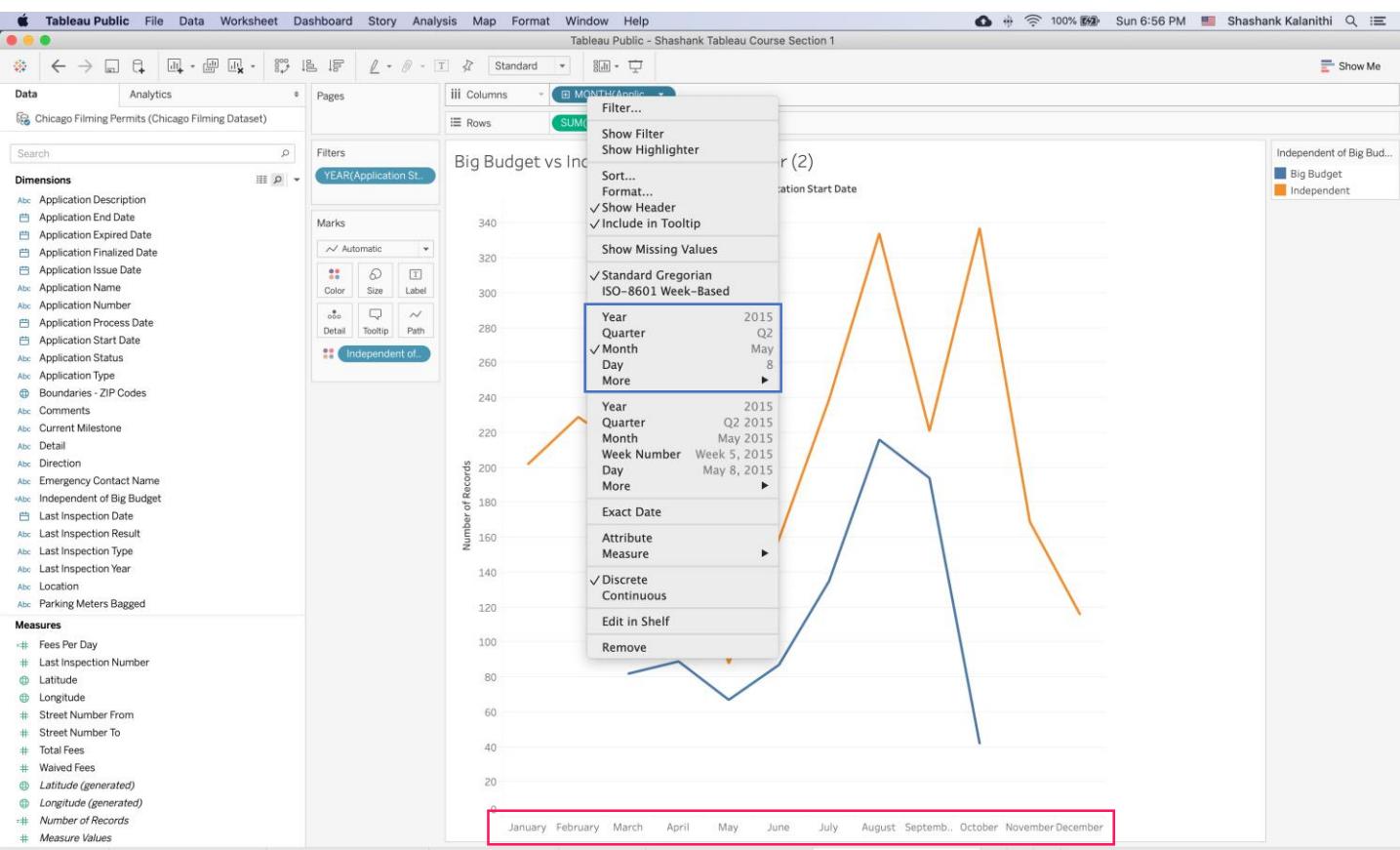
The black box just changes how the values are represented on the axis. To more clearly illustrate, let's change the value in the black box to be "Discrete"





Warning! Dates and Line Graphs

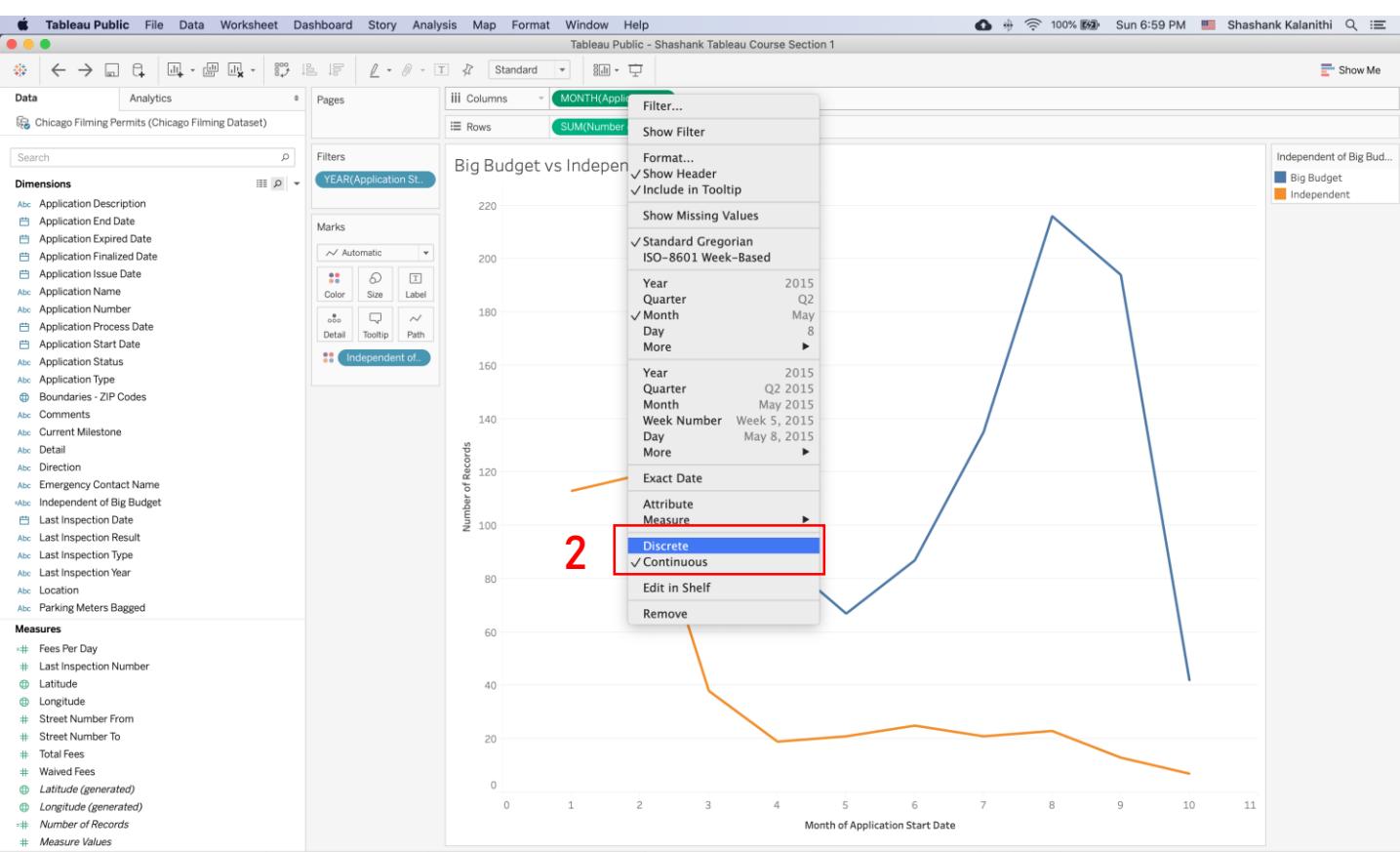
You'll notice that only the axis changed, we're still only seeing 12 x-values for two years of data. This is because we chose "Month" from the "Discrete" section therefore Tableau is creating the months as a categorical variable, meaning it's adding all of the January's together and all of the February's together without regard to year. As you can expect this isn't what we really want. On this sheet continue to play around with these settings to see if they help you understanding.





Line Graph

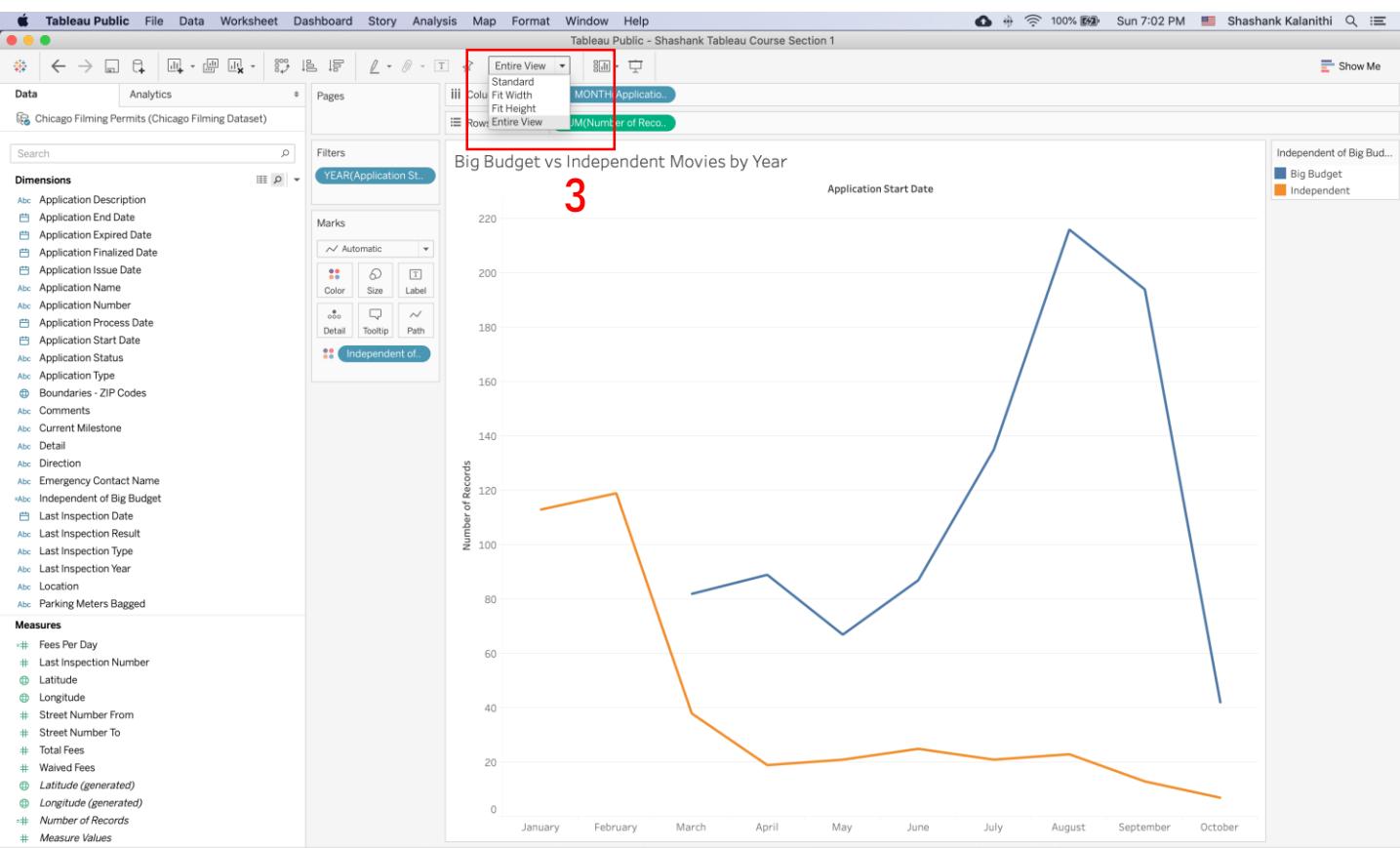
1. When you're done experimenting go back to the sheet "Big Budget vs Independent Movies by Year"
2. It would be helpful if the axis had labels corresponding to the names of months. Right click the date pill and select "Discrete"





Line Graph

- As an option if you want you can use this dropdown to tell Tableau how to fit this visualization onto the screen

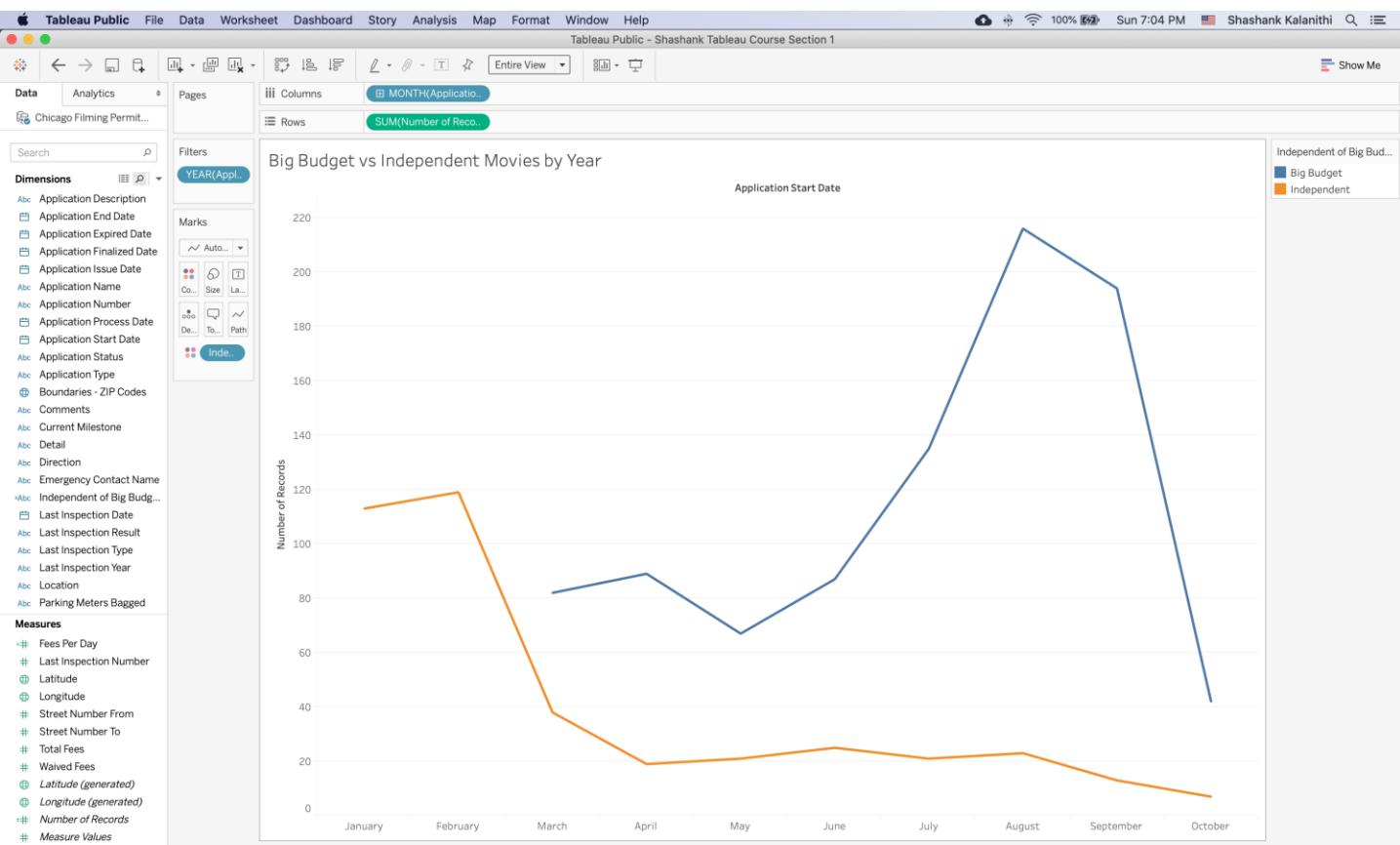




Section 2: Done

Great job! It looks like over the year 2019 Chicago brought in some good business with hundreds of permits being given to Big Budget movies. This concludes Section 2 of the course. Go ahead and save your work. I will leave a copy of this workbook here:

<https://public.tableau.com/profile/shashank.kalani thi#!/vizhome/ShashankTableauCourseSection2/B igBudgetvsIndependentMoviesbyYear>





Section 2: Done

This is everything that we've learned in Section 2!

- Calculated Fields
 - Date Calculations
 - If-Then statements
- Filtering Data
- Line Graphs
 - Continuous vs. Discrete Dates



Section 3: Objectives

For this part of the course we're going to be looking at some player stats from the English Premier League.

The English Premier League is the highest level of soccer (football) played in England and one of the most watched sports leagues in the world.

We're most interested in plotting data on player salaries.



Connect to Data

First, let's see if we can get some basic information on players.

1. Open a new Tableau workbook
2. In the connect menu, click on "Microsoft Excel"
3. Import the "Player Data" workbook

The screenshot shows the Tableau Public interface. On the left, there's a sidebar with 'Connect' options like 'To a File' (Microsoft Excel selected), 'To a Server', and 'OData'. The main area has a 'Discover' sidebar with links to 'How-to Videos', 'Overview', 'Intro to the Interface', 'Chart Types', 'Dashboard', and 'More how-to videos...'. A large central window shows an 'Open' dialog from a Mac OS X file browser. The 'Downloads' folder is open, and the file 'Player Data.xlsx' is selected. Below it, the 'Player Data.xlsx' file details are shown: '3rd party formats - 164 KB', 'Created Today, 11:49 AM', and 'Show More'. At the bottom of the dialog are 'Cancel' and 'Open' buttons. The status bar at the top right shows 'Shashank Kalanithi' and the date 'Sun 11:51 AM'.



Connect to Data

It looks like the data that we have has split players that are from England with those who aren't from England, let's see if we can combine the two datasets.

4. Drag in the sheet labeled “English Players”
5. Right-click on the sheet you just dragged or click on the downward facing arrow
6. Click on “Convert to Union”

Screenshot of Tableau Public showing the process of combining datasets:

4. A red box highlights the "English Players" sheet in the Sheets pane.
5. A red box highlights the context menu for the "English Players" sheet, which includes options: "Field names are in first row", "Generate field names automatically", "Convert to Union...", "Duplicate", and "Remove".
6. A red box highlights the "Convert to Union..." button in the context menu.

The main workspace shows a data source named "Player Data" connected to Microsoft Excel. The data is currently split into two sheets: "English Players" and "Non English Players". The "English Players" sheet contains 715 rows of data, including columns such as ID, Name, Age, Photo, Nationality, Overall Potential, Special Preferred Foot, International Reputation, Weak Foot, Skill Moves, and Work Rate. The data includes players like K. Henry, R. Green, L. McCormick, etc.

ID	Name	Age	Photo	Nationality	Overall	Potential	Special	Preferred Foot	International Repu...	Weak Foot	Skill Moves	Work Rate
100803	K. Henry	35	https://cdn.sofifa.or...	England	67	67	1,753	Right	1	3	2	Medium/High
101880	R. Green	38	https://cdn.sofifa.or...	England	72	72	1,101	Right	2	3	1	Medium/Medium
111328	L. McCormick	34	https://cdn.sofifa.or...	England	64	64	1,106	Right	1	4	1	Medium/Medium
111590	L. Feeney	31	https://cdn.sofifa.or...	England	67	67	1,724	Right	1	3	3	Medium/Low
118794	A. Lonergan	34	https://cdn.sofifa.or...	England	65	65	1,048	Left	1	1	1	Medium/Medium
119233	T. Mears	35	https://cdn.sofifa.or...	England	66	66	1,805	Right	1	3	3	Medium/Medium
120312	M. Dawson	34	https://cdn.sofifa.or...	England	71	71	1,402	Right	2	3	2	Medium/High
135883	S. Francis	33	https://cdn.sofifa.or...	England	75	75	1,788	Right	1	4	2	High/Medium
138279	L. Dyer	35	https://cdn.sofifa.or...	England	65	65	1,646	Left	1	1	3	High/Medium
138412	J. Milner	32	https://cdn.sofifa.or...	England	81	81	2,126	Right	2	4	3	High/High
138719	C. O'Grady	32	https://cdn.sofifa.or...	England	61	61	1,529	Right	1	3	2	High/High
138786	B. Williams	35	https://cdn.sofifa.or...	England	58	58	1,123	Right	1	2	1	Medium/Medium
139296	D. Nugent	33	https://cdn.sofifa.or...	England	71	71	1,770	Right	1	3	3	High/High
139476	D. Gerken	33	https://cdn.sofifa.or...	England	68	68	1,201	Right	1	3	1	Medium/Medium
140422	A. Baptiste	32	https://cdn.sofifa.or...	England	68	68	1,593	Right	1	3	2	Medium/Medium
150724	J. Hart	31	https://cdn.sofifa.or...	England	79	79	1,260	Right	3	3	1	Medium/Medium



Connect to Data

7. Drag in the sheet labeled “Non-English Players”
8. Click “OK”

The screenshot shows the Tableau Public interface with the following details:

- Connections:** Player Data (Microsoft Excel) is selected.
- Sheets:** English Players+ (Player Data) is open. A red box highlights the "Non English Players" sheet tab.
- Drag Area:** A red arrow points from the "Non English Players" sheet tab to the "Non English Players" section in the "English Players+" dialog box.
- Dialog Box:** "English Players+" dialog box is open, showing the "Specific (manual)" tab selected. It displays the "English Players" connection and the "Non English Players" sheet.
- Buttons:** "Tables in union: 1" and "OK" button are visible in the dialog box. A red box highlights the "OK" button.
- Bottom Navigation:** "Worksheet" tab is selected (highlighted with a red box), and the "Sheet 1" tab is also visible.



Potential Bug

If you find that the window you're supposed to drag "Non-English Players" to disappears when you try and drag the sheet in, it's just hiding behind the main Tableau window. Move that window and you'll be able to drag it in as expected.

The screenshot shows a Mac desktop with a scenic coastal background. In the foreground, a Tableau Public interface is open. A small modal window titled "English Players+" is centered, containing two tabs: "English Players" (selected) and "Non English Players". Below the tabs is a button labeled "OK". A red arrow points from the text above to this "OK" button. To the right of the modal is the main Tableau interface. On the left, under "Sheets", the "Non English Players" sheet is listed with a red box around it. In the center, a preview of the data is shown with the first few rows of a table. On the right, the full data grid is visible, with columns for ID, Name, Age, Photo, and Nationality. A red box highlights the "Non English Players" row in the grid. At the bottom, a toolbar includes a "3 to Worksheet" button, which has a red box around it, and a "Sheet 1" tab.

ID	Name	Age	Photo	Nationality
100803	K. Henry	35	https://cdn.sofifa.or...	England
101880	R. Green	38	https://cdn.sofifa.or...	England
111328	L. McCormick	34	https://cdn.sofifa.or...	England
111590	L. Feeney	31	https://cdn.sofifa.or...	England
118794	A. Lonergan	34	https://cdn.sofifa.or...	England
119233	T. Mears	35	https://cdn.sofifa.or...	England
120312	M. Dawson	34	https://cdn.sofifa.or...	England
135883	S. Francis	33	https://cdn.sofifa.or...	England
138279	L. Dyer	35	https://cdn.sofifa.or...	England
138412	J. Milner	32	https://cdn.sofifa.or...	England
138719	C. O'Grady	32	https://cdn.sofifa.or...	England
138786	B. Williams	35	https://cdn.sofifa.or...	England
139296	D. Nugent	33	https://cdn.sofifa.or...	England
139476	D. Gerken	33	https://cdn.sofifa.or...	England
140422	A. Baptiste	32	https://cdn.sofifa.or...	England
150724	J. Hart	31	https://cdn.sofifa.or...	England



Unions

What we just did was union our data. You will start to notice that Tableau borrows the terminology for a lot of its concepts from SQL and Excel. This makes the tool really easy to pick up if you're familiar with these concepts and the skills you learn here easy to transition to SQL and Excel if you're just learning them now.

Put simply, a union (SQL Union) is the process of stacking two tables on top of one another. You will usually do this when your data is split up into multiple sections like an excel spreadsheet of a year's sales split by month.

As you can see from below, Tableau stacks the columns based on column name, and will put in null values wherever a value for a given column doesn't exist

Style	Color	Model
Big	Blue	30X
Small	Red	50X

Style	Color	Model	Car
Medium	Chartreuse	123H	Atoyot
Puny	Gamboge	313J	Drof



Union



Style	Color	Model	Car
Big	Blue	30X	Null
Small	Red	50X	Null
Medium	Chartreuse	123H	Atoyot
Puny	Gamboge	313J	Drof



Unions

The Premier League is very diverse and although it's an English league it has players from all over the world. Because of this the data for both player sets is separated and we have to combine them somehow. Because the table structures are almost exactly the same we can easily combine the two groups together through a Union.



Inspect the Data

Before you ever start creating visualizations you should always inspect your data.

If you look under your Dimensions you might notice a Dimension that should probably a Measure

At this end of this booklet I've compiled a small checklist that will help you inspect your data for common errors that I have encountered in my career.

The screenshot shows the Tableau Public interface with a blank sheet titled 'Sheet 1'. The left sidebar contains a 'Dimensions' section listing various player attributes like Body Type, Contract Valid Until, Height, ID, Jersey Number, Joined, Name, Nationality, Photo, Position, Preferred Foot, Real Face, Sheet, Skill Moves, Table Name, Work Rate, and Measure Names. Below it is a 'Measures' section with Age, International Reputation, Overall, Potential, Special, Weak Foot, Weight, Number of Records, and Measure Values. The main workspace has three empty drop zones labeled 'Drop field here'.



Inspect the Data

If you guessed [Height] then you were right! It's a string a Dimension which doesn't sound right. Drag it into the Rows shelf so we can take a look at it.

You'll notice that it's in a format that won't let us do much with it. Let's convert it to a Measure, this will require us to convert it to either feet or inches. Let's go with inches

1. Click on the “Data Source” tab

The screenshot shows the Tableau Public interface with the "Data Source" tab selected. The main view displays a list of player heights in inches, such as Null, 5'3, 5'4, etc., with an associated dimension value "Abc". The left sidebar lists dimensions like Body Type, Contract Valid Until, Height, ID, Jersey Number, Joined, Name, Nationality, Photo, Position, Preferred Foot, Real Face, Sheet, Skill Moves, Table Name, Work Rate, and Measure Names. The bottom navigation bar shows "Data Source" is active, along with other tabs like "Sheet 1", "Marks", and "Rows".

Height	Dimension Value
Null	Abc
5'3	Abc
5'4	Abc
5'5	Abc
5'6	Abc
5'7	Abc
5'8	Abc
5'9	Abc
5'10	Abc
5'11	Abc
6'0	Abc
6'1	Abc
6'2	Abc
6'3	Abc
6'4	Abc
6'5	Abc
6'6	Abc
6'7	Abc
6'8	Abc



Splitting Columns

If you scroll to the right side of your data pane, you'll notice that the "height" column is formatted in a way that will make it difficult to analyze

As a string we can't perform normal math on this column

Because there are two units in one column "feet and inches" it'll make it even more difficult to perform math on this data, we'll want to convert this to just a single unit column

Screenshot of Tableau Public showing the English Players+ (Player Data) sheet.

The data pane displays a table with the following columns:

Abc English Players+ Skill Moves	Abc English Players+ Work Rate	Abc English Players+ Body Type	Abc English Players+ Real Face	Abc English Players+ Position	Abc English Players+ Jersey Number	Abc English Players+ Joined	Abc English Players+ Contract Valid Until	Abc English Players+ Height	# English Players+ Weight	Abc English Players+ Sheet	Abc English Players+ Table Name
2	Medium/ High	Lean	No	RDM	48	Nov 23, 2018	2019	6'1	176	English Players	English Players
1	Medium/ Medium	Normal	Yes	GK	31	Jul 26, 2018	2019	6'2	203	English Players	English Players
1	Medium/ Medium	Normal	No	GK	23	Jul 7, 2018	2019	6'0	194	English Players	English Players
3	Medium/ Low	Stocky	No	RM	24	Aug 23, 2018	2020	6'0	168	English Players	English Players
1	Medium/ Medium	Normal	No	GK	31	Aug 2, 2018	2019	6'4	192	English Players	English Players
3	Medium/ Medium	Normal	No	RB	12	Aug 28, 2018	2019	5'11	163	English Players	English Players
2	Medium/ High	Lean	Yes	CB	20	Jul 1, 2018	2020	6'2	168	English Players	English Players
2	High/ Medium	Normal	Yes	RB	2	Jan 1, 2012	2020	6'2	198	English Players	English Players
3	High/ Medium	Normal	No	LM	22	Sep 24, 2018	2019	5'8	154	English Players	English Players
3	High/ High	Stocky	Yes	CM	7	Jul 1, 2015	2020	5'9	154	English Players	English Players
2	High/ High	Normal	No	LS	10	Jul 30, 2018	2019	6'3	172	English Players	English Players
1	Medium/ Medium	Normal	No	GK	27	Aug 3, 2018	2019	6'2	190	English Players	English Players
3	High/ High	Normal	Yes	ST	28	Jan 9, 2017	2019	5'11	168	English Players	English Players
1	Medium/ Medium	Normal	No	GK	1	Jul 12, 2013	2019	6'0	170	English Players	English Players
2	Medium/ Medium	Normal	No	CB	15	Aug 7, 2017	2019	5'11	163	English Players	English Players
1	Medium/ Medium	Normal	Yes	GK	20	Aug 7, 2018	2020	5'6	201	English Players	English Players

The "Height" column is highlighted with a red box, indicating it needs to be split into feet and inches for analysis.



Splitting Columns

1. Right click on the “Height” column and click “Custom-Split”

Screenshot of Tableau Public showing the "English Players+ (Player Data)" sheet. The "Height" column is selected, and a context menu is open with the "Custom Split..." option highlighted.

The context menu options for the "Height" column are:

- Rename
- Copy Values
- Hide
- Aliases...
- Create Calculated Field...
- Create Group...
- Split
- Custom Split...** (highlighted)
- Pivot (select multiple fields)
- Describe...

The data table shows player statistics, including columns like Skill Moves, Work Rate, Body Type, Real Face, Position, Jersey Number, Joined, Contract Valid Until, Height, Weight, and Sheet Name.

Skill Moves	Work Rate	Body Type	Real Face	Position	Jersey Number	Joined	Contract Valid Until	Height	Weight	Sheet Name
2	Medium/ High	Lean	No	RDM	48	Nov 23, 2018	2019	6'1		English Players
1	Medium/ Medium	Normal	Yes	GK	31	Jul 26, 2018	2019	6'2		English Players
1	Medium/ Medium	Normal	No	GK	23	Jul 7, 2018	2019	6'0		English Players
3	Medium/ Low	Stocky	No	RM	24	Aug 23, 2018	2020	6'0		English Players
1	Medium/ Medium	Normal	No	GK	31	Aug 2, 2018	2019	6'4		English Players
3	Medium/ Medium	Normal	No	RB	12	Aug 28, 2018	2019	5'11		English Players
2	Medium/ High	Lean	Yes	CB	20	Jul 1, 2018	2020	6'2		English Players
2	High/ Medium	Normal	Yes	RB	2	Jan 1, 2012	2020	6'2	198	English Players
3	High/ Medium	Normal	No	LM	22	Sep 24, 2018	2019	5'8	154	English Players
3	High/ High	Stocky	Yes	CM	7	Jul 1, 2015	2020	5'9	154	English Players
2	High/ High	Normal	No	LS	10	Jul 30, 2018	2019	6'3	172	English Players
1	Medium/ Medium	Normal	No	GK	27	Aug 3, 2018	2019	6'2	190	English Players
3	High/ High	Normal	Yes	ST	28	Jan 9, 2017	2019	5'11	168	English Players
1	Medium/ Medium	Normal	No	GK	1	Jul 12, 2013	2019	6'0	170	English Players
2	Medium/ Medium	Normal	No	CB	15	Aug 7, 2017	2019	5'11	163	English Players
1	Medium/ Medium	Normal	Yes	GK	20	Aug 7, 2018	2020	6'5	201	English Players



Splitting Columns

2. In the textbox input an apostrophe as the separator
 - This is telling Tableau to split this column when it sees an apostrophe
3. Select “All” under “Split Off”
 - This tells Tableau to split off as many columns as there are apostrophes per record
4. Click “OK” and return to Sheet 1

Screenshot of Tableau Public interface showing the process of splitting a column.

The screenshot shows the Tableau Public interface with the following details:

- Connections:** Player Data (Microsoft Excel) is selected.
- Sheets:** English Players+ (Player Data) is the active sheet.
- Data Source:** English Players+ (Player Data) is selected.
- Custom Split Dialog:** A modal dialog titled "Custom Split" is open, asking "How should this data be split?". It contains a "Use the separator" input field with an apostrophe ('), a "Split off" dropdown set to "First", and a "columns" input field set to "1".
- Table View:** A table with columns: Skill Moves, Work Rate, Body Type, Contract Valid Until, Height, Weight, Sheet, and Table Name. The first few rows show data like "Medium/ High", "Lean", and "Nov 23, 2018".
- Bottom Navigation:** Shows "Sheet 1" and other sheet icons.



Splitting Columns

8. Right-click the Height – Split 1

- Do the same for Height – Split 2

9. Change the data type to “Number (whole)”

- Do the same for Height – Split 2

10. Drag Height – Split 1 from Dimensions to Measures

- Do the same for Height – Split 2

The screenshot shows the Tableau Public interface with the following details:

- Dimensions Panel:** Shows fields like Body Type, Contract Valid Until, Height, Height - Split, Height - Split 1, Height - Split 2, ID, Jersey Number, Joined, Name, Nationality, Photo, Position, Preferred Foot, Real Face, Sheet, Skill Moves, Table Name, Work Rate, and Measure Name.
- Measures Panel:** Shows fields like Age, International Reputation, Overall, Potential, Special, Weak Foot, Weight, Number of Records, and Measure Values.
- Right-click Context Menu:** A context menu is open over the "Height - Split" dimension field. The menu path "Height - Split" → "Change Data Type" → "Number (whole)" is highlighted with red boxes and arrows. Other options in the menu include Cut, Copy, Edit..., Duplicate, Rename, Hide, Delete, Aliases..., Create, Transform, Convert to Measure, Geographic Role, Default Properties, Group by, Folders, and Hierarchy.
- Sheet View:** A single sheet titled "Sheet 1" is visible. It has two empty columns labeled "Drop field here".
- Top Bar:** Shows the title "Tableau Public - Book2", the status bar with "100%", "Sun 12:35 PM", and "Shashank Kalanithi", and the "Show Me" button.

Data Types

You might have noticed the little icons next to the names of your Measures and Dimensions. Here is an overview of what the different datatypes are and when they should be used

	String Data (Text)	A string is a catchall datatype because it can include just about any textual data
	Numerical Data	Numerical data is any data that math can be performed on. Be warned, that although an ID number is numerical, you can't perform math on it so you should classify it as a string
	Date Data	You could almost have an entire course discussing the intricacies of dates. For more info click here .
	Date Time Data	Date with time included as well, you generally want to avoid these if they aren't necessary.
	Boolean Data (True/False)	True/False values. Well designed datasets will have these for common filters like Current FY vs prior FY
	Geospatial Data	This can be in the form of place names (postal codes, states, countries, cities) or geospatial objects



Manipulating Data

We have converted and brought in the constituent parts that we'll need to create a single field for height

1. Click on “Analysis”
2. Click on “Create Calculated Field”
3. Name the new field “Height (Inches)”
4. $([\text{Height} - \text{Split 1}] * 12) + [\text{Height} - \text{Split 2}]$
5. Click on “OK”

The screenshot shows the Tableau Public interface with the following steps highlighted:

1. The "Analysis" menu is highlighted.
2. The "Create Calculated Field..." option is highlighted in the dropdown menu.
3. The "Height (Inches)" field name is highlighted in the calculation editor.
4. The formula $([\text{Height} - \text{Split 1}] * 12) + [\text{Height} - \text{Split 2}]$ is highlighted in the calculation editor.
5. The "OK" button is highlighted at the bottom right of the calculation editor.

The left sidebar shows dimensions like Body Type, Contract Valid Until, Height, ID, Jersey Number, Joined, Name, Nationality, Photo, Position, Preferred Foot, Real Face, Sheet, Skill Moves, Table Name, Work Rate, and Measure Names. Measures include Age, Height - Split 1, Height - Split 2, International Reputation, Overall, Potential, Special, Weak Foot, Weight, Number of Records, and Measure Values. The "Height - Split 2" measure is currently selected.



Aliases

Sometimes data we import is encoded in a way that won't make sense for a visualization. When this happens a solution is to change the aliases of the data. Changing aliases does not change the underlying data, just how it appears in your visualizations.

1. Right-click "Skill Moves" and click "Aliases..."

The screenshot shows the Tableau Public interface with a context menu open over the 'Skill Moves' dimension in the Data pane. The 'Aliases...' option is highlighted in blue. Other options in the context menu include 'Add to Sheet', 'Duplicate', 'Rename', 'Hide', 'Create', and 'Transform'. The Data pane lists various dimensions and measures, and the Marks card shows color, size, and text options. The View pane displays 'Sheet 1' with a single column labeled 'Drop field here'.



Aliases

2. Use the “Value (Alias)” column to fill in the aliases as shown below:
 1. Weak Skill
 2. Below Average
 3. Average Skill
 4. Above Average
 5. High Skill
3. Click “OK”

Now whenever the value 1 appears in relation to [Skill Moves] Tableau will instead show “Weak Skill”, i.e. an Alias

The screenshot shows the Tableau Public interface with a data source named 'English Players+ (Player...)' loaded. The 'Dimensions' shelf on the left lists various player attributes like Body Type, Contract Valid Until, Height, ID, Jersey Number, Name, Nationality, Photo, Position, Preferred Foot, Real Face, Sheet, and Skill Moves. The 'Skill Moves' dimension is currently selected. The 'Measures' shelf lists various performance metrics such as Age, Height - Split 1, Height - Split 2, Height (Inches), International Reputation, Overall, Potential, Special, Weak Foot, Weight, Number of Records, and Measure Values.

In the center, a 'Sheet 1' canvas is visible with a single 'Drop field here' placeholder. A 'Filters' section is also present.

A 'Edit Aliases [Skill Moves]' dialog box is open in the foreground. It contains a table with two columns: 'Member' and 'Has Alias'. The 'Has Alias' column contains five entries: 'Weak Skill', 'Below Average Skill', 'Average Skill', 'Above Average Skill', and 'High Skill'. The entry 'Weak Skill' is highlighted with a red box labeled '2'. The 'OK' button at the bottom right of the dialog is also highlighted with a red box labeled '3'.



Aggregations

3. Drag:

- Height (Inches) into Columns
- Weight into Rows
- Right-click the measures

4. Change the aggregation of both your Height and Weight from Sum to Average

Tableau Public - Book2

Data Analytics Pages

English Players+ (Player ...)

Dimensions

- Age
- Body Type
- Contract Valid Until
- Height
- ID
- Jersey Number
- Joined
- Name
- Nationality
- Photo
- Position
- Preferred Foot
- Real Face
- Sheet
- Skill Moves
- Table Name
- Work Rate

Measures

- # Age
- # Height - Split 1
- # Height - Split 2
- # Height (Inches)
- # International Reputation
- # Overall
- # Potential
- # Special
- # Weak Foot
- # Weight
- # Number of Records
- # Measure Values

Columns Rows Sheet

240K
220K
200K
180K
160K
140K
120K
100K
80K
60K
40K
20K
0K

Weight

0K 10K 20K 30K 40K 50K 60K 70K 80K 90K 100K 110K

Height (Inches)

Sum(Age)
Sum(Height (Inches))
Sum(Weight)

Show Filter Format... ✓ Show Header ✓ Include in Tooltip Dimension Attribute ✓ Measure (Sum) ▾ ✓ Sum Average Median Discrete ✓ Continuous Edit in Shelf Add Table Calculation... Quick Table Calculation Remove Minimum Maximum Percentile ▾ Std. Dev Std. Dev (Pop.) Variance Variance (Pop.) Count Count (Distinct)

1 4



Aggregation

Aggregations are one of the most important and most complicated data-related concepts for newbies to understand. The basic idea is that you might want to collapse or expand a table in different ways and aggregations tell Tableau what to do with your Measures when you do that. Let's look at a simple example.

Year	Month	Sales	Revenue
2020	January	10	\$100
2020	February	12	\$120
2021	January	14	\$150
2021	January	13	\$120



Aggregation: SUM

Take a look at the table below, you'll notice that it has numerical data by year and month. Say we wanted to look at the data by year, we'd need to tell Tableau how to group (Aggregate) the numerical values. The default way is to SUM it, meaning just add all the values within their respective groups, in this case the [Year] column.

When we group by [Year] then we will need to sum all of the corresponding [Sales] and [Revenue] columns.

Year	Month	Sales	Revenue
2020	January	10	\$100
2020	February	12	\$120
2021	January	14	\$150
2021	January	13	\$120



Year	SUM(Sales)	SUM(Revenue)
2020	22	\$220
2021	27	\$270



Aggregation: AVG

There are numerous ways to aggregate your data, over the next few pages I'll go over the most common ones I've used.

AVG or average, just takes the average of all the data you're aggregating.

Here we'll be averaging the [Revenue] column and summing the [Sales] column

Year	Month	Sales	Revenue
2020	January	10	\$100
2020	February	12	\$120
2021	January	14	\$150
2021	January	13	\$120



Year	SUM(Sales)	AVG(Revenue)
2020	22	\$110
2021	27	\$135



Aggregation: MAX/MIN

MAX and MIN look for the smallest value per each of your groupings and outputs that value.

Here we'll be maxing the [Revenue] column and minning the [Sales] column

Year	Month	Sales	Revenue
2020	January	10	\$100
2020	February	12	\$120
2021	January	14	\$150
2021	January	13	\$120



Year	MIN(Sales)	MAX(Revenue)
2020	10	\$120
2021	13	\$150



Aggregation: COUNT/COUNTD

COUNT, counts the number of rows in a group while COUNTD will count the number of unique rows in a group.

Here we'll be counting the [Month] column and also countd'ing (pronounced "count-dee-ing") the [Month] column

Year	Month	Sales	Revenue
2020	January	10	\$100
2020	February	12	\$120
2021	January	14	\$150
2021	January	13	\$120



Year	COUNT(MONTH)	COUNTD(MONTH)
2020	2	2
2021	2	1



Aggregation: ATTR

ATTR is a very special aggregation function. It will return a value if there is only one for every row in a group, otherwise it returns an asterisk “*”. This is a really useful function to use in calculated fields where you cannot normally combine aggregated and non-aggregated values.

Here we'll be taking the attribute of the [Month] column.

Year	Month	Sales	Revenue
2020	January	10	\$100
2020	February	12	\$120
2021	January	14	\$150
2021	January	13	\$120



Year	ATTR(MONTH)
2020	*
2021	January

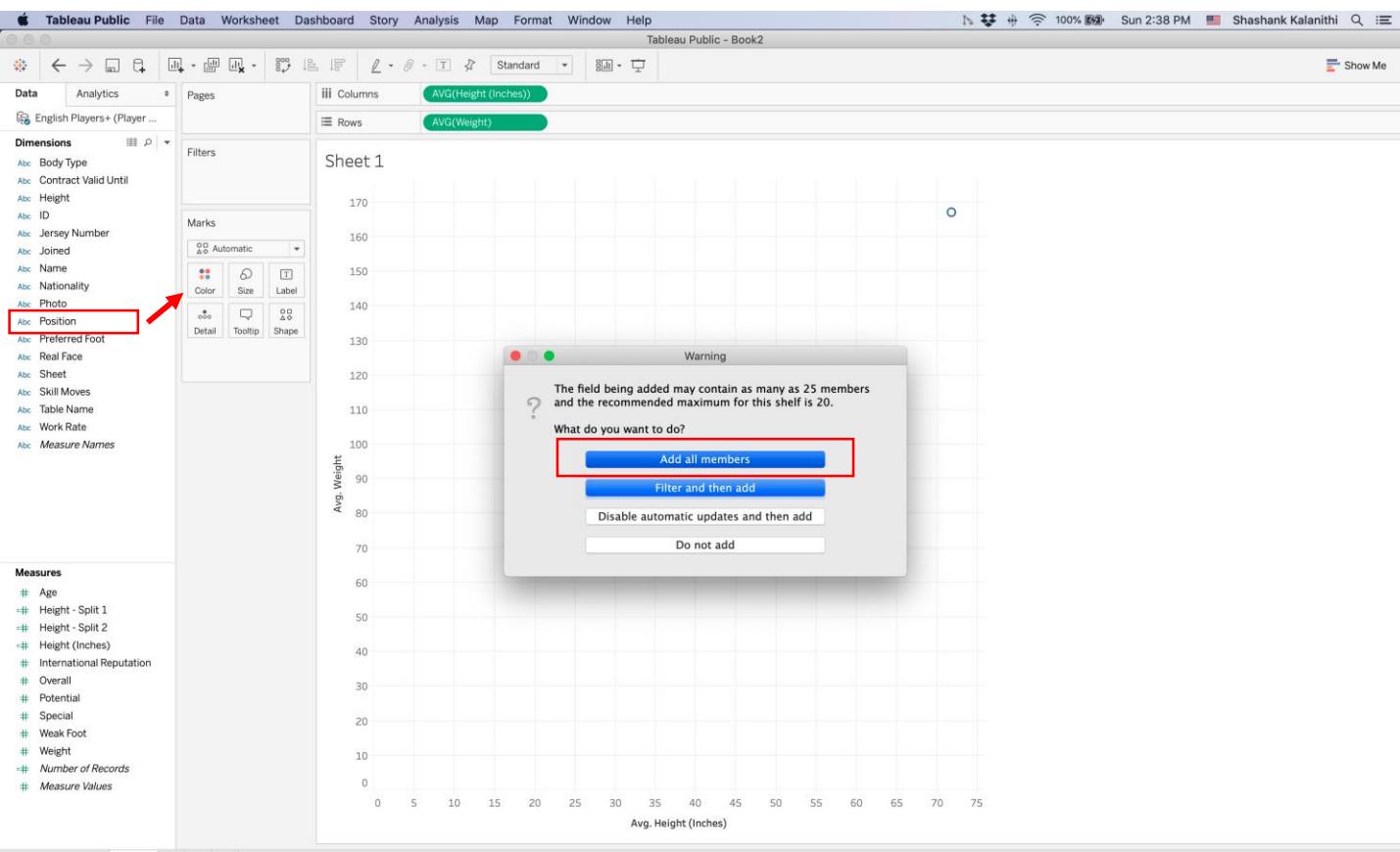


Scatterplots

Let's see if there is any relation between player position and compensation.

1. Drag "Position" into "Colors" on the Marks card

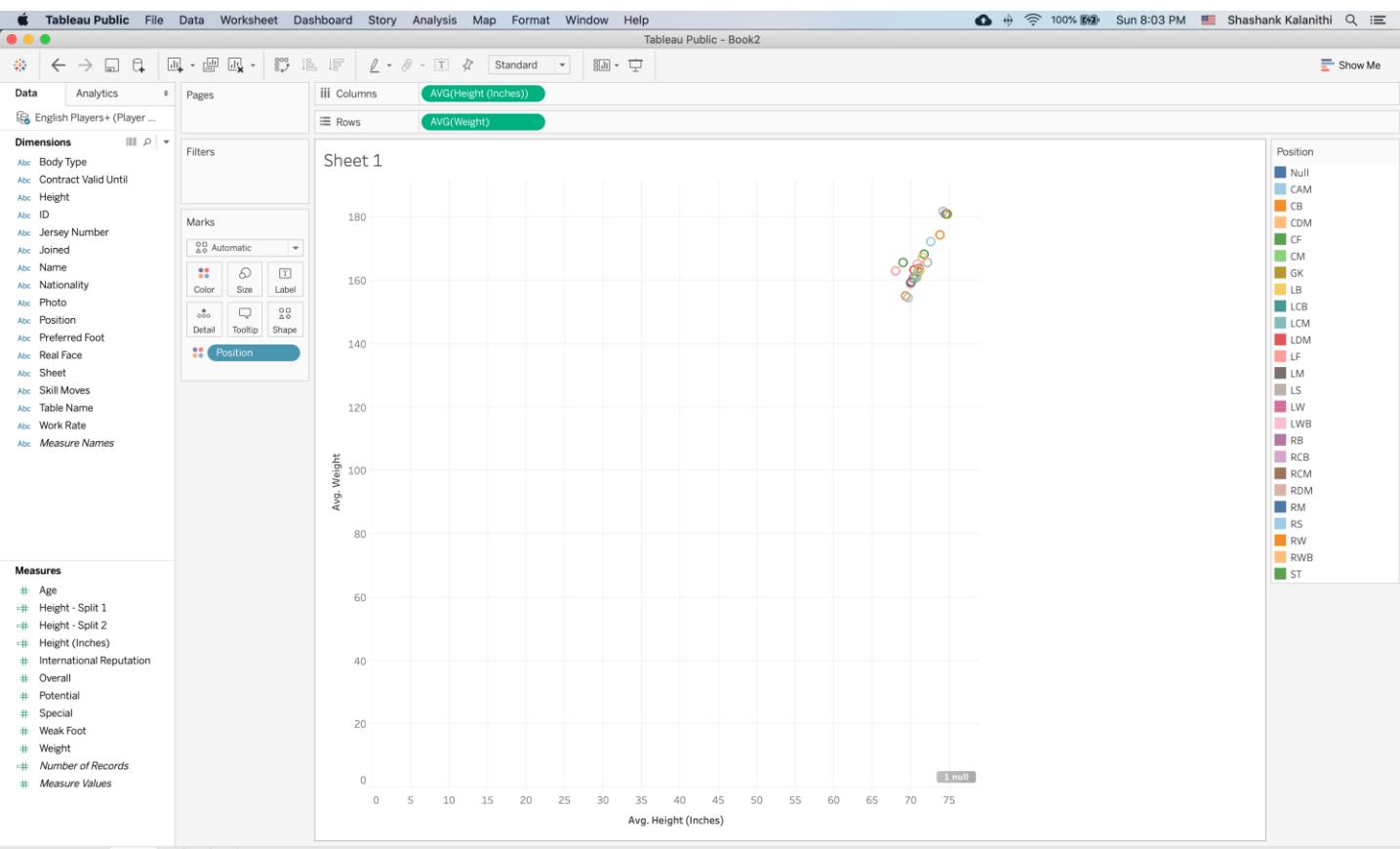
- If you get a warning, select "Add all Members"





Scatterplots

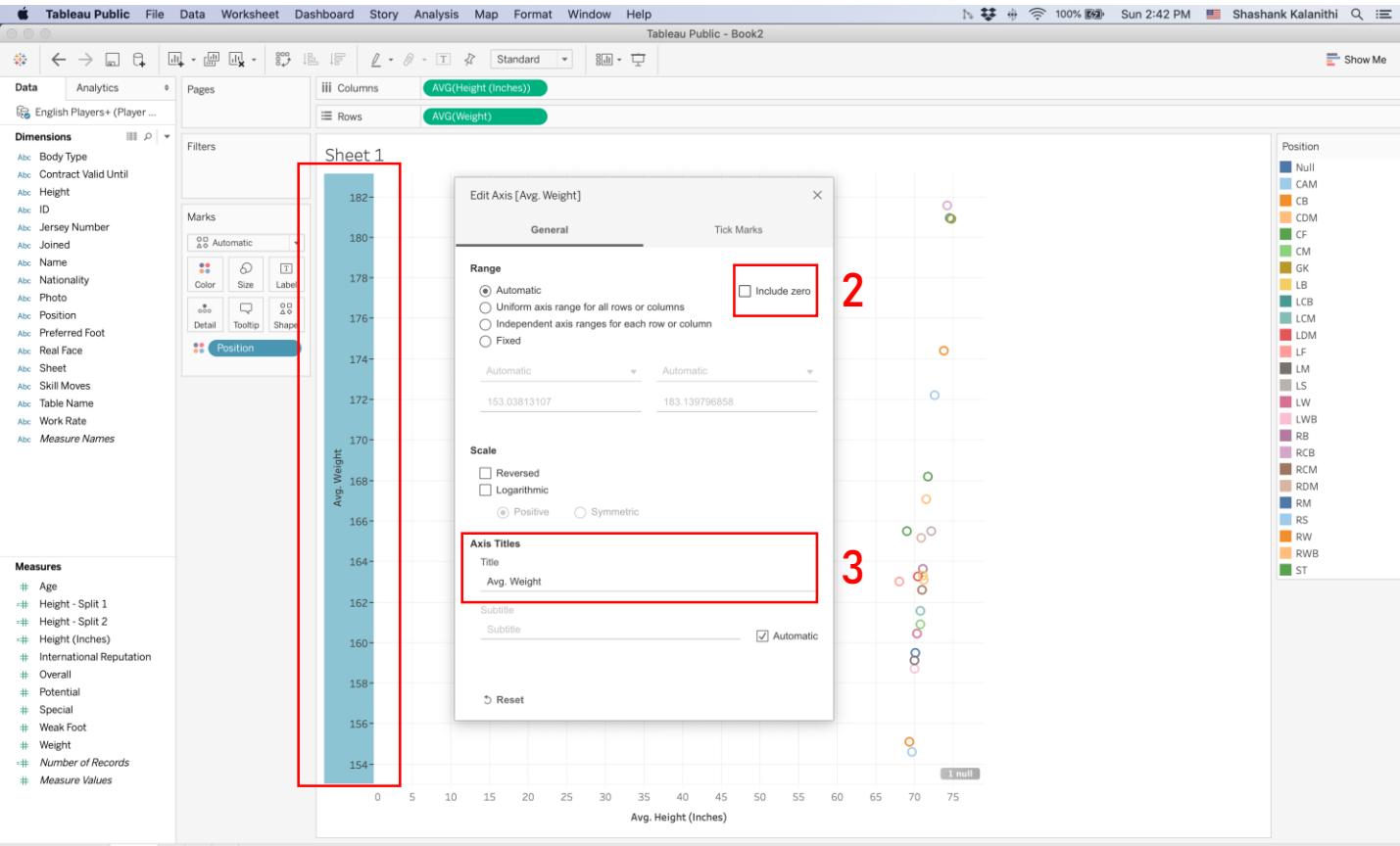
We have our scatterplot, but it's almost impossible to tell what's what. Let's see if we can change the axes to help with that





Editing Axis Settings

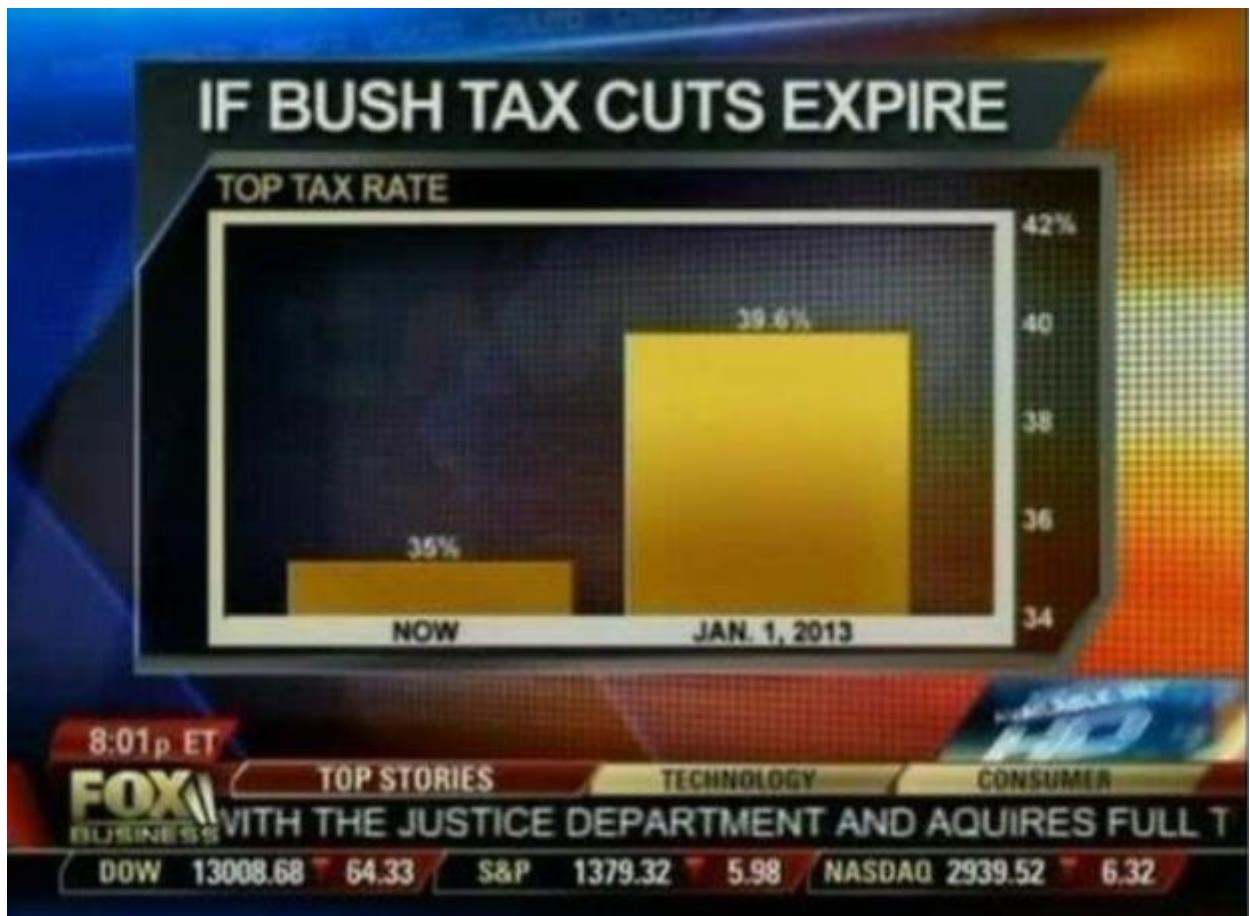
1. Right click the y-axis and click on the “Edit Axis” option
2. This dialog box allows you to manipulate the axes as you please, uncheck the “Include Zero” box
3. You can also change the title here if you want to
4. Go ahead and follow the same process for the x-axis to remove the 0 value



Axes Don't Have to Include 0

There's a common misconception that the y-axis needs to start at 0. While messing with the y-axis is one of the easiest ways to [Lie with Statistics](#), oftentimes you need to adjust the axes depending on the audience. The Fox News example below is particularly egregious example of fiddling with the y-axis to prove a point (They even moved the axis to the left hand side so you're likely to miss it entirely).

The axis starts at 34% to make the ~5% marginal increase seem much larger than it actually is.

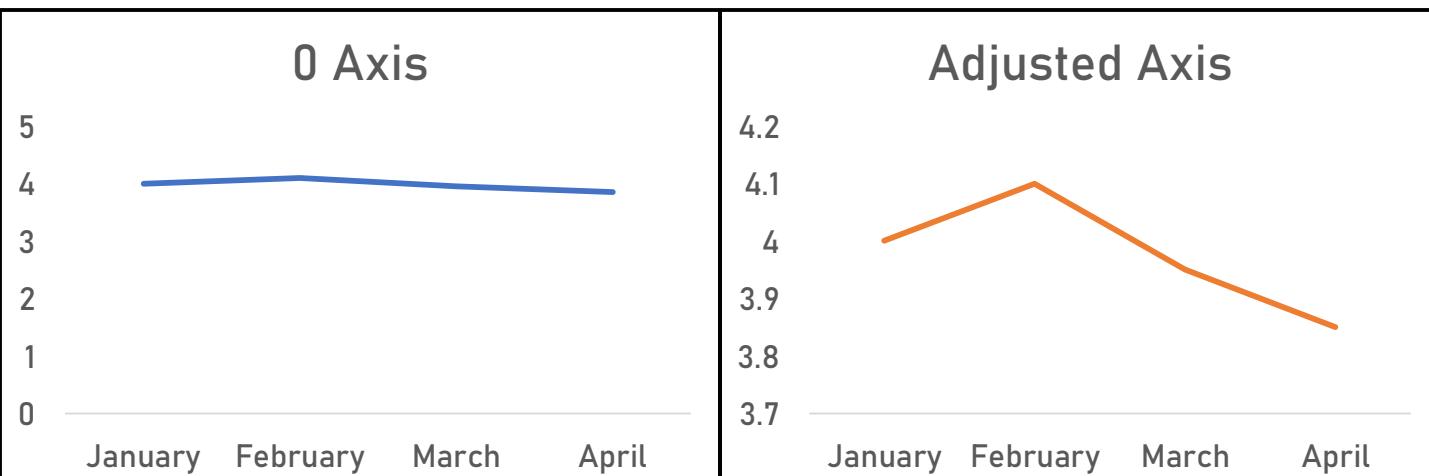


Axes Don't Have to Include 0

You should always make an effort to represent your data accurately, but it can be just as important to consider the context surrounding your visualization.

An example of this would be a visualization I needed to put together to illustrate how profits changed during the 2019-2020 Coronavirus Pandemic for our execs. While profits did in fact drop, you could only visualize the difference and analyze it if you zoomed in on the y-axis, if I pegged the axis to 0 then you wouldn't think the pandemic did anything to our profit.

The two graphs below show the exact same data, but to the informed audience (such as your company execs) the one on the right-hand side gives you more information. As a visualization professional, you need to digest data, and communicate information.

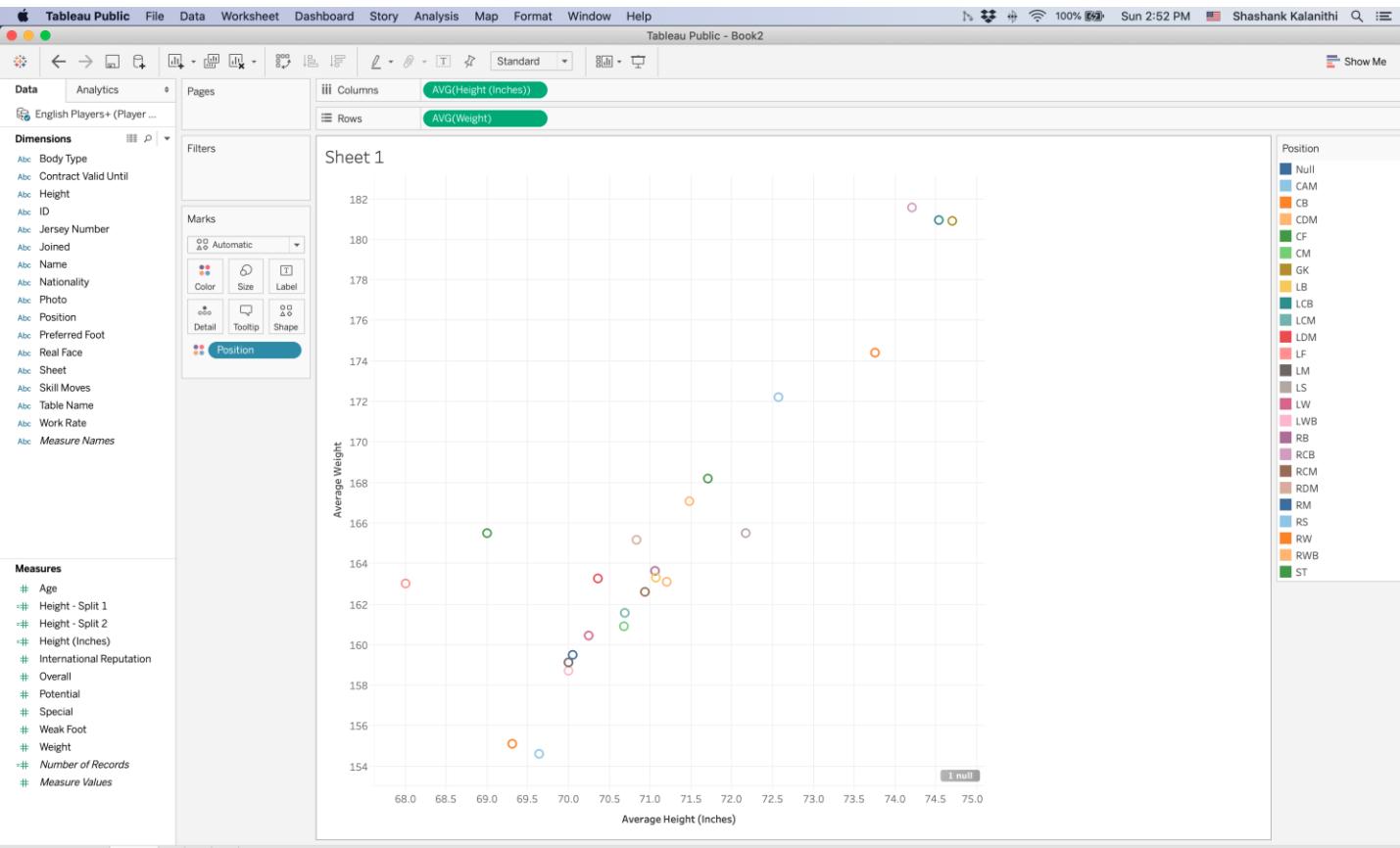




Moving the Graph

While conducting an exploratory analysis, you might find that you need to manually manipulate the graph. Here are a few commands that allow you to do so.

- You can use **Ctrl + Scroll** to zoom in and out of a viz
- You can use **Shift + Drag** to pan around a viz
- Double-click your current sheet and rename it to “Average Measurements by Position”
- You can also right-click any axis and click “Edit Axis”



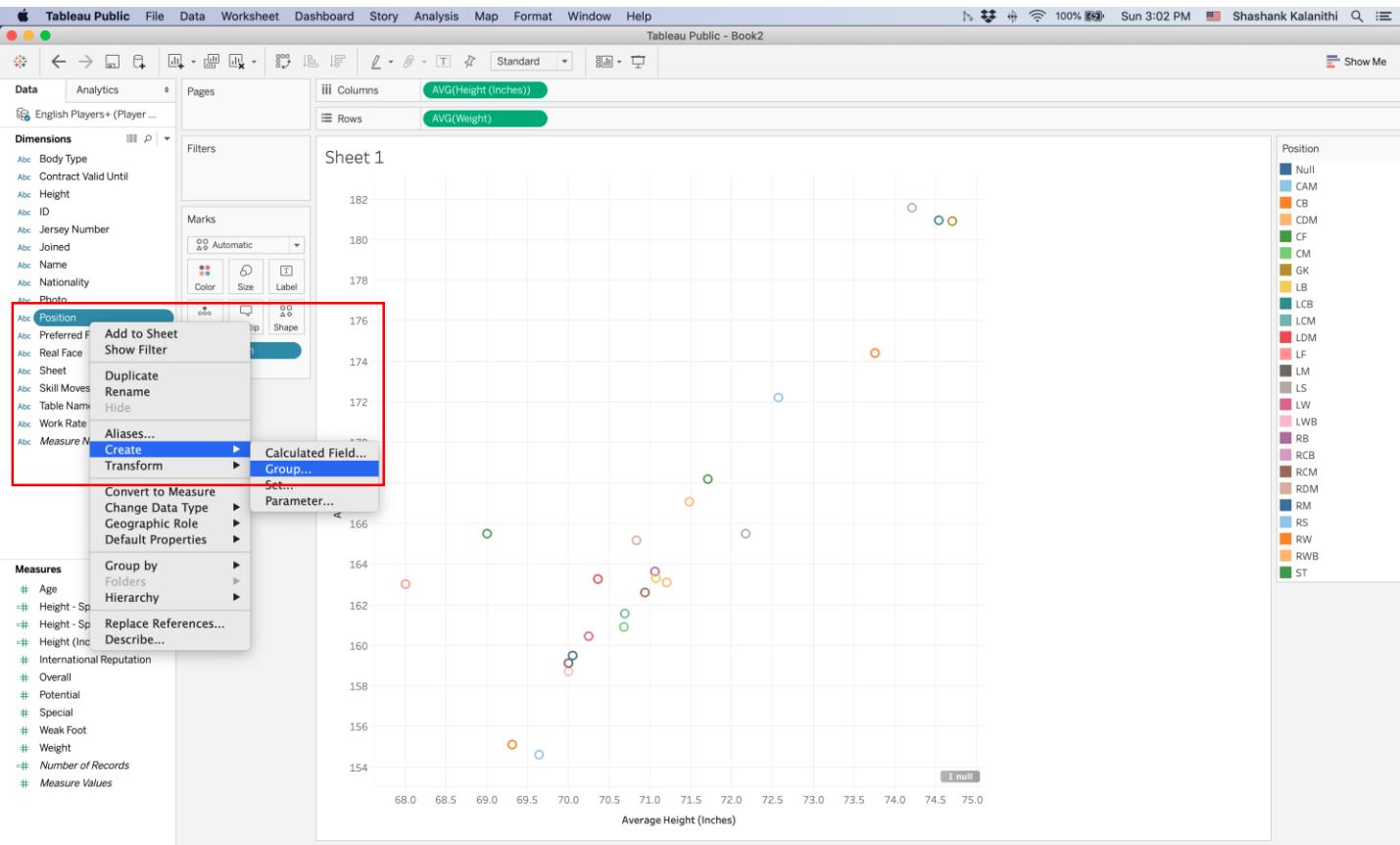


Grouping Your Data

Sometimes the level of detail you have is too granular, in these situations grouping the data might help you out. In the example below, all these positions listed individually don't really help us out that much.

Grouping data adds a column that categorizes the data the way you want

1. Right-click [Position] and click "Group..."





Grouping Your Data

2. Ctrl + Select the positions that go together and click on “Group”
 - Make sure you check the “Include Other” checkbox
3. Click “OK”
4. Click on “Data Source”

The screenshot shows a Tableau Public interface with the following details:

- Data Source:** English Players+ (Player ...)
- Dimensions:** Position (selected), Body Type, Contract Valid Until, Height, ID, Jersey Number, Joined, Name, Nationality, Photo, Preferred Foot, Real Face, Sheet, Skill Moves, Table Name, Work Rate.
- Measures:** Age, Height - Split 1, Height - Split 2, Height (Inches), International Reputation, Overall, Potential, Special, Weak Foot, Weight, Number of Records, Measure Values.
- Sheet 1:** A scatter plot with Average Height (Inches) on the X-axis (ranging from 68.0 to 69.5) and Average Weight on the Y-axis (ranging from 154 to 182). Data points are colored by Position: Red (LW), Orange (RW), Green (CM), and Blue (LDM).
- Create Group [Position] Dialog:**
 - Field Name: Position (group)
 - Groups:
 - Null
 - Midfielders: CAM, CDM, CM, LCM, LDM, LM, LW, RCM, RDM, RM, RW
 - Defensive Positions: CB, GK, LB, LCB, LWB, RB, RCB, RWB
 - Forwards: CF, LF, LS, RS, ST
 - Add to: (dropdown menu)
 - Group, Rename, Ungroup buttons
 - Show Add Location checked
 - Include 'Other' checkbox
 - Find >> button
 - Reset, Apply, OK, Cancel buttons
- Legend:** A vertical list of positions with corresponding color swatches.

Numbered callouts indicate steps: 3 points to the 'OK' button in the dialog, 4 points to the 'Data Source' tab at the bottom left.



Joins and Importing Unusual Data

They say that Data Scientists spend about 70-80% of their time just gathering and cleaning data. Oftentimes this happens just because data comes in inconvenient formats. Today, we'll be working with one such format in the form of a table inside a PDF. Tableau has the ability to help us parse through this kind of data quite easily.

We don't have access to some very basic player compensation info. Unfortunately this data is in a PDF format which would normally make it very hard to work with, but not with the power of Tableau!

The screenshot shows the Tableau Public interface. On the left, the 'Player Data' sheet is selected. In the center, a 'Data to Join.pdf' file is being imported from the 'Downloads' folder. The 'Add a Connection' dialog is open, showing connection options like Microsoft Excel, Text file, JSON file, etc. The 'Information' pane shows details about the PDF document, including its creation date (Today, 9:21 PM) and modified date (Today, 9:21 PM). The main workspace displays a table of player data, including columns for Height, Weight, and various skill levels. A portion of the PDF content is visible on the right, showing a table of player statistics.

Height	Weight	Skill Level	Position	Experience	Age	Last Update	Created	Modified	
6'1	6	Average Skill	Medium/Low	Stocky	No	RM	24	Aug 23, 2018	2020
6'2	6	Weak Skill	Medium/Medium	Normal	No	GK	31	Aug 2, 2018	2019
6'0	6	Average Skill	Medium/Medium	Normal	No	RB	12	Aug 28, 2018	2019
6'2	6	Below Average Skill	Medium/High	Lean	Yes	CB	20	Jul 1, 2018	2020
6'2	6	Below Average Skill	High/Medium	Normal	Yes	RB	2	Jan 1, 2012	2020
5'8	5	Average Skill	High/Medium	Normal	No	LM	22	Sep 24, 2018	2019
5'9	5	Average Skill	High/High	Stocky	Yes	CM	7	Jul 1, 2015	2020
6'3	3	Below Average Skill	High/High	Normal	No	LS	10	Jul 30, 2018	2019
6'2	2	Weak Skill	Medium/Medium	Normal	No	GK	27	Aug 3, 2018	2019
5'11	11	Average Skill	High/High	Normal	Yes	ST	28	Jan 9, 2017	2019
6'0	0	Weak Skill	Medium/Medium	Normal	No	GK	1	Jul 12, 2013	2019
5'11	11	Below Average Skill	Medium/Medium	Normal	No	CB	15	Aug 7, 2017	2019
6'5	5	Weak Skill	Medium/Medium	Normal	Yes	GK	20	Aug 7, 2018	2020



Joins and Importing Unusual Data

1. Using the “Add” button above our first data source, import the PDF “Data to Join”
2. On the dialog box that pops up, click “All” to import all of the pages in the PDF

The screenshot shows the Tableau Public interface with the following details:

- Connections:** A sidebar on the left lists "Player Data (Microsoft Excel)" and "Sheets".
- Add:** A red box highlights the "Add" button at the top of the main workspace.
- Add a Connection:** A modal window titled "Add a Connection" is open, showing options like "To a File" (selected), "Microsoft Excel", "Text file", "JSON file", "PDF file" (highlighted with a red box), "Spatial file", and "Statistical file".
- File Selection:** A file selection dialog is open over the Tableau interface, showing "Downloads" as the folder. It lists files including "Data to Join.pdf" (highlighted with a red box).
- Data Preview:** Below the file list, a preview of the "Data to Join.pdf" document is shown, displaying a table of player data.
- File Details:** A modal window titled "Data to Join.pdf" provides details about the PDF: "PDF document - 1 MB", "Information" (Created: Today, 9:21 PM; Modified: Today, 9:21 PM), and a "Show More" link.
- Open Button:** A red box highlights the "Open" button in the bottom right corner of the file details modal.
- Tableau Interface:** The main workspace shows a data source named "Player Data" with a single sheet. The data preview table includes columns: "Weak Skill", "Medium", "Stocky", "No", "RM", "24", "Aug 23, 2018", "2020", "6'0", "6", "1", "0", "1".
- Bottom Navigation:** Includes "Data Source", "Sheet 1", and various navigation icons.



Joins and Importing Unusual Data

3. Click on the first Page, hold onto the Shift key on your keyboard and scroll down to select the last Page, drag all of these Pages to the right of “English Players+”

Screenshot of Tableau Public showing the process of importing data from a PDF file. The 'Player Data' connection is selected in the Connections pane. The 'English Players+' sheet is open, and the 'Page 30 Table 1' page is highlighted with a red box. A red arrow points from this box to the top of the page list, indicating the selection of multiple pages. The main data view shows player statistics across various columns like Skill Moves, Work Rate, Body Type, etc.

English Players+ Skill Moves	English Players+ Work Rate	English Players+ Body Type	English Players+ Real Face	English Players+ Position	English Players+ Jersey Number	English Players+ Joined	English Players+ Contract Valid Until	English Players+ Height	# Calculations	# Calculations	# English Players+ Weight
Below Average	Medium/ High	Lean	No	RDM	48	Nov 23, 2018	2019	6'1	6	1	17
Weak Skill	Medium/ Medium	Normal	Yes	GK	31	Jul 26, 2018	2019	6'2	6	2	20
Weak Skill	Medium/ Medium	Normal	No	GK	23	Jul 7, 2018	2019	6'0	6	0	19
Average Skill	Medium/ Low	Stocky	No	RM	24	Aug 23, 2018	2020	6'0	6	0	16
Weak Skill	Medium/ Medium	Normal	No	GK	31	Aug 2, 2018	2019	6'4	6	4	19
Average Skill	Medium/ Medium	Normal	No	RB	12	Aug 28, 2018	2019	5'11	5	11	16
Below Average	Medium/ High	Lean	Yes	CB	20	Jul 1, 2018	2020	6'2	6	2	16
Below Average	High/ Medium	Normal	Yes	RB	2	Jan 1, 2012	2020	6'2	6	2	19
Average Skill	High/ Medium	Normal	No	LM	22	Sep 24, 2018	2019	5'8	5	8	15
Average Skill	High/ High	Stocky	Yes	CM	7	Jul 1, 2015	2020	5'9	5	9	15
Below Average	High/ High	Normal	No	LS	10	Jul 30, 2018	2019	6'3	6	3	17
Weak Skill	Medium/ Medium	Normal	No	GK	27	Aug 3, 2018	2019	6'2	6	2	19
Average Skill	High/ High	Normal	Yes	ST	28	Jan 9, 2017	2019	5'11	5	11	16
Weak Skill	Medium/ Medium	Normal	No	GK	1	Jul 12, 2013	2019	6'0	6	0	17
Below Average	Medium/ Medium	Normal	No	CB	15	Aug 7, 2017	2019	5'11	5	11	16
Weak Skill	Medium/ Medium	Normal	Yes	GK	20	Aug 7, 2018	2020	6'5	6	5	20



Joins and Importing Unusual Data

4. Click on the Venn Diagram between the two data connections
5. Select the Left Join option
6. Go back to the sheet we were working on

The screenshot shows the Tableau Public interface with the following details:

- Connections:** Player Data (Microsoft Excel) is selected.
- Tables:** English Players+ (Player Data) is the active sheet.
- Join Configuration:** A modal dialog titled "English Players+ (Player Data)" is open, showing the join settings:
 - Left Join is selected (highlighted by a red box).
 - The join condition is set to "ID (Page 1 T...)".
 - Buttons for "Inner", "Right", and "Full Outer" joins are also visible.
- Data View:** The main area displays a table of player data with the following columns:

Abc English Players+ Skill Moves	Abc English Players+ Work Rate	Abc English Players+ Body Type	Abc English Players+ Real Face	Abc English Players+ Position	Abc English Players+ Jersey Number	Abc English Players+ Joined	Abc English Players+ Contract Valid Until	Abc English Players+ Height	# Calculation Height - Split 1	# Calculation Height - Split 2	# English Players+ Weight
Below Average	Medium/ High	Lean	No	RDM	48	Nov 23, 2018	2019	6'1	6	1	17
Weak Skill	Medium/ Medium	Normal	Yes	GK	31	Jul 26, 2018	2019	6'2	6	2	20
Weak Skill	Medium/ Medium	Normal	No	GK	23	Jul 7, 2018	2019	6'0	6	0	19
Average Skill	Medium/ Low	Stocky	No	RM	24	Aug 23, 2018	2020	6'0	6	0	16
Weak Skill	Medium/ Medium	Normal	No	GK	31	Aug 2, 2018	2019	6'4	6	4	19
Average Skill	Medium/ Medium	Normal	No	RB	12	Aug 28, 2018	2019	5'11	5	11	16
Below Average	Medium/ High	Lean	Yes	CB	20	Jul 1, 2018	2020	6'2	6	2	16
Below Average	High/ Medium	Normal	Yes	RB	2	Jan 1, 2012	2020	6'2	6	2	19
Average Skill	High/ Medium	Normal	No	LM	22	Sep 24, 2018	2019	5'8	5	8	15
Average Skill	High/ High	Stocky	Yes	CM	7	Jul 1, 2015	2020	5'9	5	9	15
Below Average	High/ High	Normal	No	LS	10	Jul 30, 2018	2019	6'3	6	3	17
Weak Skill	Medium/ Medium	Normal	No	GK	27	Aug 3, 2018	2019	6'2	6	2	19
Average Skill	High/ High	Normal	Yes	ST	28	Jan 9, 2017	2019	5'11	5	11	16
Weak Skill	Medium/ Medium	Normal	No	GK	1	Jul 12, 2013	2019	6'0	6	0	17
Below Average	Medium/ Medium	Normal	Yes	CB	15	Aug 7, 2017	2019	5'11	5	11	16
- Data Source:** A red box highlights the "Data Source" tab at the bottom left.
- Bottom Status Bar:** Shows "Average Measurements by Position" and other status indicators.

Joins

What we just did was join our data. Joins are another concept that Tableau borrows from SQL. In the way that Unions combine two tables vertically, Joins combine two tables horizontally.

For a join, like a Union you have to have at least two tables, what we call our Left Table and our Right Table. You (mostly) have to have at least one matching column between the two tables, and you will match rows from these columns.

The most common way to visualize the types of Joins are through Venn Diagrams.

ID	Color	Model
1	Blue	30X
3	Red	50X

Left Table

ID	Car
1	Atoyot
2	Drof

Right Table

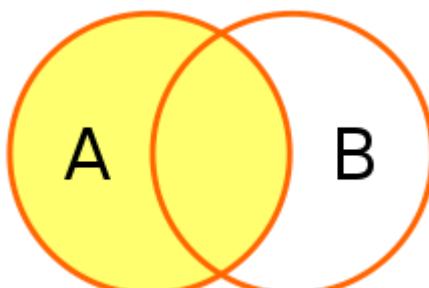
Joins

There are four basic joins that you can use.

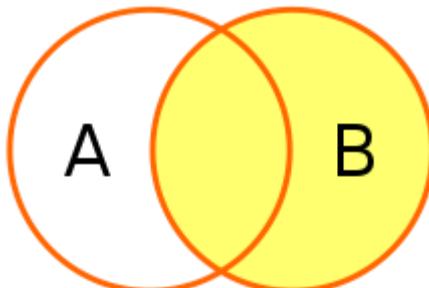
Inner Join



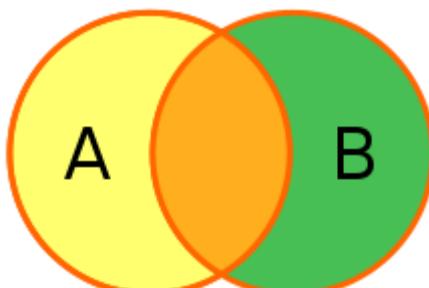
Left Join



Right Join



Full Join



合

Joins

You'll mostly be sticking to Left and Inner Joins. It's worth your time to learn more about Joins because they are some of the most powerful tools you can use to manipulate data. I use Joins basically every single day in my work. For this course we're going to stick with relatively simple Joins.

Joins: Inner Join

We're now going to do something called an **Inner Join** on the [ID] column which will only output exact matches from the [ID] column in our output.

ID	Color	Model
1	Blue	30X
3	Red	50X

ID	Car
1	Atoyot
2	Drof



Join



ID	Color	Model	ID (Right)	Car
1	Blue	30X	1	Atoyot

Joins: Left Join

A Left Join keeps all of the data from your Left table and whatever matches from the Right table.

ID	Color	Model
1	Blue	30X
3	Red	50X

ID	Car
1	Atoyot
2	Drof



Join



ID	Color	Model	ID (Right)	Car
1	Blue	30X	1	Atoyot
3	Red	50X	Null	Null

Joins: Right Join

A Right Join does the exact opposite and keeps everything from your Right table while only bringing in the matches from the Left table.

ID	Color	Model
1	Blue	30X
3	Red	50X

ID	Car
1	Atoyot
2	Drof



Join



ID	Color	Model	ID (Right)	Car
1	Blue	30X	1	Atoyot
Null	Null	Null	2	Drof

Joins: Full Join

A Full Join brings in everything from both tables and matches whatever will match from the columns you specify.

ID	Color	Model
1	Blue	30X
3	Red	50X

ID	Car
1	Atoyot
2	Drof



Join



ID	Color	Model	ID (Right)	Car
1	Blue	30X	1	Atoyot
Null	Null	Null	2	Drof
3	Red	50X	Null	Null

Joins: Common Join Gotchas

Joins can get a bit tricky because of the potential for gotchas when joining two tables. The most common one is row duplication where you accidentally duplicate rows because the columns you're matching on have multiple potential matches .

In the example below we're going to try an Inner Join. You'll notice the columns in Orange were duplicated.

ID	Color	Model
1	Blue	30X
3	Red	50X

ID	Car
1	Atoyot
1	Adnoh



Join



ID	Color	Model	ID (Right)	Car
1	Blue	30X	1	Atoyot
1	Blue	30X	1	Adnoh

Joins: Common Join Gotchas

This isn't an error per se but it is something to watch out for as it can cause you to duplicate data you don't intend to duplicate.

ID	Color	Model
1	Blue	30X
3	Red	50X

ID	Car
1	Atoyot
1	Adnoh



Join



ID	Color	Model	ID (Right)	Car
1	Blue	30X	1	Atoyot
1	Blue	30X	1	Adnoh



Joins and Importing Unusual Data

7. Value, Wage, and Release Clause are all amounts in Euros so make sure to change them to numbers and move them to Measures
8. Right click one of the new values and click Default Properties > Number Format

The screenshot shows a Tableau Public dashboard with a scatter plot titled 'Sheet 1'. The x-axis is 'Average Height (Inches)' ranging from 68.0 to 75.0, and the y-axis is 'Average Weight' ranging from 154 to 182. Data points are colored according to their position, with a legend on the right side. The 'Measures' shelf on the left contains measures like Age, International Reputation, Overall, Potential, Special, Weak Foot, and Weight, along with the newly created measures Release Clause, Value, and Wage. A red arrow points from the 'Measures' shelf to the context menu of the 'Value' measure, which is highlighted with a red box. The number '8' is overlaid on the context menu options.

Tableau Public - Book2

Tableau Public

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Standard

English Players+ (Player ...

Dimensions

- English Players+
- Body Type
- Contract Valid Until
- ID
- Height
- Jersey Number
- Joined
- Name
- Nationality
- Photo
- Position
- Preferred Foot
- Real Face
- Sheet
- Skill Moves
- Table Name
- Work Rate

Measures

- Age
- International Reputation
- Overall
- Potential
- Special
- Weak Foot
- Weight
- Release Clause
- Value
- Wage

Pages

Filters

Marks

Columns: Avg(Height (Inches))

Rows: Avg(Weight)

Sheet 1

Average Height (Inches)

Average Weight

Position

Duplicate Hide

Create Transform

Convert to Discrete

Convert to Dimension

Change Data Type

Geographic Role

Default Properties

Number Format...

8

Group by

Aggregation

Total using

1 null

Data Source

Sheet 1

1 row by 1 column

SUM of AVG(Height (Inches)): 1.708.193

83% 9:45 PM Mon Shashank Kalanithi Show Me

Null CAM CDM CF CM GK LB LCM LDM LF LM LS LW LWB RB RCB RCM RDM RM RS RW RWB ST



Changing the Default Number Format

9. Click on “Currency (Custom)”

10. Enter a € symbol under “Prefix”

- You can get this symbol by opening a word document and clicking Ctrl + Alt + E and copying the Euro symbol into Tableau

11. Repeat this for the “Wage” and “Value” columns of data

The screenshot shows a Tableau Public dashboard with a scatter plot of Average Height (Inches) on the x-axis and Average Weight on the y-axis. The data points are colored circles. A context menu is open over the 'Wage' column in the Measures shelf, specifically the 'Default Number Format [Wage]' dialog. The dialog shows the 'Prefix / Suffix:' field containing a red box around the euro symbol '€'. The 'OK' button at the bottom right of the dialog is also highlighted with a red box.

Tableau Public - Book2

English Players+ (Player ...)

Dimensions

- English Players+
- Body Type
- Contract Valid Until
- Height
- ID
- Jersey Number
- Joined
- Name
- Nationality
- Photo
- Position
- Preferred Foot
- Real Face
- Sheet
- Skill Moves
- Table Name
- Work Rate

Measures

- Age
- International Reputation
- Overall
- Potential
- Special
- Weak Foot
- Weight
- Value
- Wage

Pages

Filters

Marks

Avg(Height (Inches))

Avg(Weight)

Sheet 1

Average Height (Inches)

Average Weight

Default Number Format [Wage]

Currency (Custom)

Decimal places: 2

Negative values: (€1234)

Display Units: None

Prefix / Suffix: €

Include thousands separators

Clear Cancel OK

Position

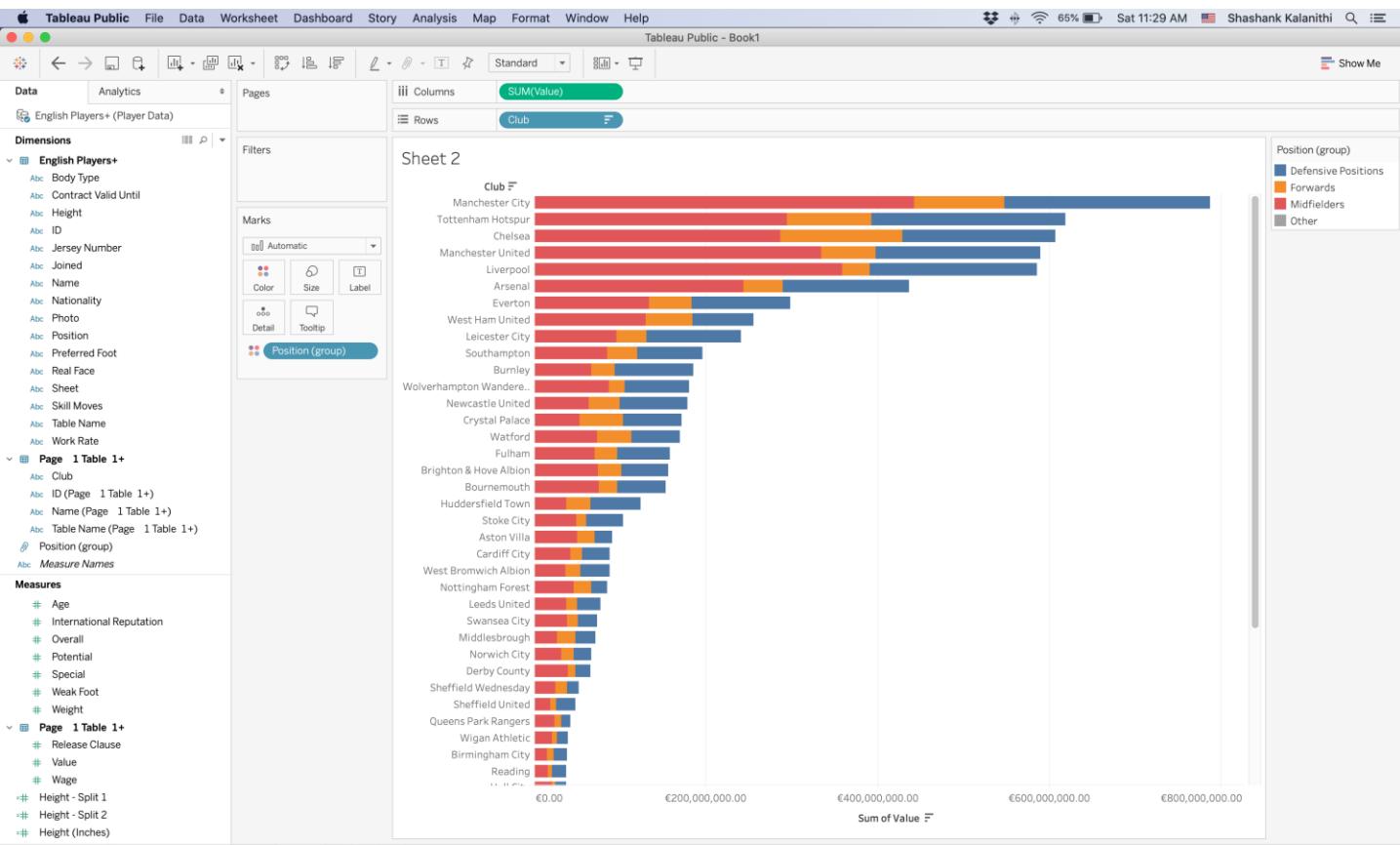
Null CAM CDM CF CM GK LB LCB LDM LF LM LS LW LWB RB RCB RCM RDM RM RS RW RWB ST



Exercise

Now let's see if we can visualize how much each [Club] spends on their players by [Position (group)].

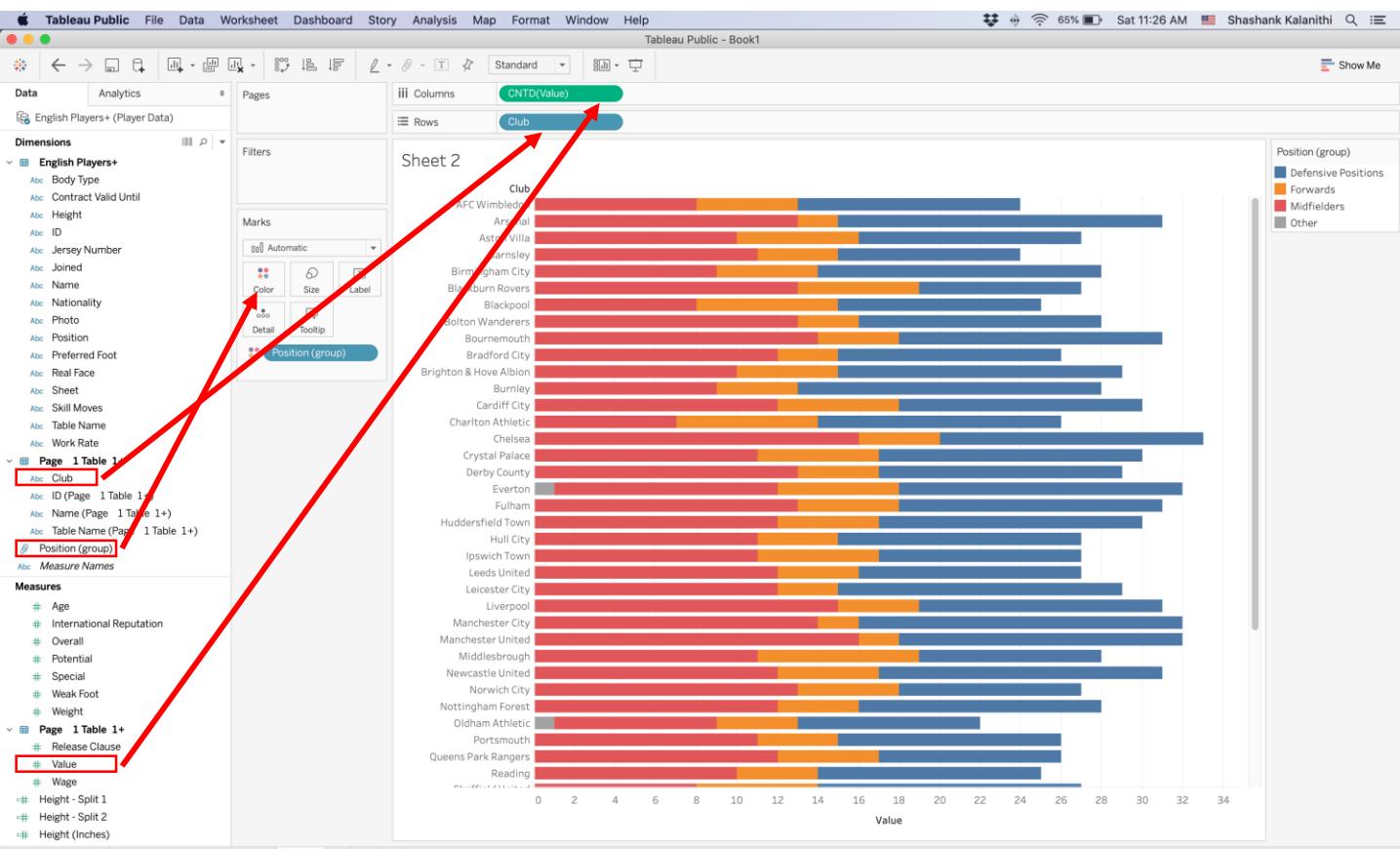
Try and recreate this visualization





Exercise

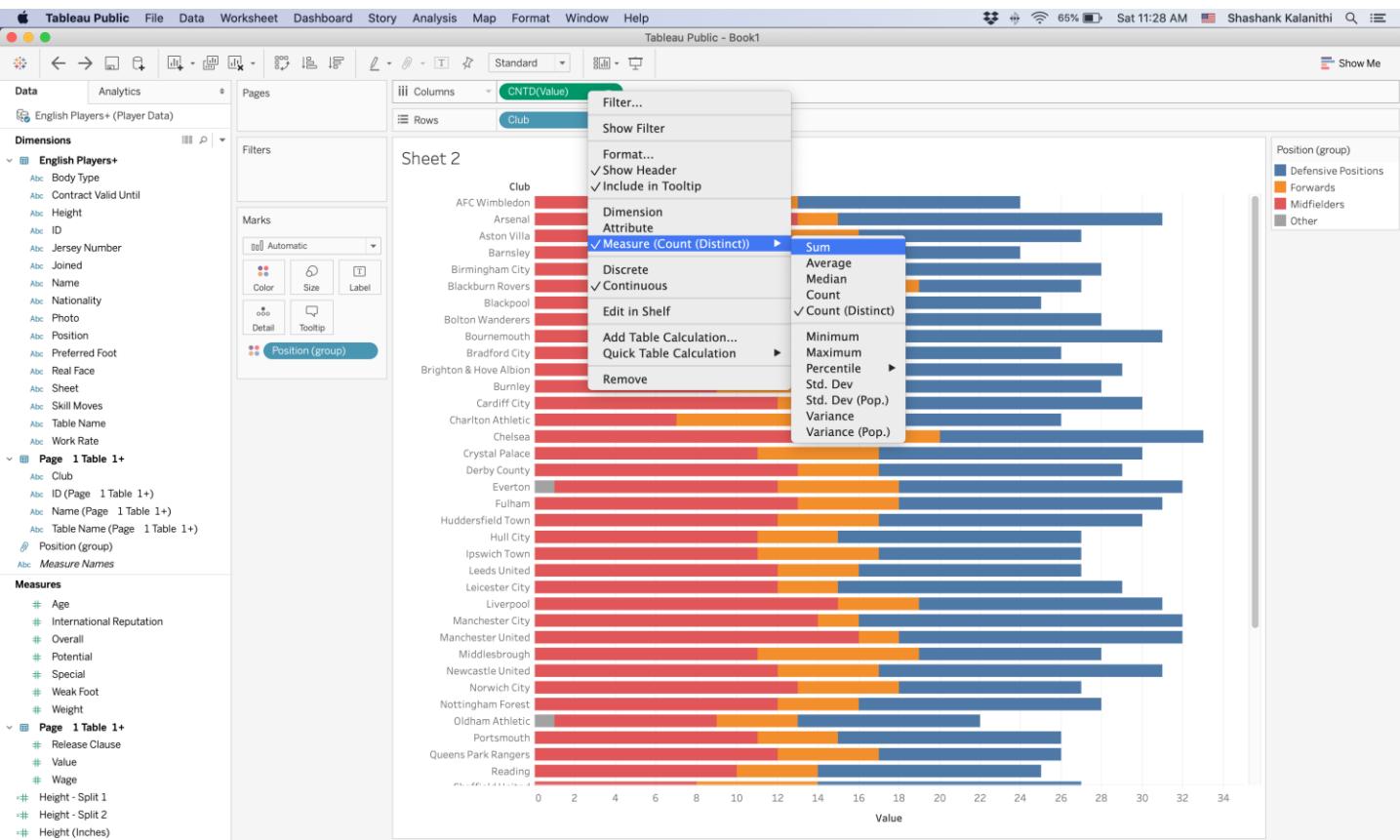
Here's how you would do it





Exercise

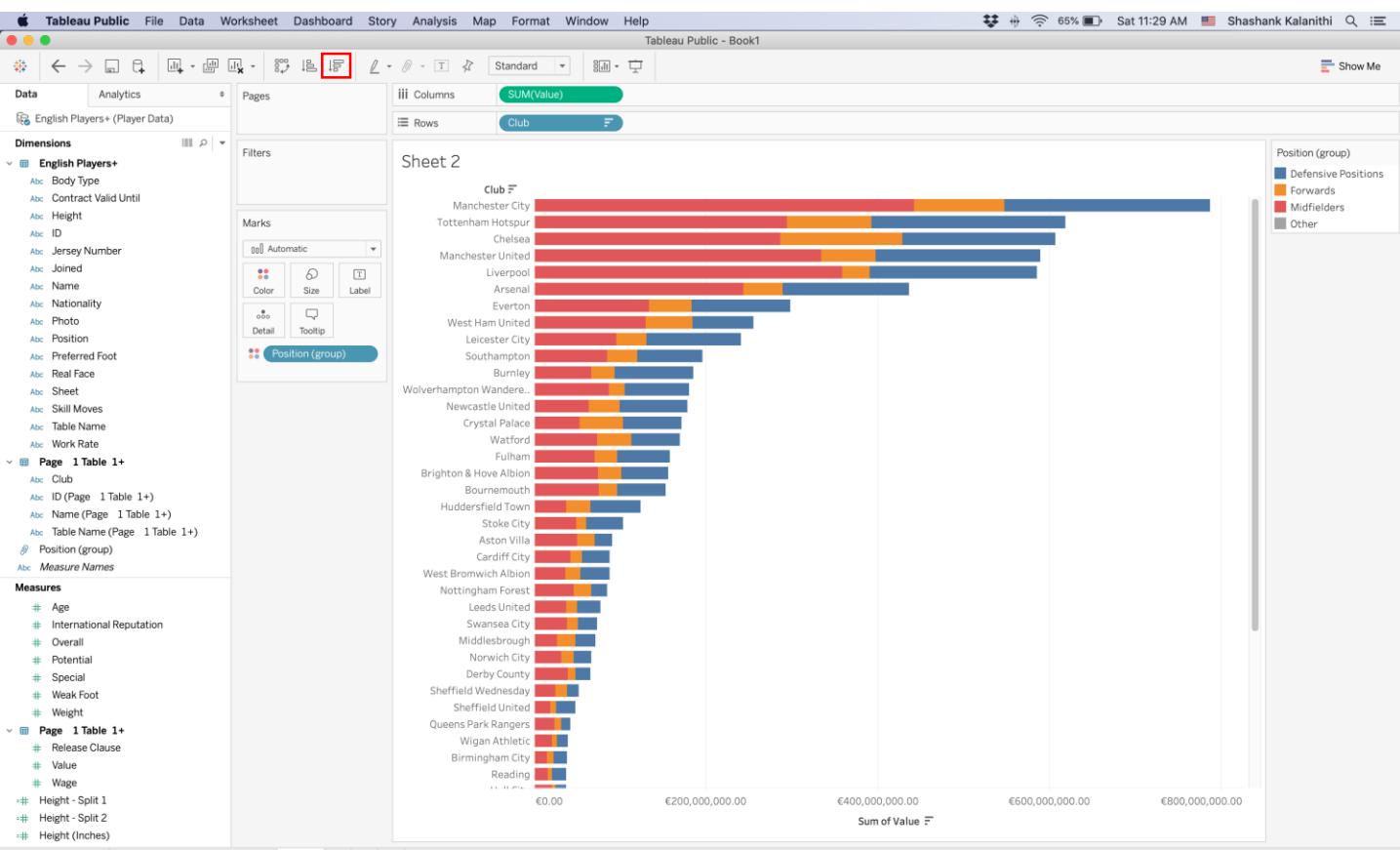
You'll notice that the aggregation of our data is CNTD, or Count Distinct. This means that the length of the bars corresponds to the number of distinct values in that group. The default aggregation of this data is CNTD instead of SUM because we converted it from a string. Right-click and change it to SUM





Exercise

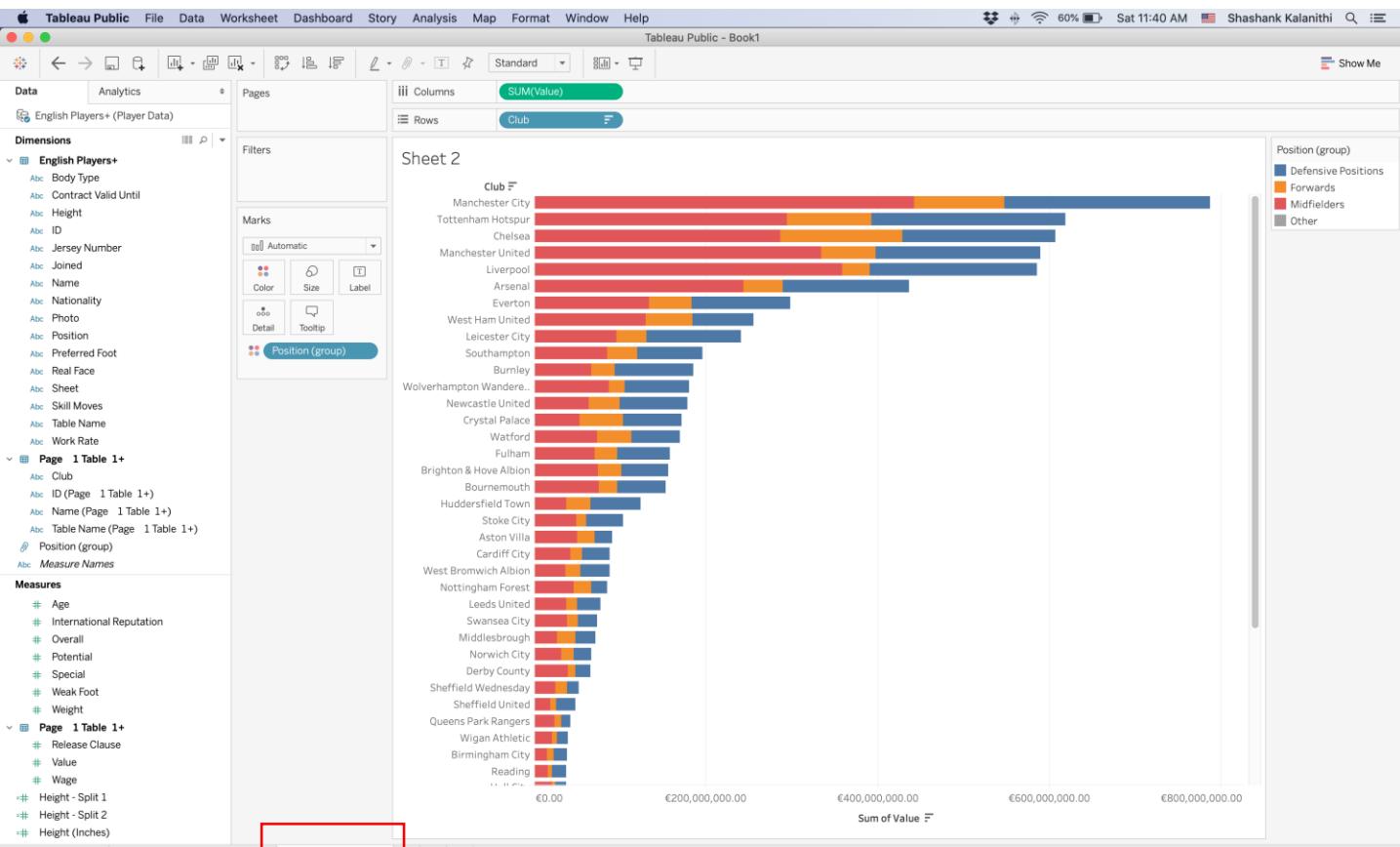
Then you just need to sort the data in descending order using the button at the top





Exercise

Let's rename the visualization to: Player Value by Club

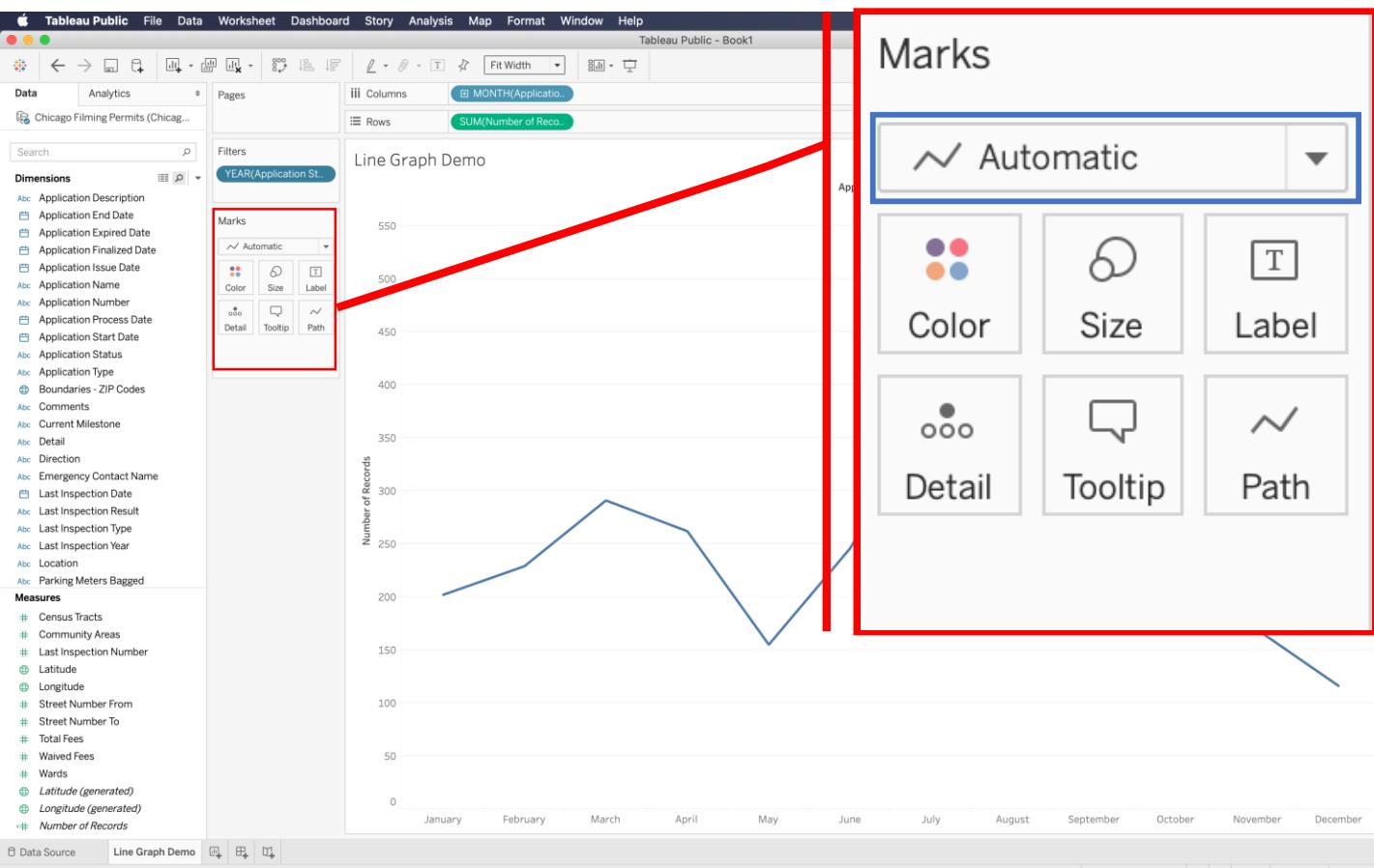




Marks Card

The Marks Card is one of the key ways you'll change your visualizations in Tableau. Put generally, the Columns and Rows shelf is where you place your data to create the basic form of your visual, and you change the details using the Marks Card.

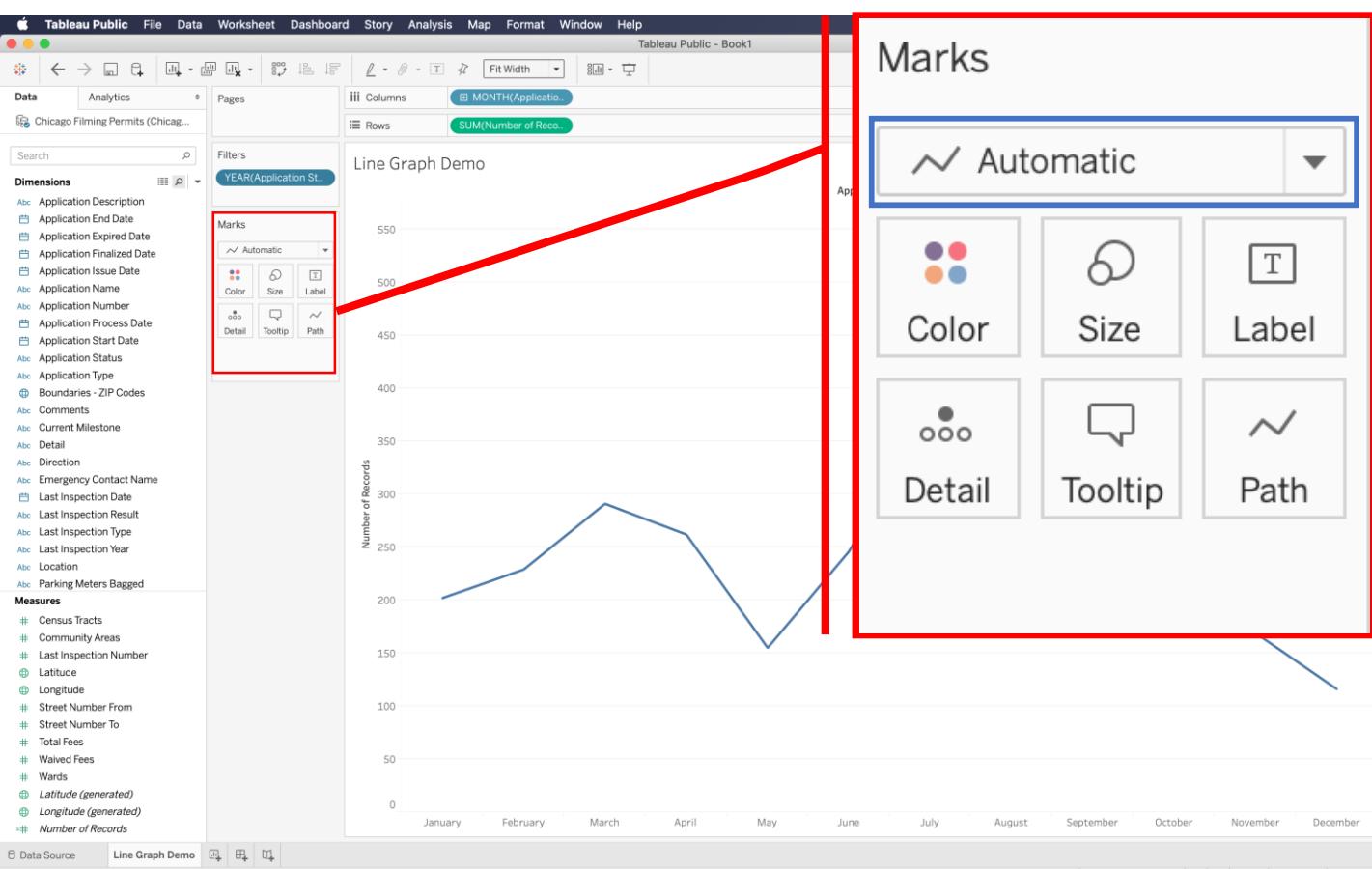
Marks are how your rows are represented in Tableau, they are the individual “points” on your visualization. If you want to get a better idea of what a Mark is, try changing the Mark type using the dropdown highlighted in blue.





Marks Card

If you want to change any individual aspect of your visualization, the Marks Card should be your first stop. From here you can change colors, how much detail is in your visualization, whether labels show up, and what the tooltip that comes up when you hover over a mark says.





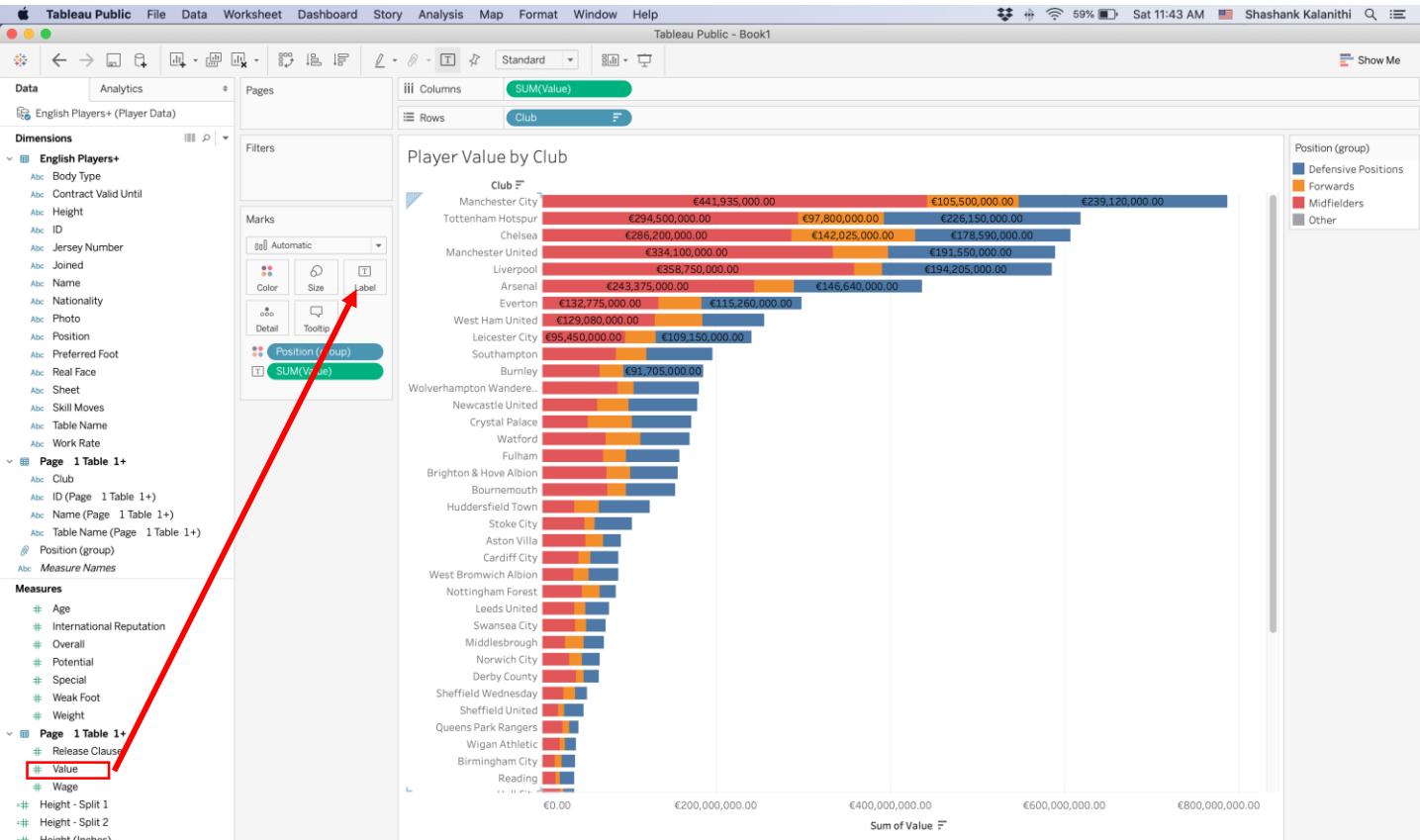
End of Graph Labels

Bars are great, but this graph would benefit from having labels on it at least for the full value of the bar

Using what we learned about the Marks card you might want to add labels to the chart

Dragging the [Value] measure to the Label Marks Card (and changing the aggregation) gives us something that looks like the below.

This isn't particularly useful, let's see if we can get the labels at the end of the graph.





End of Graph Labels

1. Click on the “Analytics” tab on the upper left of the interface
2. Double-click on “Reference Line”
3. Select the “Per Cell” option
4. Aggregate by Sum
5. Fill the label with Values
6. Hit OK
7. Remove the [Value] measure from the Marks Card

Tableau Public - Book1

Analytics 1

2

3

4

5

6

Player Value by Club

Sum of Value

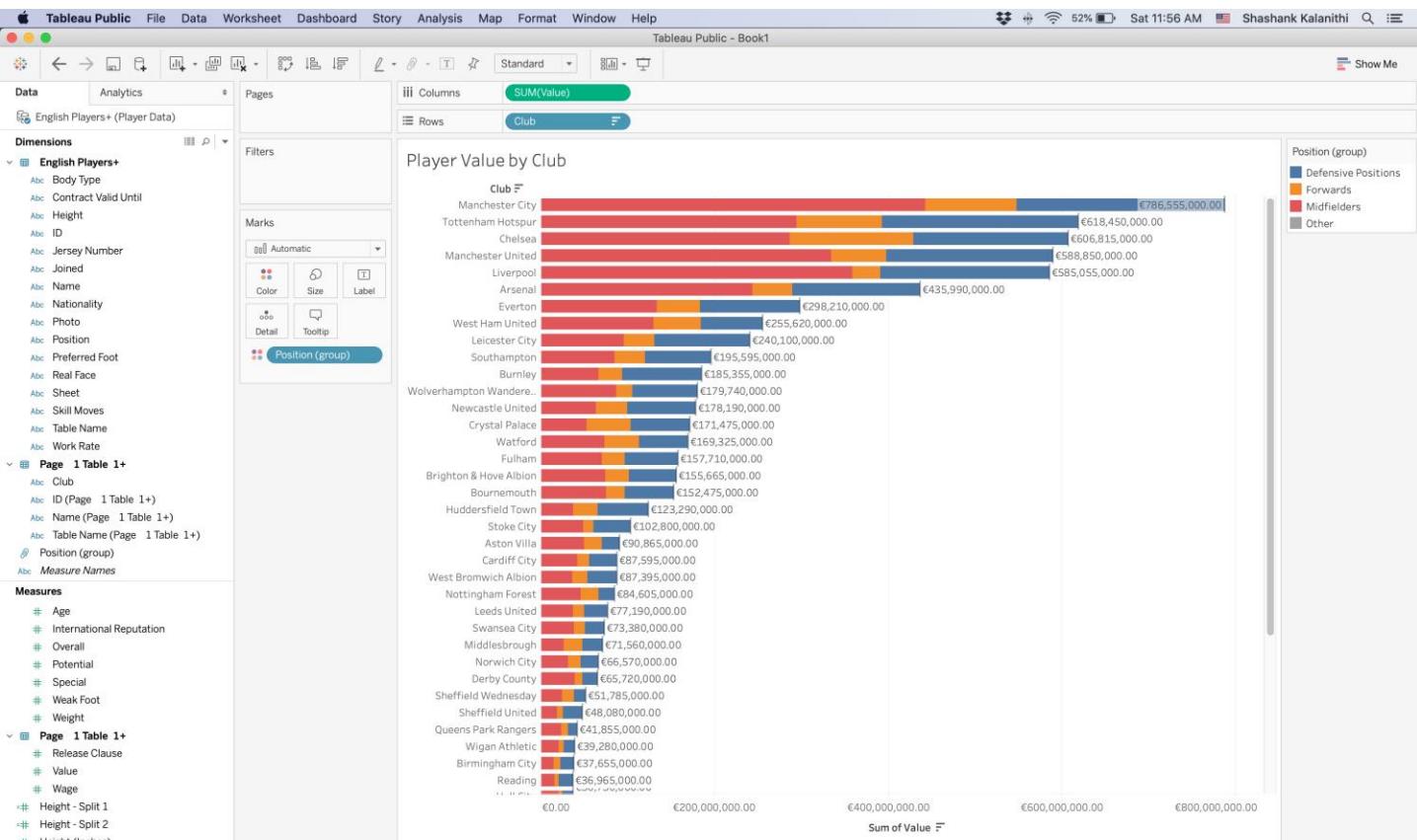
Club	Sum of Value
Manchester United	€105,500,000.00
Chelsea	€239,120,00
West Ham United	€786,555,000.00
Tottenham Hotspur	€226,150,000.00
Leeds United	€618,450,000.00
Sheffield United	€178,590,000.00
Nottingham Forest	€606,815,000.00
Watford	€91,550,000.00
Burnley	€588,850,000.00
Everton	€420,500,00
Aston Villa	€585,055,000.00
Wolverhampton Wanderers	€35,990,000.00
Newcastle United	€37,655,000.00
Crystal Palace	€36,965,000.00
Brighton & Hove Albion	€37,655,000.00
Leicester City	€37,655,000.00
Southampton	€37,655,000.00
Midtjylland	€37,655,000.00
Norwich City	€37,655,000.00
Denmark	€37,655,000.00
Sheffield Wednesday	€37,655,000.00
Shrewsbury Town	€37,655,000.00
Queens Park Rangers	€37,655,000.00
Wigan Athletic	€37,655,000.00
Birmingham City	€37,655,000.00
Reading	€36,965,000.00



End of Graph Labels

Here's what we end up with.

When we put the [Value] column in the "Label" part of the Marks Card, Tableau tried to label at the lowest level of aggregation on the chart which was the player [Position (group)] level. What we did to fix this was to add a line at the end of the graph that was aggregated at the [Club] level and then labeled that line.

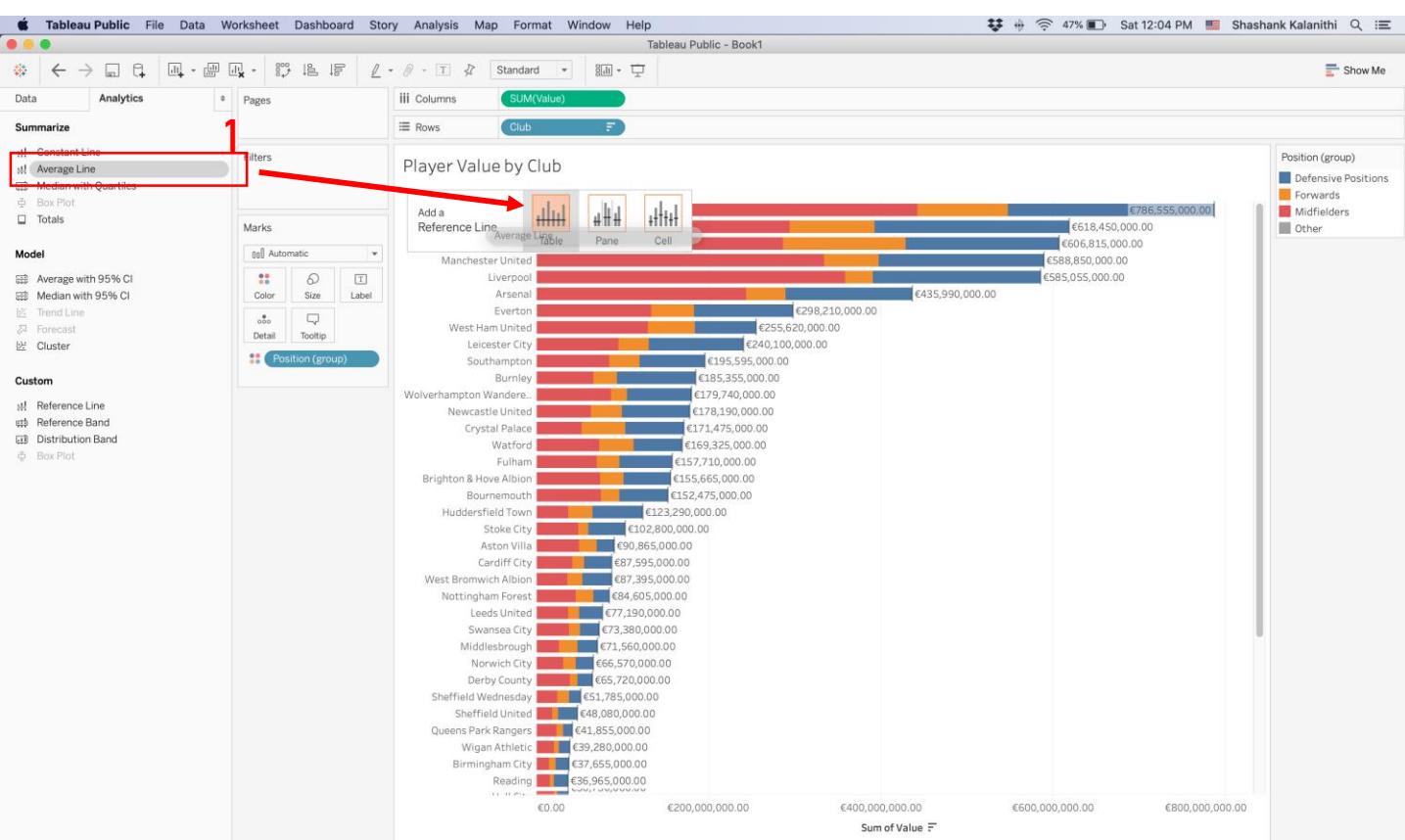




Adding an Average Line

This visualization is great and clearly communicates where teams are relative to each other, but what about relative to the average?

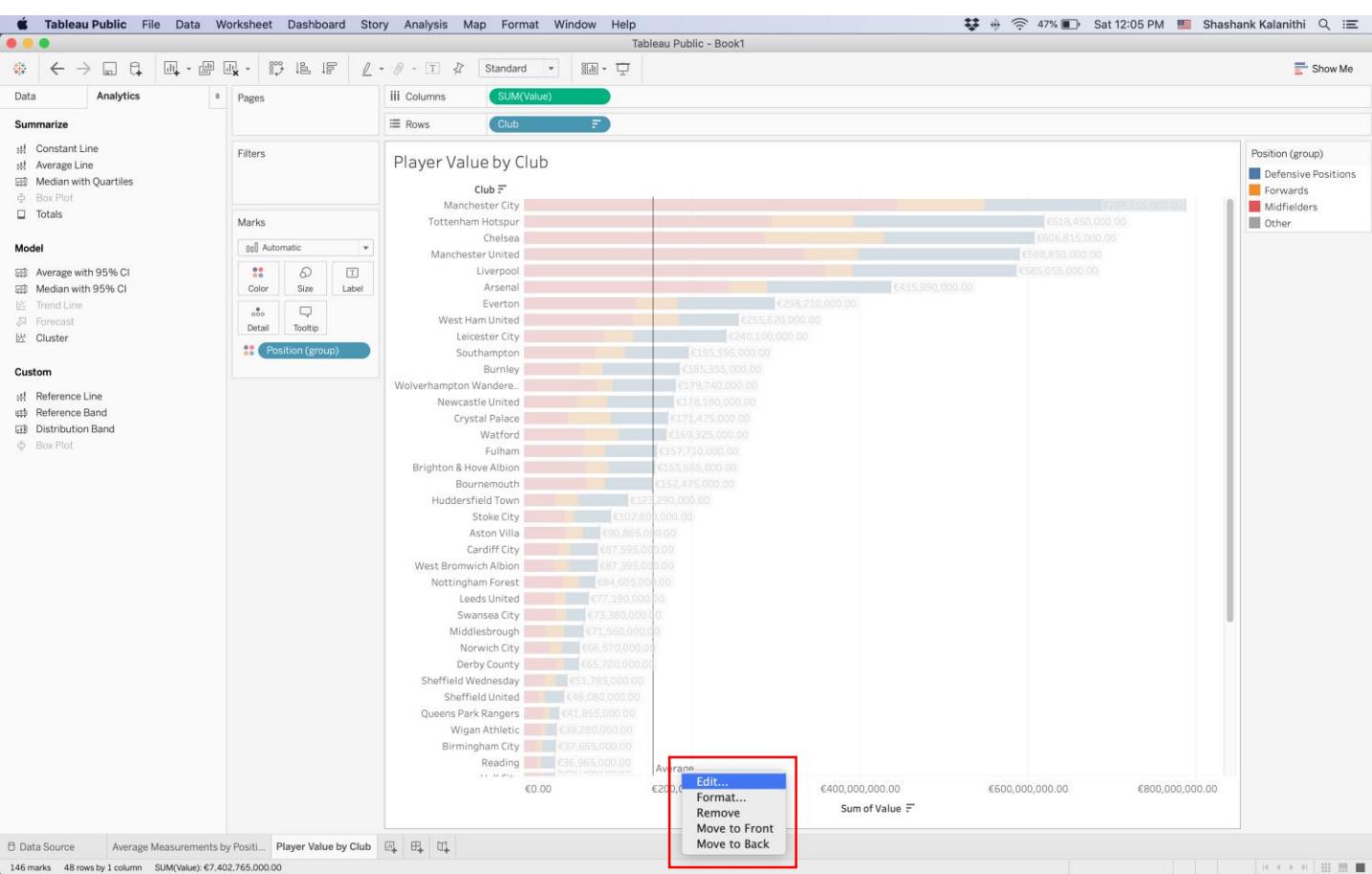
1. Drag “Average Line” to the “Table” section of the menu (Under the “Analytics” menu)





Adding an Average Line

- Right-click the average line and select "Edit..."





Adding an Average Line

3. Select “Custom”
4. Type in: <Computation>: <Value>
5. Hit OK
6. Click on the Connect Menu icon

The screenshot shows the Tableau Public interface with a bar chart titled "Player Value by Club". The chart displays player values for various clubs, with a horizontal axis labeled "Sum of Value" ranging from €0.00 to €800,000,000.00. A vertical axis lists club names. A red box labeled "6" highlights the "Connect" menu icon in the top-left corner of the interface.

A floating dialog box titled "Edit Reference Line, Band, or Box" is open. It contains settings for a "Line" reference element:

- Scope:** Set to "Entire Table".
- Line:**
 - Value:** SUM(Value) (highlighted with a red box labeled "3").
 - Label:** Custom <Computation>: <Value> (highlighted with a red box labeled "4").
 - Tooltip:** Automatic.
- Formatting:** Includes options for "Line", "Fill Above", and "Fill Below".
- Show recalculated line for highlighted or selected data points:** Checked.

At the bottom right of the dialog box is a red box labeled "5" containing the "OK" button, which is highlighted with a red border.



Import Spatial Data

We happen to have some data on stadium locations. Let's see if we can bring this in and correlate it to the numerical data we've compiled.

1. Select “Spatial File”
2. Import the “Data to Blend” dataset

The screenshot shows the Tableau Public application window. On the left, there's a sidebar with 'Connect' and 'To a File' sections, and a 'Discover' sidebar on the right with links like 'How-to Videos', 'Overview', and 'VIZ OF THE DAY'. The main area has a 'File' menu at the top. A 'File > Open' dialog box is centered, showing a file selection tree. The 'Downloads' folder is selected, and a file named 'Data to Blend.kml' is highlighted. Below the tree, a preview pane shows the file's contents. At the bottom of the dialog are 'Cancel' and 'Open' buttons. The status bar at the bottom of the screen shows 'Update to 2020.1.2 Now'.



Import Spatial Data

3. Right-click on Name
4. Click Rename and name it “Club”
 - Rename Description: Stadium
5. Create a new Sheet and navigate to it

The screenshot shows the Tableau Public interface with the following details:

- Connections:** Data to Blend (Spatial file) is selected.
- Tables:** Data_to_Bland is listed.
- Data View:** A table titled "Data_to_Bland" is displayed with the following columns: Name, Description, and Geometry.
- Actions:** A context menu is open over the "Name" column, with "Rename" highlighted.
- Table Data:** The table lists 20 football clubs and their stadium names, all categorized under "Point" geometry.
- Bottom Navigation:** Data Source, Average Measurements by Position, Player Value by Club, and various Tableau navigation icons.

Name	Description	Geometry
Liverpool	Carrow Road	Point
Stoke City	City Ground	Point
Blackpool	County Ground	Point
Oldham Athlet...	Craven Cottage	Point
Sheffield Unite...	Dean Court	Point
Cardiff City	DW Stadium	Point
Norwich City	Elland Road	Point
Nottingham Forest	Emirates Stadium	Point
Manchester City	Ewood Park	Point
Swindon Town	Fulham	Point
Fulham	Bournemouth	Point
Bournemouth	Wigan Athletic	Point
Wigan Athletic	Leeds United	Point
Leeds United	Arsenal	Point
Arsenal	Blackburn Rovers	Point
Blackburn Rovers		Point



Spatial Files

The file we just imported is something called a .KML file. This is a spatial file type that stores information about geography.

Spatial files can store three basic geospatial data types:

- Points
- Lines
- Polygons

You can use these to create visualizations that would otherwise be very difficult to create.



Data Blends

Now we need to relate our spatial dataset to our player data.

1. Click on Data on the menu tab and select “Edit Relationships”

The screenshot shows the Tableau Public interface. The top navigation bar includes File, Data, Worksheet, Dashboard, Story, Analysis, Map, Format, Window, Help, and a user profile. A red box highlights the 'Data' menu item. A dropdown menu is open under 'Data', showing options: New Data Source, Paste, Edit Blend Relationships..., Replace Data Source..., and a checked item 'Data to Blend English Players+ (Player Data)'. Below the menu, the main workspace shows a 'Marks' shelf with 'Automatic' selected and various color, size, and text options. The 'Dimensions' shelf lists 'Abc: Club', 'Abc: Description', and 'Abc: Measure Names'. The 'Measures' shelf lists 'Geometry', 'Latitude (generated)', 'Longitude (generated)', 'Number of Records', and 'Measure Values'. At the bottom, there are tabs for 'Sheet 3' and other dashboard components like 'Average Measurements by Position' and 'Player Value by Club'.



Data Blends

You'll see that from your primary source to your secondary source, they are automatically linked on the [Club] column.

This is the menu where you would define what columns are linked together if you needed to.

- Press "OK" or exit out of this menu

The screenshot shows the Tableau Public interface with the following details:

- Top Bar:** Tableau Public, File, Data, Worksheet, Dashboard, Story, Analysis, Map, Format, Window, Help, Shashank Kalanithi, Show Me.
- Left Sidebar:** Data (selected), Analytics, Pages, Filters, Dimensions (Club), Measures (Geometry, Latitude, Longitude, Number of Records, Measure Values).
- Middle Area:** Sheet 3, Drop field here.
- Blend Relationships Dialog:** A modal window titled "Blend Relationships".
 - Primary data source: Data to Blend
 - Secondary data source: English Players+ (Player Data)
 - Linking columns:
 - Automatic (radio button selected)
 - Club (under Primary data source)
 - Club (under Secondary data source)
 - Buttons: Add..., Edit..., Remove, Cancel, OK.
- Bottom Navigation:** Data Source, Average Measurements by Positi..., Player Value by Club, Sheet 3, icons for Refresh, Save, Print, etc.



Data Blends

Like Joins and Unions, the Data Blend is a way to combine data from multiple sources.

A Data Blend emulates a traditional Left Join, the difference is that a Join will combine the data row-by-row then aggregate the resultant table, whereas in a Data Blend, the tables will be aggregated as necessary for the view, then combined.

One important difference with a Data Blend vs a Left Join is that a Data Blend will not duplicate results, instead, if there is a many-to-one relationship between the two data sources that you're combining, then Tableau will output an asterisk “*”.

A Data Blend will never output more rows than exist in the “Left” or Primary table.

The next page will compare a Left Join to a Data Blend where we have multiple matches to illustrate the differences between the two.

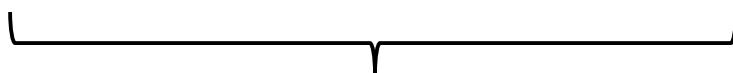


Data Blends

You'll notice in this Left Join the data duplicates as we'd expect it to. (Highlighted in Orange)

ID	Color	Model
1	Blue	30X
3	Red	50X

ID	Car
1	Atoyot
1	Adnoh
3	Ustahiad



Left Join



ID	Color	Model	ID (Right)	Car
1	Blue	30X	1	Atoyot
1	Blue	30X	1	Adnoh
3	Red	50X	3	Ustahiad



Data Blends

In this Data Blend, because we don't have a single clean match for [ID] = 1 in our right table, Tableau doesn't know which value to use and will output an asterisk instead.

ID	Color	Model
1	Blue	30X
3	Red	50X

ID	Car
1	Atoyot
1	Adnoh
3	Ustahiad



Data Blend



ID	Color	Model	Car
1	Blue	30X	*
3	Red	50X	Ustahiad



Data Blends

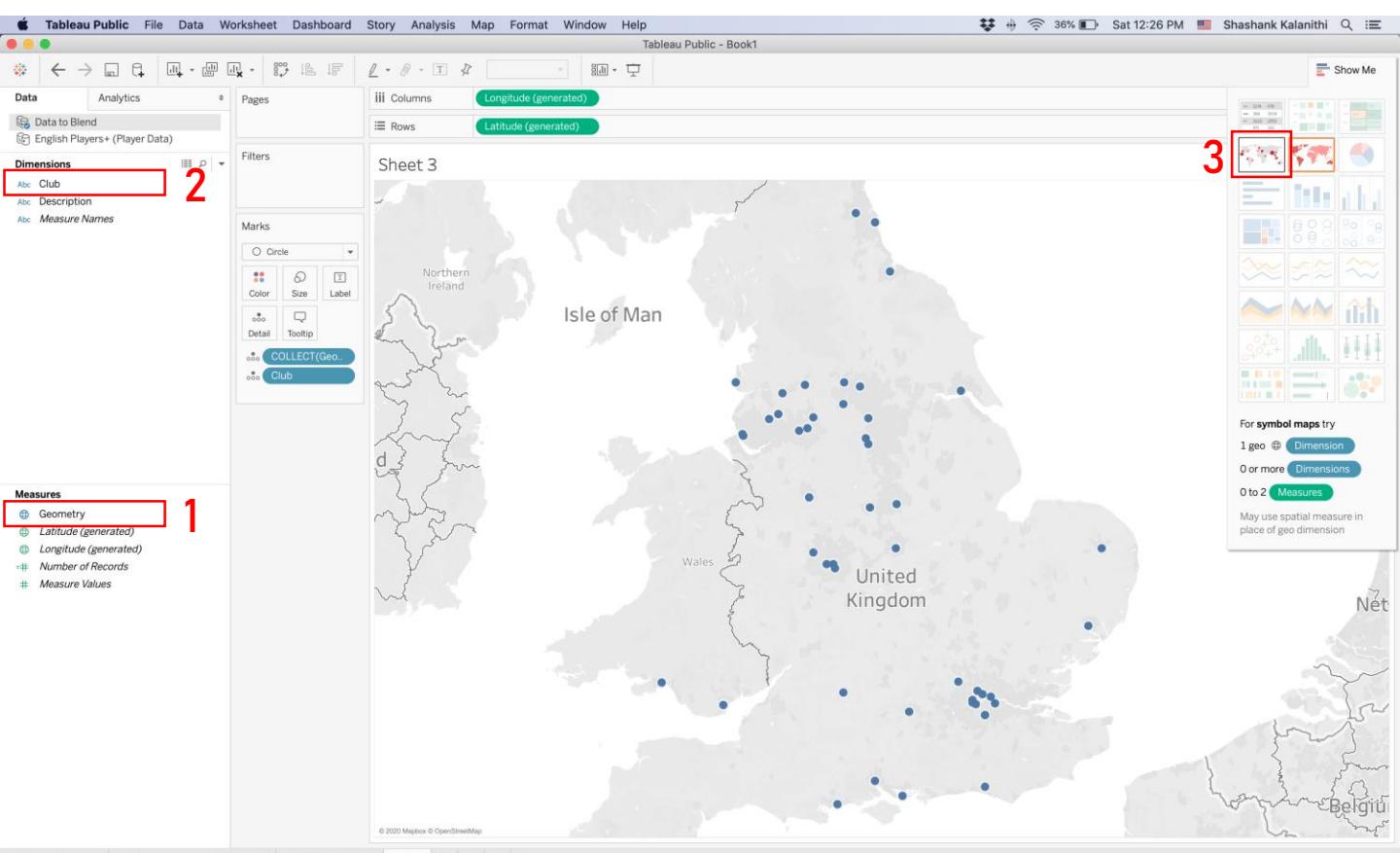
In Tableau you'll know what fields you're linking a blend on based on a chain symbol next to the field on the secondary source. A red link means that those fields are linked, a grey link means they aren't being actively linked now. You can click on this icon to toggle this setting.





Geospatial Data

1. Double-click [Geometry]
2. Drag [Club] to the Details section of the Marks card
3. Under the Show Me menu, change the graph to be a symbol map





Geospatial Data

4. Select the English Players+ data connection
 - Look at the blue box and you'll see that Tableau automatically linked this data source using the [Club] field
5. Drag [Value] to “Size” under the Marks Card
 - Make sure the aggregation is a SUM
6. Click on Size and edit the slider until you find a size you’re comfortable with

The screenshot shows a Tableau Public dashboard titled "Sheet 3". The data pane on the left lists the "English Players+" data source, which includes measures like Age, International Reputation, Overall, Potential, Special, Weak Foot, and Weight. A red box highlights the "Value" measure. A red arrow labeled "5" points from this box to the "Value" measure in the data pane. The marks card on the right shows the "Size" setting, with a red box highlighting it and a red arrow labeled "6" pointing to it. The main visualization is a map of the United Kingdom and surrounding areas, with numerous blue dots representing player data points. A tooltip on the right side of the screen provides instructions for using spatial measures.

Tableau Public - Book1

4

5

6

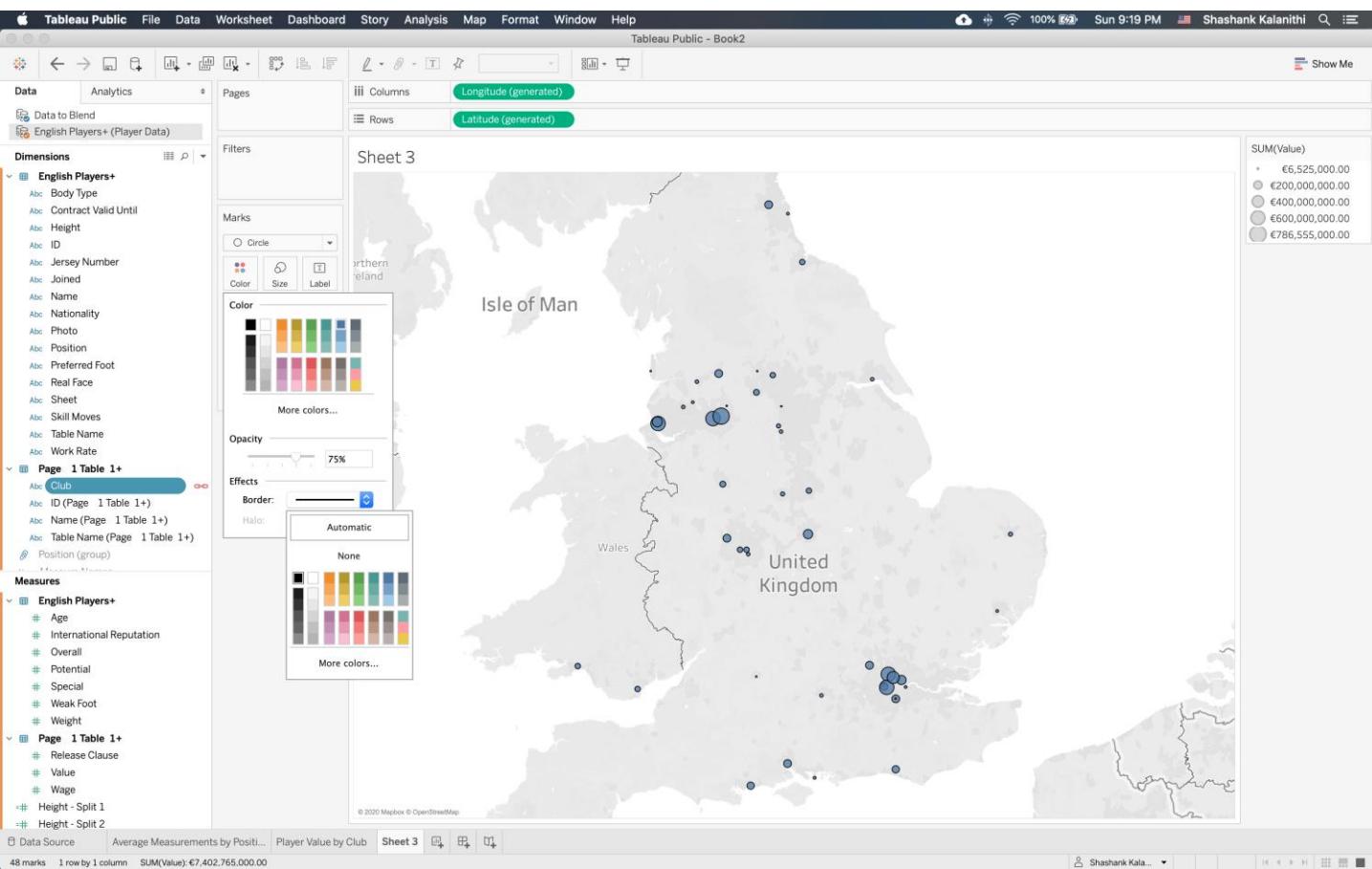
For maps try
1 geo @ Dimension
0 or more Dimensions
0 or 1 Measure
May use spatial measure in place of geo dimension



Geospatial Data

You can use the Color section of the Marks card to edit the opacity, colors, and the border of the Marks on your visualization

Generally I like to use 75% opacity and make my borders black. I find this tends to make your visualizations pop a little more but experiment and see what works best for you.





Parameters and Parameter Actions

1. Drag [Club] under the English Players++ dataset to the Filters card
2. Select the “Top” tab
3. Select the “By field” radio button
4. On the second dropdown, select “Create a New Parameter”

The screenshot shows the Tableau interface with a map visualization. The data source is 'English Players+ (Player Data)'. A red arrow labeled '1' points to the 'Club' field in the 'Dimensions' pane. Another red arrow labeled '2' points to the 'Top' tab in the 'Filter [Club]' dialog. A third red arrow labeled '3' points to the 'By field:' radio button. A fourth red arrow labeled '4' points to the 'Create a New Parameter...' button in the 'Enter a Value...' dropdown.

Tableau Public - Book1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Analytics

Data to Blend English Players+ (Player Data)

Dimensions

- English Players+
 - Body Type
 - Contract Valid Until
 - ID
 - Height
 - Jersey Number
 - Joined
 - Name
 - Nationality
 - Photo
 - Position
 - Preferred Foot
 - Real Face
 - Sheet
 - Skill Moves
 - Table Name
 - Work Rate
- Page 1 Table 1+
 - Club
 - ID (Page 1 Table 1+)
 - Name (Page 1 Table 1+)
 - Table Name (Page 1 Table 1+)
 - Position (group)

Measures

- English Players+
 - Age
 - International Reputation
 - Overall
 - Potential
 - Special
 - Weak Foot
 - Weight
- Page 1 Table 1+
 - Release Clause
 - Value
 - Wage
 - Height - Split 1
 - Height - Split 2

Pages

Columns: Longitude (generated)
Rows: Latitude (generated)

Sheet 3

Filter [Club]

General Wildcard Condition Top 2

None By field: 3

Top 10 by Enter a Value... 4 Create a New Parameter...

By formula:

Top 10 by

Reset Apply Cancel OK

SUM(Value)

2020 Mapbox © OpenStreetMap

Data Source: Average Measurements by Position... Player Value by Club Sheet 3

48 marks 1 row by 1 column SUM(Value): €7,402,765,000.00



Parameters and Parameter Actions

5. Change the Parameter's name to "Top Teams by Player Value"
6. Change "Allowable values:" "List"
7. Copy the values in this table into the "List of values" section

Value	Display As
1	Top Team
5	Top Five Teams
10	Top Ten Teams
20	Top Twenty Teams

8. Click "OK"

The screenshot shows the Tableau interface with a map of Europe. A parameter creation dialog box is open over the visualization. The dialog has the following settings:

- Name: Top Teams by Player Value (5)
- Data type: Integer
- Current value: Top Team
- Value when workbook opens: Current value
- Display format: Automatic
- Allowable values: List (radio button selected) (6)

The 'List of values' table is displayed with the following data:

Value	Display As
1	Top Team
5	Top Five Teams
10	Top Ten Teams
20	Top Twenty Teams

Red numbers 5, 6, and 7 are overlaid on the dialog box to indicate specific steps.



Parameters and Parameter Actions

9. Select [Value] and “Sum” on the next two drop downs
10. Click “OK”

Screenshot of Tableau Public showing a map visualization of player values by club. The interface includes a navigation bar, a data pane on the left listing dimensions and measures, and a central workspace where a parameter dialog box is open.

The parameter dialog box is titled "Filter [Club]" and has the following settings:

- General tab selected.
- By field: Top Teams by Player Value by
- Value dropdown set to "Value".
- Sum dropdown set to "Sum".
- Condition tab is visible but not selected.

A red box highlights the "Value" dropdown in the dialog box, and a red number "9" is overlaid on the right side of the dialog. The background map shows player values represented by bubble sizes across Europe.



Parameters and Parameter Actions

11. Right click your new Parameter (below Measures), and make sure that "Show Parameter Control" is selected
12. Name your new sheet "Top Teams by Player Value Map"

Screenshot of Tableau Public showing a map of the United Kingdom and Ireland titled "Top Teams by Player Map". The map uses size and color to represent player values. A single large blue circle is located in the English Channel between the UK and France.

The interface shows the following elements:

- Dimensions:** English Players+, Club, Height, ID, Jersey Number, Joined, Name, Nationality, Photo, Position, Preferred Foot, Real Face, Sheet, Skill Moves, Table Name, Work Rate.
- Measures:** SUM(Value), COLLECT(Geo), Club.
- Parameters:** Top Teams by Player Value.
- Actions:** A context menu is open for the "Top Teams by Player Value" parameter, with the "Show Parameter Control" option highlighted (marked with a red box and number 9).
- Sheet Header:** Top Teams by Player Map.
- Bottom Navigation:** Top Teams by Player Map, Home, Help, Log Out.



Parameters

Parameters are constants that can be used all over Tableau. You can use it to dynamically change a calculation, to filter data by measures, or allow your audience to define certain criteria when exploring your data.

In the example we just finished, we used a Parameter to allow the user to change which teams they saw on the visualization. When setting our filter normally, we'd have to select a constant to filter on, but because we connected it to a Parameter, we can change that constant as we please.



Choropleth Map

1. Create a new sheet
2. Right-click [Nationality] and select Geographic Role and Select "Country/Region"

The screenshot shows the Tableau Public interface with the following details:

- Top Bar:** Tableau Public, File, Data, Worksheet, Dashboard, Story, Analysis, Map, Format, Window, Help, Show Me.
- Left Panel (Dimensions):**
 - English Players+ (Player Data)
 - Dimensions:
 - Name
 - Nationality (selected)
 - Photo
 - Position
 - Preferred F
 - Real Face
 - Sheet
 - Skill Moves
 - Table Name
 - Work Rate
 - Measures:
 - English Player
 - Age
 - International
 - Overall
 - Potential
 - Special
 - weak foot
 - Weight
 - Page 1 Table 1+
 - Release Clause
 - Value
 - Wage
 - Height - Split 1
 - Parameters:
 - Top Teams by Player Value
- Middle Panel (Marks):** Standard, Columns, Rows, Sheet 4, Drop field here.
- Bottom Panel (Sheet Controls):** Average Measurements by Positi..., Player Value by Club, Top Teams by Player Map, Sheet 4 (highlighted with a red box and the number 1), and other navigation icons.
- Right-click Context Menu (Step 2):** A context menu is open over the "Nationality" dimension item. It includes options like Add to Sheet, Duplicate, Rename, Hide,Aliases..., Create, Transform, Convert to Measure, Change Data Type, and Geographic Role. The "Geographic Role" option is expanded, showing "None", "Airport", "Area Code (U.S.)", "CBSA/MSA (U.S.)", "City", "Congressional District (U.S.)", "Country/Region" (which is highlighted with a red box and the number 2), "County", "NUTS Europe", "State/Province", and "ZIP Code/Postcode".



Choropleth Map

3. Double-click on [Nationality]
4. Under Show Me click on the Choropleth Map
5. Drag [Value] to Colors
6. Change the aggregation to SUM for colors if you need to

Tableau Public - Book1

Dimensions

- English Players+
 - Body Type
 - Contract Valid Until
 - Height
 - ID
 - Jersey Number
 - Joined
 - Name
 - Photo
 - Position
 - Preferred Foot
 - Real Face
 - Sheet
 - Skill Moves
 - Table Name
 - Work Rate
- Page 1 Table 1+
 - Club
 - ID (Page 1 Table 1+)
 - Name (Page 1 Table 1+)
 - Table Name (Page 1 Table 1+)

Measures

- English Players+
 - Age
 - International Reputation
 - Overall
 - Potential
 - Special
 - Weak Foot
 - Weight
- Page 1 Table 1+
 - Release Clause
 - Value
 - 3
 - Wage
- Height - Split 1

Parameters

- Top Teams by Player Value

Shows

- Longitude (generated)
- Latitude (generated)

Marks

- Map
- Color
- Size
- Label
- Detail
- Tooltip
- Sum (Value)
- Nationality

Sheet 4

For symbol maps try

- 1 geo @ Dimension
- 0 or more Dimensions
- 0 to 2 Measures

May use spatial measure in place of geo dimension

© 2020 Mapbox © OpenStreetMap

Data Source: Average Measurements by Position... Player Value by Club Top Teams by Player Map Sheet 4



Correcting Locations

1. Click on the “6 Unknown” icon on the bottom right
2. Click on “Edit Locations”

Tableau Public - Book1

Special Values for [Nationality]

There are 6 values that have unknown geographic locations. What do you want to do?

Edit Locations... Correct the unknown locations.

Filter data Exclude the special values from the view and calculations.

Show data at default position Show the special values at a default position on the axis. For example, Null values are shown at 0.

SUM(Value) €70,000.00 28

Sheet 4

SUM(Value)

6 unknown

Dimensions

- English Players+
 - Body Type
 - Contract Valid Until
 - Height
 - ID
 - Jersey Number
 - Joined
 - Name
 - Nationality
 - Photo
 - Position
 - Preferred Foot
 - Real Face
 - Sheets
 - Skill Moves
 - Table Name
 - Work Name
 - Work Rate
- Page 1 Table 1+
 - Club
 - ID (Page 1 Table 1+)
 - Name (Page 1 Table 1+)
 - Table Name (Page 1 Table 1+)

Measures

- English Players+
 - Age
 - International Reputation
 - Overall
 - Potential
 - Special
 - Weak Foot
 - Weight
- Page 1 Table 1+
 - Release Clause
 - Value
 - Wage
- Height - Split 1

Parameters

- Top Teams by Player Value

Data Source: Average Measurements by Position... Player Value by Club Top Teams by Player Map Sheet 4



Correcting Locations

Tableau is very strict in how it recognizes geographic locations so this is something you'll find yourself doing often

3. Correct Macedonia and Korea Republic
4. Click “OK”

The screenshot shows a Tableau Public dashboard titled "Sheet 4". On the left, the Data pane lists dimensions like "English Players+", measures like "SUM(Value)", and parameters like "Top Teams by Player Value". A map of Europe is displayed with color-coded regions. A modal window titled "Edit Locations" is open, showing a dropdown menu for "Country/Region" set to "Nationality". The "Match values to locations" section contains a list of countries, some of which are highlighted in red boxes:

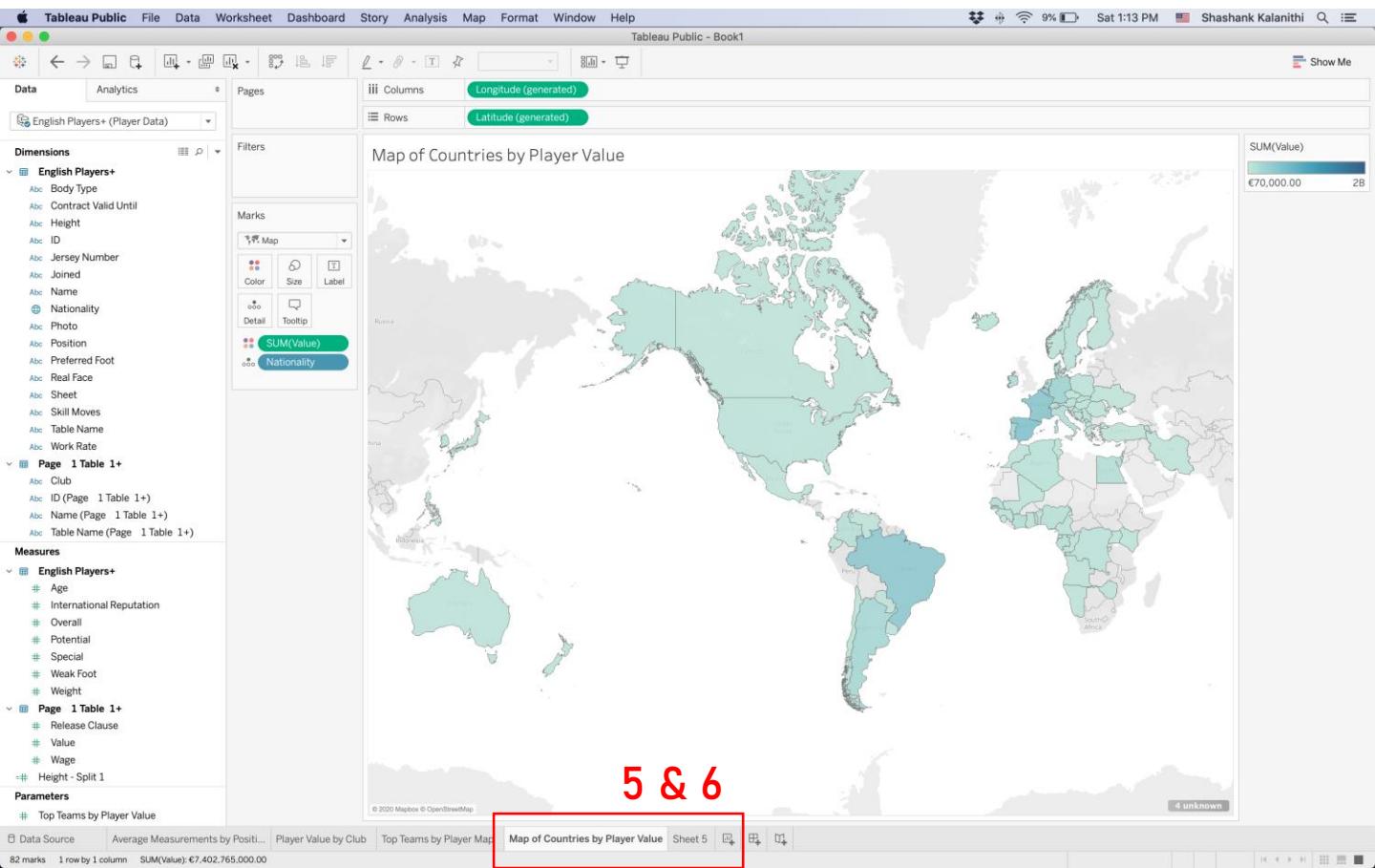
- England
- FYR Macedonia
- Korea Republic
- Northern Ireland
- Scotland
- Wales
- Algeria
- Angola
- Argentina
- Unrecognized
- North Macedonia
- South Korea
- Unrecognized
- Unrecognized
- Unrecognized
- Algeria
- Angola
- Argentina

Red numbers 3 and 4 are overlaid on the screen to indicate the steps: 3 points to the "South Korea" entry in the dropdown, and 4 points to the "OK" button at the bottom right of the modal.



Correcting Locations

5. Name your sheet “Map of Countries by Player Value”
6. Create a new sheet

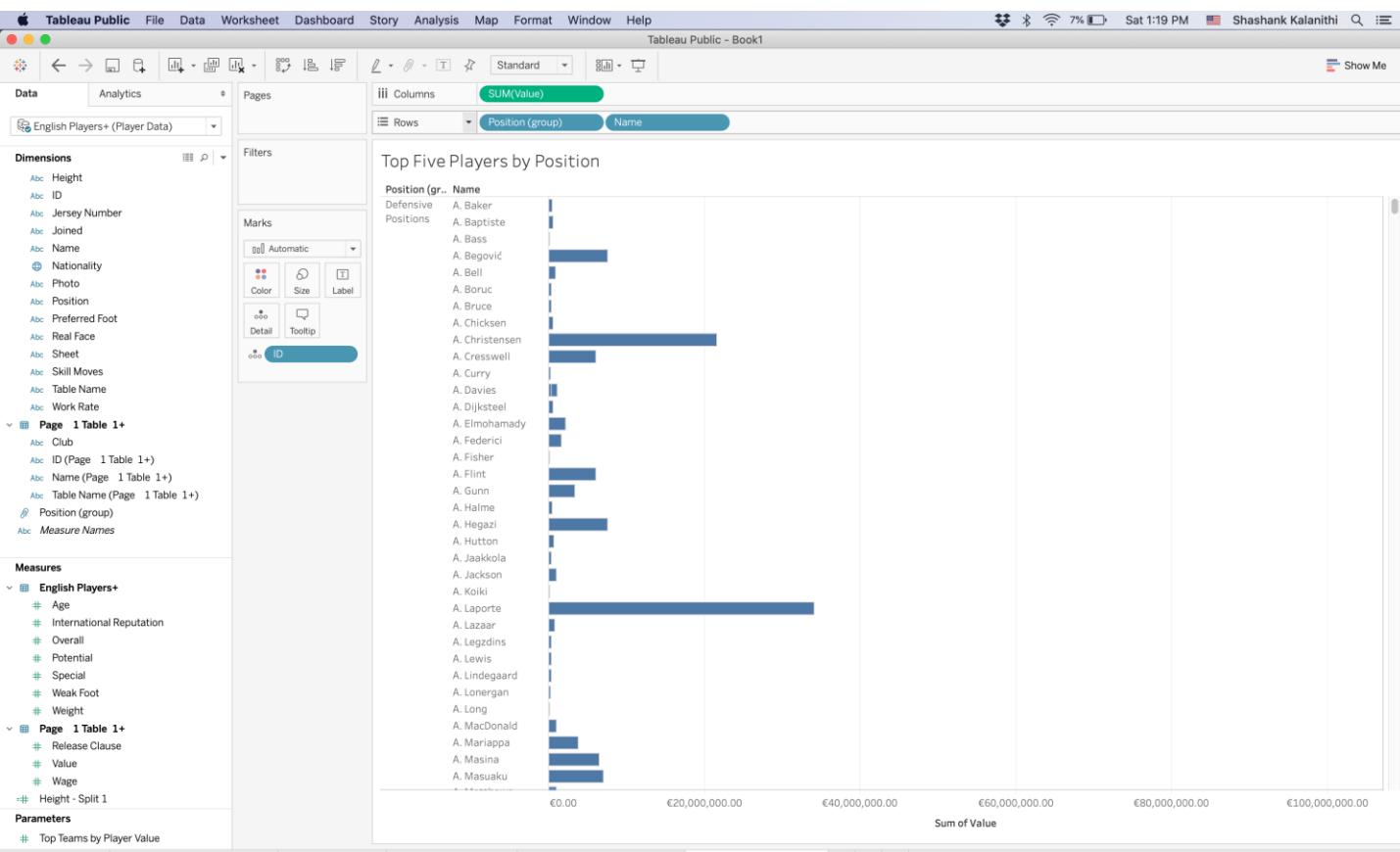




Exercise

Now let's see if we can create a visualization of the top five players by [Position (group)]

Recreate the visualization below.



Using Index to Rank Marks

1. Create a calculated field called “Index”
2. The formula is “Index()”

The screenshot shows the Tableau Public interface with the following details:

- Top Bar:** Tableau Public, File, Data, Worksheet, Dashboard, Story, Analysis, Map, Format, Window, Help.
- Left Panel (Data View):**
 - Dimensions:** Height, ID, Jersey Number, Joined, Name, Nationality, Photo, Position, Preferred Foot, Real Face, Sheet, Skill Moves, Table Name, Work Rate.
 - Measures:** English Players+, Age, International Reputation, Overall, Potential, Special, Weak Foot, Weight.
 - Parameters:** Top Teams by Player Value.
- Middle Panel (Analysis View):**
 - Pages: English Players+ (Player Data).
 - Filters: None.
 - Marks: Automatic, Color, Size, Label, ID.
- Bottom Panel (Detail View):**
 - Tableau Public - Book1: A list of names starting with A. Elmhohamy, A. Federici, A. Fisher, A. Flint, A. Guna, A. Halme, A. Hegazi, A. Hutton, A. Jaakkola, A. Jackson, A. Koiki, A. Laporte, A. Lazar, A. Legzdins, A. Lewis, A. Lindegaard, A. Lonergan, A. Long, A. MacDonald, A. Mariappa, A. Masina, A. Masaku.
 - Index: The calculation is valid.
- Bottom Right:** Default Table Calculation, Apply, OK.

Using Index to Rank Marks

3. Right-click [Index] to convert the measure into a discrete value

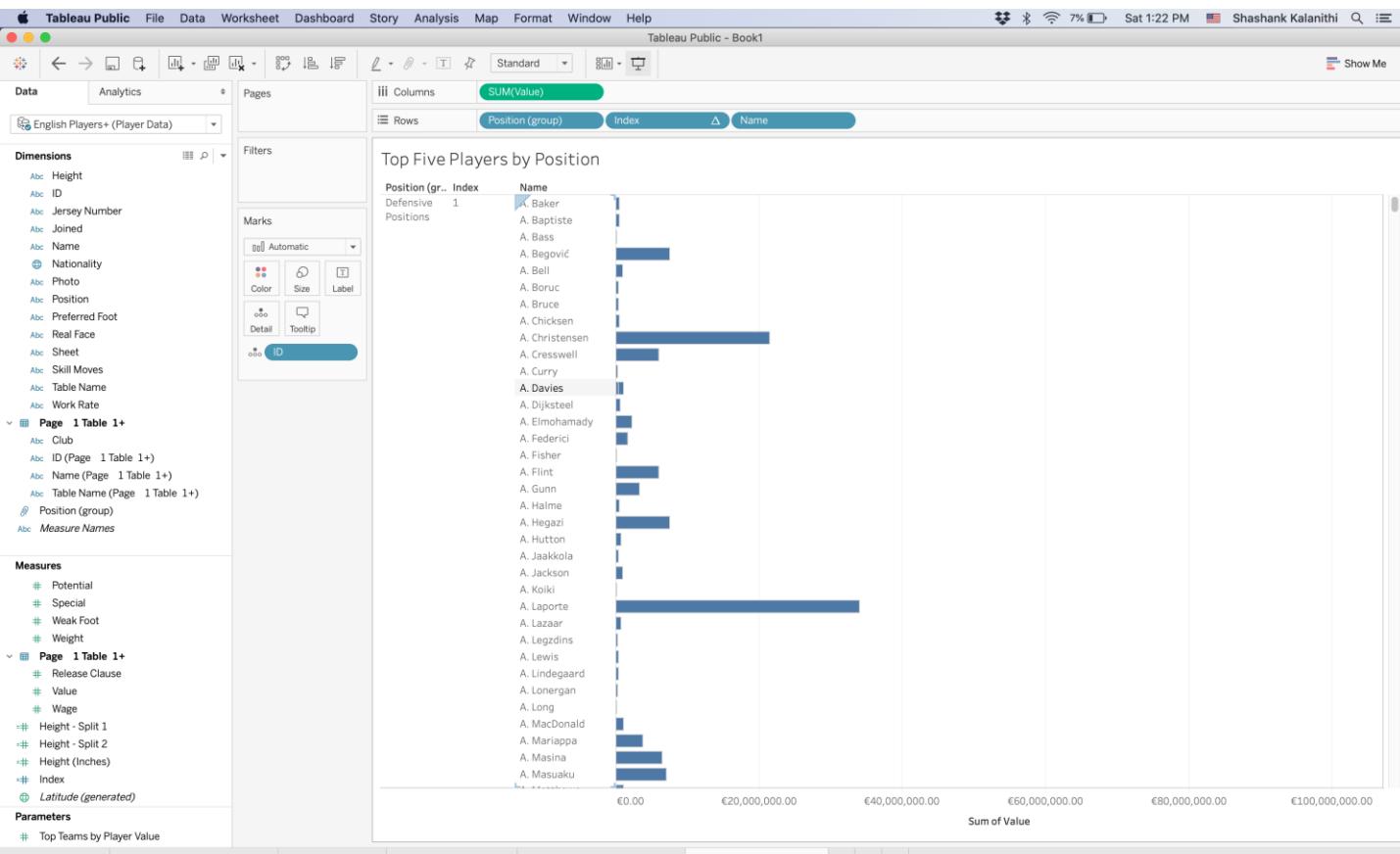
Screenshot of Tableau Public showing a bar chart titled "Top Five Players by Position". The chart displays player names grouped by position, with their sum of value. The Y-axis lists positions: Defensive, Positions, Goalkeeper, Midfielder, Forward, and Other. The X-axis shows the sum of value in millions of euros, ranging from 0.00 to 100,000,000.00.

Position (gr.)	Name	Sum of Value (€)
Defensive	A. Baker	~10,000,000
Positions	A. Baptiste	~1,000,000
Goalkeeper	A. Bass	~1,000,000
Midfielder	A. Begović	~1,000,000
Midfielder	A. Bell	~1,000,000
Midfielder	A. Boruc	~1,000,000
Midfielder	A. Bruce	~1,000,000
Midfielder	A. Chicksen	~1,000,000
Midfielder	A. Christensen	~1,000,000
Midfielder	A. Cresswell	~1,000,000
Midfielder	A. Curry	~1,000,000
Midfielder	A. Davies	~1,000,000
Midfielder	A. Dijksteel	~1,000,000
Midfielder	A. Elmohamady	~1,000,000
Midfielder	A. Federici	~1,000,000
Midfielder	A. Fisher	~1,000,000
Midfielder	A. Flint	~1,000,000
Midfielder	A. Gunn	~1,000,000
Midfielder	A. Halme	~1,000,000
Midfielder	A. Hegazi	~1,000,000
Midfielder	A. Hutton	~1,000,000
Midfielder	A. Jaakkola	~1,000,000
Midfielder	A. Jackson	~1,000,000
Midfielder	A. Koiki	~1,000,000
Midfielder	A. Laporte	~1,000,000
Midfielder	A. Lazar	~1,000,000
Midfielder	A. Legzdins	~1,000,000
Midfielder	A. Lewis	~1,000,000
Midfielder	A. Lindegaard	~1,000,000
Midfielder	A. Lonergan	~1,000,000
Midfielder	A. Long	~1,000,000
Midfielder	A. MacDonald	~1,000,000
Midfielder	A. Mariappa	~1,000,000
Midfielder	A. Masina	~1,000,000
Midfielder	A. Masuaku	~1,000,000
Forward	A. Matic	~1,000,000
Other	A. Nzonzi	~1,000,000

The screenshot also shows the Tableau interface with various data sources and a context menu open for the "Index" measure, with the option "Convert to Discrete" highlighted.

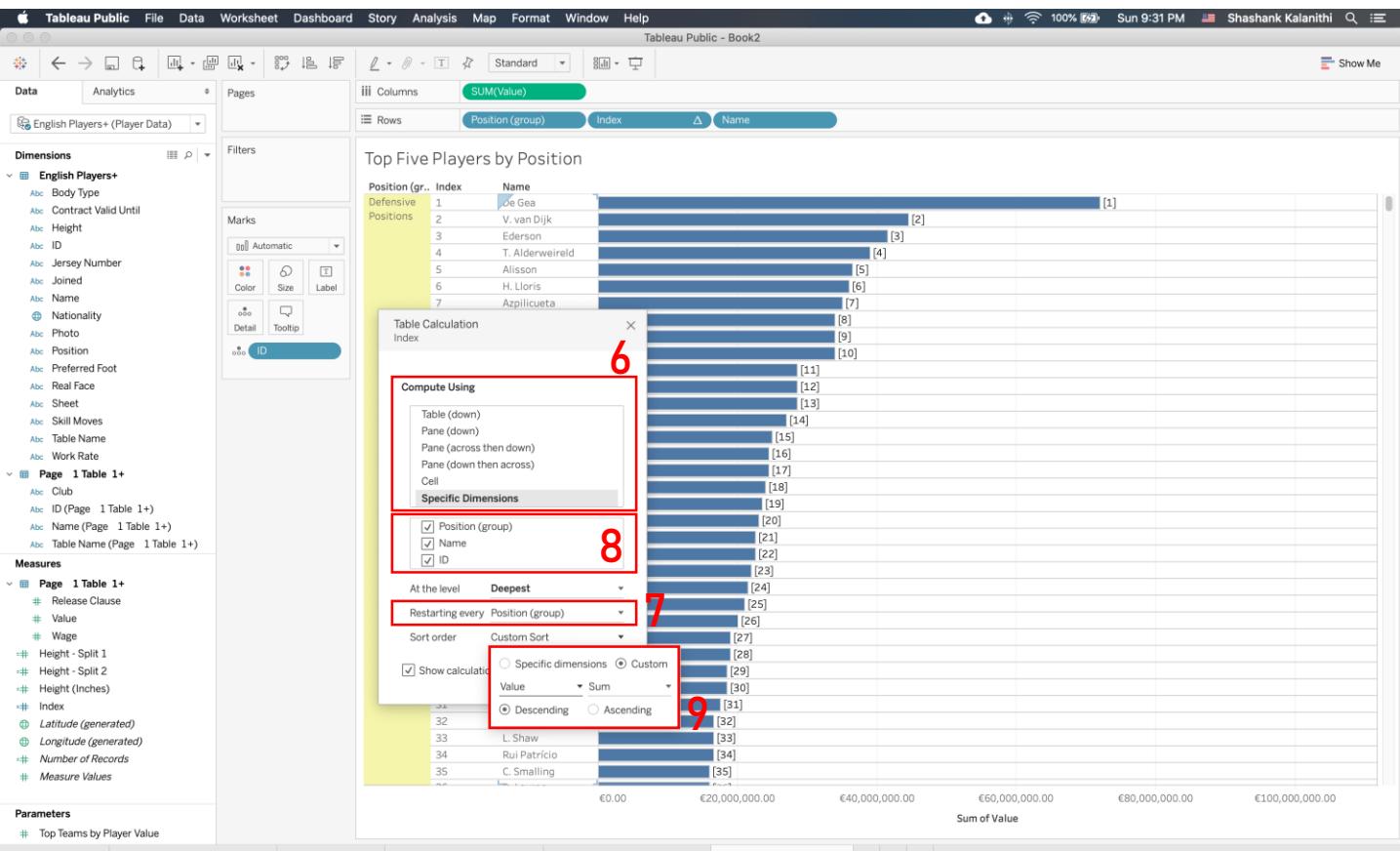
Using Index to Rank Marks

4. Place [Index] in between [Position] and [Name] in your rows shelf



Using Index to Rank Marks

5. Right-click [Index] in the Rows shelf and select “Edit Table Calculation...”
6. Under “Compute Using” click on “Specific Dimensions”
7. Choose “Restarting every” [Position (group)]
8. Make sure all of the columns are selected
9. Under “Sort Order”, select “Custom” and sort in descending order by [Value] and aggregate by SUM



12
34

Using Index to Rank Marks

10. Drag [Index] from the Rows Shelf to the Filters Card
11. Select numbers 1 through 5 and hit “OK”

The screenshot shows a Tableau Public dashboard titled "Top Five Players by Position". The data source is "English Players+ (Player Data)". The visualization is a horizontal bar chart showing the sum of player values.

Dimensions:

- English Players+
- Body Type
- Contract Valid Until
- Height
- ID
- Jersey Number
- Joined
- Name
- Nationality
- Photo
- Position
- Preferred Foot
- Real Face
- Sheet
- Skill Moves
- Table Name
- Work Rate

Measures:

- Page 1 Table 1+
- Release Clause
- Value
- Wage
- Height - Split 1
- Height - Split 2
- Height (Inches)
- Index
- Latitude (generated)
- Longitude (generated)
- Number of Records
- Measure Values

Parameters:

- Top Teams by Player Value

Rows Shelf:

- Position (group)
- Index
- Name

Filters Card (highlighted with a red box):

10

Filter [Index] Dialog (highlighted with a red box):

General

Select from list Custom value list Use all

Enter search text

1 2 3 4 5 6 7 8 9 10 11

All None Exclude

Summary

Field: [Index]
Selection: Selected 5 of 633 values
Wildcard: All
Condition: None
Limit: None

Reset Apply Cancel OK

Chart Data:

Position	Player Name	Sum of Value
Defensive	Héctor Bellerín	~€20,000,000
Defensive	L. Shaw	~€20,000,000
Middle	Rui Patrício	~€20,000,000
Middle	C. Smalling	~€20,000,000

Using Index to Rank Marks

What we just did was sort all of the data in our visualization in descending order by [Position (group)] and then attach an index which counted each position. We then filtered on this index which allowed us to only include the top 5 values per [Position (group)]

The screenshot shows a Tableau Public dashboard titled "Top Five Players by Position". The visualization is a horizontal bar chart where players are sorted by their value. The top five players are highlighted with blue bars. A red arrow points from the text in the previous slide to the "Index" tab in the filter dialog.

Tableau Public - Book2

Filter [Index]

Index
1
2
3
4
5
6
7
8
9
10
11

Summary

- Field: [Index]
- Selection: Selected 5 of 633 values
- Wildcard: All
- Condition: None
- Limit: None

Data

Dimensions:

- English Players+ (Player Data)
- Body Type
- Contract Valid Until
- Height
- ID
- Jersey Number
- Joined
- Name
- Nationality
- Photo
- Position
- Preferred Foot
- Real Face
- Sheet
- Skill Moves
- Table Name
- Work Rate

Measures:

- Page 1 Table 1+
- Release Clause
- Value
- Wage
- Height - Split 1
- Height - Split 2
- Height (Inches)
- Index
- Latitude (generated)
- Longitude (generated)
- Number of Records
- Measure Values

Parameters:

- Top Teams by Player Value

Page: Shashank Kala... | Back | Forward | Home



Dashboard Actions

1. Go to the “Map of Countries by Player Value”, right click the sheet tab and select “Duplicate as Crosstab”

The screenshot shows a Tableau Public dashboard titled "Map of Countries by Player Value". The interface includes a navigation bar at the top with options like File, Data, Worksheet, Dashboard, Story, Analysis, Map, Format, Window, Help, and a "Show Me" button. On the left, there's a sidebar with sections for Dimensions, Measures, and Parameters, listing various player attributes and calculated fields. The main area features a world map where countries are colored according to their player value, with a color scale from light green to dark blue. A context menu is open over the map, with the "Duplicate as Crosstab" option highlighted in blue. Other options in the menu include "New Worksheet", "New Dashboard", "Rename", "Delete", "Paste", "Hide All Sheets", "Unhide All Sheets", "Copy Formatting", and "Paste Formatting".



Dashboard Actions

2. Bring the [Club] and [Name] of the players into the “Rows” shelf in the order shown below

Screenshot of Tableau Public showing a dashboard action for bringing Club and Name into the Rows shelf.

The dashboard displays a map titled "Map of Countries by Player Value (2)" with data from "English Players+ (Player Data)".

The data source contains the following fields:

- Dimensions:** English Players+, Body Type, Contract Valid Until, Height, ID, Jersey Number, Joined, Name, Nationality, Photo, Position, Preferred Foot, Real Face, Sheet, Skill Moves, Table Name, Work Rate.
- Measures:** English Players+, Age, International Reputation, Overall, Potential, Special, Weak Foot, Weak Height.
- Parameters:** Top Teams by Player Value.

The dashboard interface shows the following steps:

- The "Name" dimension is selected and highlighted with a red box.
- The "Club" dimension is selected and highlighted with a red box.
- The "Name" dimension is moved to the "Rows" shelf.
- The "Club" dimension is moved to the "Rows" shelf.

Red arrows point from the "Name" and "Club" dimensions in the dimensions pane to their respective positions in the "Rows" shelf above the map.

Club	Nationality	Name	Value
AFC Wimbledon	Austria	K. Sparta	€120,000.00
England		A. Barcham	€400,000.00
		A. Hartigan	€210,000.00
		A. Oshilaja	€825,000.00
		A. Wordsworth	€425,000.00
		B. Purrington	€425,000.00
		J. Hanson	€350,000.00
		J. Jervis	€650,000.00
		J. McDonnell	€140,000.00
		J. Pigott	€500,000.00
		L. Trotter	€625,000.00
		M. Pinnock	€500,000.00
		O. Uhrogheide	€40,000.00
		P. Kalambayi	€130,000.00
		R. McDonald	€475,000.00
		S. Wagstaff	€550,000.00
		T. Garratt	€100,000.00
		T. King	€325,000.00
		T. Sibbick	€160,000.00
		T. Soares	€260,000.00
		T. Thomas	€375,000.00
		T. Watson	€325,000.00
		T. Wood	€120,000.00
		W. Nightingale	€475,000.00
	Ghana	K. Appiah	€575,000.00
	New Zealand	N. Tzanev	€80,000.00
Arsenal	Argentina	E. Martinez	€3,000,000.00
	Armenia	H. Mkhitaryan	€25,500,000.00
	Bosnia Herzegovina	S. Kolašinac	€13,000,000.00
	Czech Republic	P. Čech	€3,000,000.00
	Egypt	M. El meny	€9,000,000.00
	England	A. Maitland-Niles	€4,500,000.00
		C. Bramall	€425,000.00
		C. Jenkinson	€1,000,000.00
		D. Welbeck	€9,500,000.00
		E. Nketiah	€975,000.00
		E. Smith Rowe	€975,000.00
		J. Osei-Tutu	€240,000.00



Dashboard Actions

3. Create a new Dashboard and set the size to “Automatic”

The screenshot shows the Tableau Public interface for creating a new dashboard. The top menu bar includes File, Data, Worksheet, Dashboard, Story, Analysis, Map, Format, Window, and Help. The title bar says "Tableau Public - Book1". The main area has a "Device Preview" button and a "Size" dropdown menu. The "Size" dropdown is highlighted with a red box and contains the following options: Automatic, Fixed size, Automatic, Range, and three specific dashboard items: "Player Value by Club", "Top Teams by Player Map", and "Top Five Players by Position". Below the preview area is a placeholder text "Drop sheets here". On the left, there's an "Objects" panel with categories like Horizontal, Vertical, Text, Image, and Web Page, each with sub-options like Blank, Navigation, Export, Extension, etc. At the bottom, there are tabs for "Tiled" and "Floating", and a checkbox for "Show dashboard title". The bottom navigation bar includes Data Source, Average Measurements by Positi..., Player Value by Club, Top Teams by Player Map, Map of Countries by Player Value, Map of Countries by Player Valu..., Top Five Players by Position, and Dashboard 1.



Dashboard Actions

4. Recreate the Dashboard below by dragging in the map and the crosstab

Tableau Public - Book1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Dashboard Layout Default Phone Device Preview

Size Automatic

Sheets

- Average Measurements by Posit...
- Player Value by Club
- Top Teams by Player Map
- Map of Countries by Player Value
- Map of Countries by Player Valu...
- Top Five Players by Position

Objects

- Horizontal
- Vertical
- Text
- Image
- Web Page

Tiled Floating

Show dashboard title

Map of Countries by Player Value

Map of Countries by Player Value (2)

Club	Nationality	Name	Sum of Value
AFC	Australia	K. Sparta	€120,000.00
Wimbledon	England	A. Barcham	€400,000.00
		A. Hartigan	€210,000.00
		A. Oshilaja	€825,000.00
		A. Wordsworth	€425,000.00
		B. Purrington	€425,000.00
		J. Hanson	€350,000.00
		J. Jervis	€650,000.00
		J. McDonnell	€140,000.00
		J. Pigott	€500,000.00
		L. Trotter	€25,000.00
		M. Pinnock	€500,000.00
		O. Urhoghide	€40,000.00
		P. Kalambayi	€130,000.00
		R. McDonald	€475,000.00
		S. Wagstaff	€550,000.00
		T. Garratt	€100,000.00
		T. King	€325,000.00
		T. Sibbick	€160,000.00
		T. Soares	€260,000.00
		T. Thomas	€375,000.00
		T. Watson	€325,000.00
		T. Wood	€120,000.00
		W. Nightingale	€475,000.00
		K. Appiah	€575,000.00
		N. Tzanev	€80,000.00
Arsenal	E. Martinez		€3,000,000.00
	H. Mkhitaryan		€25,500,000.00
	Bosnia Herzegovina	S. Kolašinac	€13,000,000.00
	Czech Republic	P. Čech	€3,000,000.00
	Egypt	M. El meny	€9,000,000.00
	England	A. Maitland-Niles	€4,500,000.00
		C. Bramall	€425,000.00
		C. Jenkinson	€1,000,000.00
		D. Welbeck	€9,500,000.00
		E. Nketiah	€975,000.00
		E. Smith Rowe	€975,000.00
		J. Osei-Tutu	€240,000.00
		J. Willock	€525,000.00
		R. Holding	€9,500,000.00
		Z. Medley	€375,000.00

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Data Source Average Measurements by Posit... Player Value by Club Top Teams by Player Map Map of Countries by Player Value Map of Countries by Player Valu... Top Five Players by Position Dashboard 1



Dashboard Actions

5. Click “Actions” option under the “Dashboard” menu item

The screenshot shows a Tableau Public dashboard interface. The top navigation bar includes options like File, Data, Worksheet, Dashboard, Story, Analysis, Map, Format, Window, and Help. The 'Dashboard' menu is open, showing sub-options: New Dashboard, Device Layouts, Show Grid, Grid Options..., Format, Clear, Show Title, Actions..., Auto Update, and Run Update. The 'Actions...' option is highlighted with a blue selection bar. Below the menu, there's a world map titled 'Map of Countries by Player Value (2)' with a color scale for 'Sum of Value' ranging from €70,000.00 to 2B. To the right of the map is a detailed table of player values for clubs like Wimbledon and Arsenal. The bottom left contains a sidebar with sections for Sheets, Objects, and Data Sources.

Club	Nationality	Name	Sum of Value
Wimbledon	Australia	K. Sparta	€120,000.00
	England	A. Barcham	€400,000.00
		A. Hartigan	€210,000.00
		A. Oshilaja	€825,000.00
		A. Wordsworth	€425,000.00
		B. Purrington	€425,000.00
		J. Hanson	€350,000.00
		J. Jervis	€650,000.00
		J. McDonnell	€140,000.00
		J. Pigott	€500,000.00
Arsenal	L. Trotter	€225,000.00	
	M. Pinnock	€500,000.00	
	O. Urhoghide	€40,000.00	
	P. Kalambayi	€130,000.00	
	R. McDonald	€475,000.00	
	S. Wagstaff	€550,000.00	
	T. Garratt	€100,000.00	
	T. King	€325,000.00	
	T. Sibbick	€160,000.00	
	T. Soares	€260,000.00	
Other Clubs	T. Thomas	€375,000.00	
	T. Watson	€325,000.00	
	T. Wood	€120,000.00	
	W. Nightingale	€475,000.00	
	K. Appiah	€575,000.00	
	N. Tzanev	€80,000.00	
	E. Martinez	€3,000,000.00	
	H. Mkhitaryan	€25,500,000.00	
	S. Kolašinac	€13,000,000.00	
	P. Čech	€3,000,000.00	
M. El meny	€9,000,000.00		
Individuals	A. Maitland-Niles	€4,500,000.00	
	C. Bramall	€425,000.00	
	C. Jenkinson	€1,000,000.00	
	D. Welbeck	€9,500,000.00	
	E. Nketiah	€975,000.00	
	E. Smith Rowe	€975,000.00	
	J. Osei-Tutu	€240,000.00	
	J. Willock	€525,000.00	
	R. Holding	€9,500,000.00	
	Z. Medley	€375,000.00	



Dashboard Actions

6. Under “Add Actions” select “Filter”

Tableau Public - Book1

File Data Worksheet Dashboard Story Analysis Map Format Window Help Sat 8:32 PM Shashank Kalanithi Show Me

Dashboard Layout Default Phone Device Preview

Size Automatic

Sheets

- Average Measurements by Posi...
- Player Value by Club
- Top Teams by Player Map
- Map of Countries by Player Value
- Map of Countries by Player Valu...
- Top Five Players by Position

Objects

- Horizontal
- Vertical
- Text
- Image
- Web Page

Tiled Floating

Show dashboard title

Map of Countries by Player Value

Actions

Actions let you create interactive relationships between data, dashboard objects, other workbook sheets, and the web.

Name	Run On	Source	Fields

Add Action > Filter... Edit... Remove

Show actions for

- Filter...
- Highlight...
- Go to URL...
- Go to Sheet...
- Change Parameter...
- Change Set Values...

Cancel OK

Map of Countries by Player Value (2)

Club	Nationality	Name	Sum of Value
Wimbledon	Australia	K. Sparta	€120,000.00
	England	A. Barcham	€400,000.00
		A. Hartigan	€210,000.00
		A. Oshilaga	€825,000.00
		A. Wordsworth	€425,000.00
		B. Purrington	€425,000.00
		J. Hanson	€350,000.00
		J. Jervis	€650,000.00
		J. McDonnell	€140,000.00
		J. Pigott	€500,000.00
		L. Trotter	€225,000.00
		M. Pinnock	€500,000.00
		O. Urhoghide	€40,000.00
		P. Kalambayi	€130,000.00
		R. McDonald	€475,000.00
		S. Wagstaff	€550,000.00
		T. Garratt	€100,000.00
		T. King	€325,000.00
		T. Sibbick	€160,000.00
		T. Soares	€260,000.00
		T. Thomas	€375,000.00
		T. Watson	€325,000.00
		T. Wood	€120,000.00
		W. Nightingale	€475,000.00
		K. Applah	€575,000.00
		N. Tzanev	€80,000.00
		E. Martinez	€3,000,000.00
		H. Mkhitaryan	€25,500,000.00
		S. Kolašinac	€13,000,000.00
		P. Čech	€3,000,000.00
		M. El meny	€9,000,000.00
		A. Maitland-Niles	€4,500,000.00
		C. Bramall	€425,000.00
		C. Jenkinson	€1,000,000.00
		D. Welbeck	€9,500,000.00
		E. Nketiah	€975,000.00
		E. Smith Rowe	€975,000.00
		J. Osei-Tutu	€240,000.00
		J. Willock	€525,000.00
		R. Holding	€9,500,000.00
		Z. Medley	€375,000.00

© 2020 Mapbox © OpenStreetMap 4 unknown

Data Source Average Measurements by Posi... Player Value by Club Top Teams by Player Map Map of Countries by Player Value Map of Countries by Player Valu... Top Five Players by Position Dashboard 1

82 marks 1 row by 1 column SUM(Value): €7,402,765,000.00



Dashboard Actions

7. Under the “Source Sheets” select the “Map of Countries by Player Value”
8. Under the “Target Sheets” select the “Map of Countries by Player Value (2)”
9. Make sure the action runs on “Select”
10. Under “Target Filters” select “Selected Fields” and use the [Nationality] as the column to filter on

The screenshot shows the Tableau Public interface with a dashboard containing a world map. A context menu is open over the map, displaying the "Add Filter Action" dialog. The dialog is divided into several sections:

- Name:** Filter1
- Source Sheets:** A list containing "Map of Countries by Player Value" (with a checked checkbox) and "Map of Countries by Player Value (2)" (unchecked checkbox). The "Map of Countries by Player Value" item is highlighted with a red box and labeled "7".
- Run action on:** A dropdown menu with options "Hover", "Select" (which is checked and highlighted with a red box), and "Menu". The "Select" option is labeled "9".
- Target Sheets:** A list containing "Map of Countries by Player Value" and "Map of Countries by Player Value (2)". The "Map of Countries by Player Value (2)" item is checked and highlighted with a red box, labeled "8".
- Target Filters:** A section with a radio button for "Selected Fields" (which is selected and highlighted with a red box) and "All Fields". Below it is a table with columns "Source Field" and "Target Field", which is empty. This section is labeled "10".

On the right side of the interface, there is a data grid titled "Map of Countries by Player Value (2)" showing player data. A second "Add Filter" dialog is open over the data grid, also titled "Add Filter". It has sections for "Source" (Data Source: English Players+ (Player Data), Field: Nationality) and "Target" (Data Source: English Players+ (Player Data), Field: Nationality). Both sections are highlighted with a red box and labeled "10".

At the bottom of the interface, there are various toolbars and a status bar indicating "Sat 8:36 PM" and "Shashank Kalanithi".



Dashboard Actions

You'll notice that as we click around to different countries on the map the values in the table change

Tableau Public - Book1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Dashboard Layout Default Phone Device Preview

Size Automatic

Sheets

- Average Measurements by Position
- Player Value by Club
- Top Teams by Player Map
- Map of Countries by Player Value
- Map of Countries by Player Value (2)
- Top Five Players by Position

Objects

- Horizontal
- Vertical
- Text
- Image
- Web Page

Tiled Floating

Show dashboard title

Map of Countries by Player Value

Map of Countries by Player Value (2)

Club	Nationality	Name	Sum of Value
Real Madrid	United States	G. Zelalem	€875,000.00
Derby County	United States	D. Holmes	€1,200,000.00
Fulham	United States	L. de la Torre	€800,000.00
Huddersfield Town	United States	T. Ream	€3,000,000.00
Hull City	United States	D. Williams	€2,300,000.00
Newcastle United	United States	E. Lichaj	€800,000.00
Queens Park Rangers	United States	D. Yedlin	€8,500,000.00
Sunderland	United States	G. Cameron	€2,300,000.00
Swansea City	United States	L. Gooch	€1,500,000.00
Wigan Athletic	United States	C. Carter-Vickers	€2,100,000.00
		A. Robinson	€1,600,000.00

Keep Only Exclude

Nationality: United States
Sum of Value: €24,975,000.00

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Data Source Average Measurements by Position Player Value by Club Top Teams by Player Map Map of Countries by Player Value Map of Countries by Player Value (2) Top Five Players by Position Dashboard 1



Dashboard Actions

In Tableau, Dashboards are a collection of sheets that when viewed together give the user a fuller picture of the data being viewed. As such, it makes sense that actions taken on one sheet in a dashboard would affect other parts of the dashboard. This is where dashboard actions come in handy.

Dashboard actions allow us to define how an action such as selecting or highlighting a mark will affect the visualization such as through filtering.



Dashboard Actions

You'll notice that as we click around to different countries on the map the values in the table change

Tableau Public - Book1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Dashboard Layout Default Phone Device Preview

Size Automatic

Sheets

- Average Measurements by Position
- Player Value by Club
- Top Teams by Player Map
- Map of Countries by Player Value
- Map of Countries by Player Value (2)
- Top Five Players by Position

Objects

- Horizontal
- Vertical
- Text
- Image
- Web Page

Tiled Floating

Show dashboard title

Map of Countries by Player Value

Map of Countries by Player Value (2)

Club	Nationality	Name	Sum of Value
Arsenal	United States	G. Zelalem	€875,000.00
Derby County	United States	D. Holmes	€1,200,000.00
Fulham	United States	L. de la Torre	€800,000.00
		T. Ream	€3,000,000.00
Huddersfield Town	United States	D. Williams	€2,300,000.00
Hull City	United States	E. Lichaj	€800,000.00
Newcastle United	United States	D. Yedlin	€8,500,000.00
Queens Park Rangers	United States	G. Cameron	€2,300,000.00
Sunderland	United States	L. Gooch	€1,500,000.00
Swansea City	United States	C. Carter-Vickers	€2,100,000.00
Wigan Athletic	United States	A. Robinson	€1,600,000.00

Keep Only Exclude Nationality: United States Sum of Value: €24,975,000.00

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Data Source Average Measurements by Position Player Value by Club Top Teams by Player Map Map of Countries by Player Value Map of Countries by Player Value (2) Top Five Players by Position Dashboard 1



Differentiating Colors

You might notice that the colors on this map are not well differentiated, let's see if we can change that

1. Click on the drop-down for the color legend and select “Edit Colors...”

Tableau Public - Book1

Map of Countries by Player Value

Map of Countries by Player Value (2)

Club	Nationality	Name	Sum of Value
AFC	Australia	K. Sparta	€120,000
Wimbledon	England	A. Barcham	€400,000
		A. Hartigan	€210,000
		A. Oshilaja	€825,000
		A. Wordsworth	€425,000
		B. Purrington	€425,000
		J. Hanson	€350,000
		J. Jervis	€650,000
		J. McDonnell	€140,000
		J. Pigott	€500,000
		L. Trotter	€25,000
		M. Pinnock	€500,000
		O. Urhoghide	€40,000
		P. Kalambayi	€130,000
		R. McDonald	€475,000
		S. Wagstaff	€550,000
		T. Garratt	€100,000
		T. King	€325,000
		T. Sibbick	€160,000
		T. Soares	€260,000
		T. Thomas	€375,000
		T. Watson	€325,000
		T. Wood	€120,000
		W. Nightingale	€475,000
		Ghana	€575,000
		K. Appiah	€80,000
		New Zealand	€80,000
		N. Tzanev	€80,000
Arsenal		E. Martinez	€3,000,000
		Armenia	€25,500,000
		Bosnia Herzegovina	€13,000,000
		Czech Republic	€3,000,000
		Egypt	€9,000,000
		England	€4,500,000
		A. Maitland-Niles	€425,000
		C. Bramall	€1,000,000
		C. Jenkinson	€9,500,000
		D. Welbeck	€25,000,000
		E. Nketiah	€975,000
		E. Smith Rowe	€975,000
		J. Osei-Tutu	€240,000
		J. Willock	€525,000
		R. Holding	€9,500,000
		Z. Medley	€375,000

Legend: Sum of Value (€) 0 to 2B

Dashboard Layout Default Phone Device Preview Size Automatic Sheets Average Measurements by Position Player Value by Club Top Teams by Player Map Map of Countries by Player Value Map of Countries by Player Value... Top Five Players by Position

Objects Horizontal Blank Navigation Vertical Export Extension Text Image Web Page Tiled Floating Show dashboard title

Data Source Average Measurements by Position Player Value by Club Top Teams by Player Map Map of Countries by Player Value Map of Countries by Player Value... Top Five Players by Position Dashboard 1



Differentiating Colors

The problem here is that the range of SUM[Value] is too great here. We'll address that in a moment, for now let's change the following settings to see if any change takes place

2. Click on the "Advanced" option
3. Set the Start and End values to be 10,000,000 and 500,000,000 respectively. The Center value will automatically reset
4. Select the "Stepped Color" option and click "Apply"

You might notice that there isn't a large difference in the graph. We can more clearly see the nations that have a lot of high payed players (Brazil, France, Spain), but most of the map is still highlighted ineffectively.

Map of Countries by Player Value

Map of Countries by Player Value (2)

Club	Nationality	Name	Sum of Value
AFC	Australia	K. Sparta	€120,000,000
Wimbledon	England	A. Barcham	€400,000,000
		A. Hartigan	€210,000,000
		A. Oshilaga	€825,000,000
		A. Wordsworth	€425,000,000
		B. Purrington	€425,000,000
		J. Hanson	€350,000,000
		J. Jarvis	€650,000,000
		C. Jenkinson	€1,100,000,000
		D. Welbeck	€9,500,000,000
		E. Nketiah	€975,000,000
		E. Smith Rowe	€975,000,000
		J. Osei-Tutu	€240,000,000
		J. Willock	€525,000,000
		R. Holding	€9,500,000,000
		Z. Medley	€375,000,000

Palettes:

- Automatic
- Stepped Color

Start: 10,000,000 End: 500,000,000

Advanced

Reset Apply Cancel OK



Creating a Set

5. Go back to “Map of Countries by Player Value”
6. Right-click [Nationality], and select “Create”>”Set...”

Tableau Public - Book1

Map of Countries by Player Value

Dimensions

- English Players+
- Body Type
- Contract Valid Until
- Height
- ID
- Jersey Number
- Joined
- Name
- Nationality
- Photo
- Position
- Preferred Foot
- Real Face
- Sheet
- Skill Moves
- Table Name
- Work Rate

Measures

- English Players+
- Age
- International R
- Overall
- Potential
- Special
- weak foot
- Weight

Parameters

- Top Teams by Player Value

5

6



Creating a Set

7. Name the Set “Top 10 Countries by Salary Value” then the “Top” tab
8. Select the “By field” option. “Top” “10” [Value] “Sum” and hit “OK”

The screenshot shows the Tableau Public interface with a map of countries colored by player value. A 'Create Set' dialog box is open in the foreground. The 'Name' field contains 'Top 10 Countries by Salary Value'. The 'By field:' section is selected, showing 'Top 10 by Value Sum'. Red numbers 7 and 8 are overlaid on the dialog box to indicate the steps in the list above.

Tableau Public - Book1

Map of Countries by Player Value

Create Set

Name: Top 10 Countries by Salary Value

General Condition Top

None

By field:

Top 10 by Value Sum

By formula:

Top 10 by Value Sum

Reset Cancel OK

SUM(Value)

10M 500K

Dimensions

English Players+

- Body Type
- Contract Valid Until
- Height
- ID
- Jersey Number
- Joined
- Name
- Nationality
- Photo
- Position
- Preferred Foot
- Real Face
- Sheet
- Skill Moves
- Table Name
- Work Rate

Measures

English Players+

- Age
- International Reputation
- Overall
- Potential
- Special
- Weak Foot
- Weight

Page 1 Table 1+

- Club
- ID (Page 1 Table 1+)
- Name (Page 1 Table 1+)

Parameters

- Top Teams by Player Value

Data Source: Average Measurements by Position... Player Value by Club Top Teams by Player Map Map of Countries by Player Value Map of Countries by Player Value... Top Five Players by Position Dashboard 1



Creating a Set

9. Drag your newly created Set to the filter card
10. Go back to the “Edit Colors” menu

The screenshot shows a Tableau Public dashboard titled "Map of Countries by Player Value". The dashboard features a world map where countries are colored based on player values. A legend on the right side shows color-coded categories: light gray for the lowest values, teal for medium values, and dark blue for the highest values. The map includes labels for major countries and some smaller ones like Venezuela, Colombia, Peru, Argentina, Brazil, Chile, Uruguay, Mexico, Canada, United States, France, Spain, Italy, Germany, Poland, Russia, Turkey, Saudi Arabia, Egypt, Sudan, and South Africa.

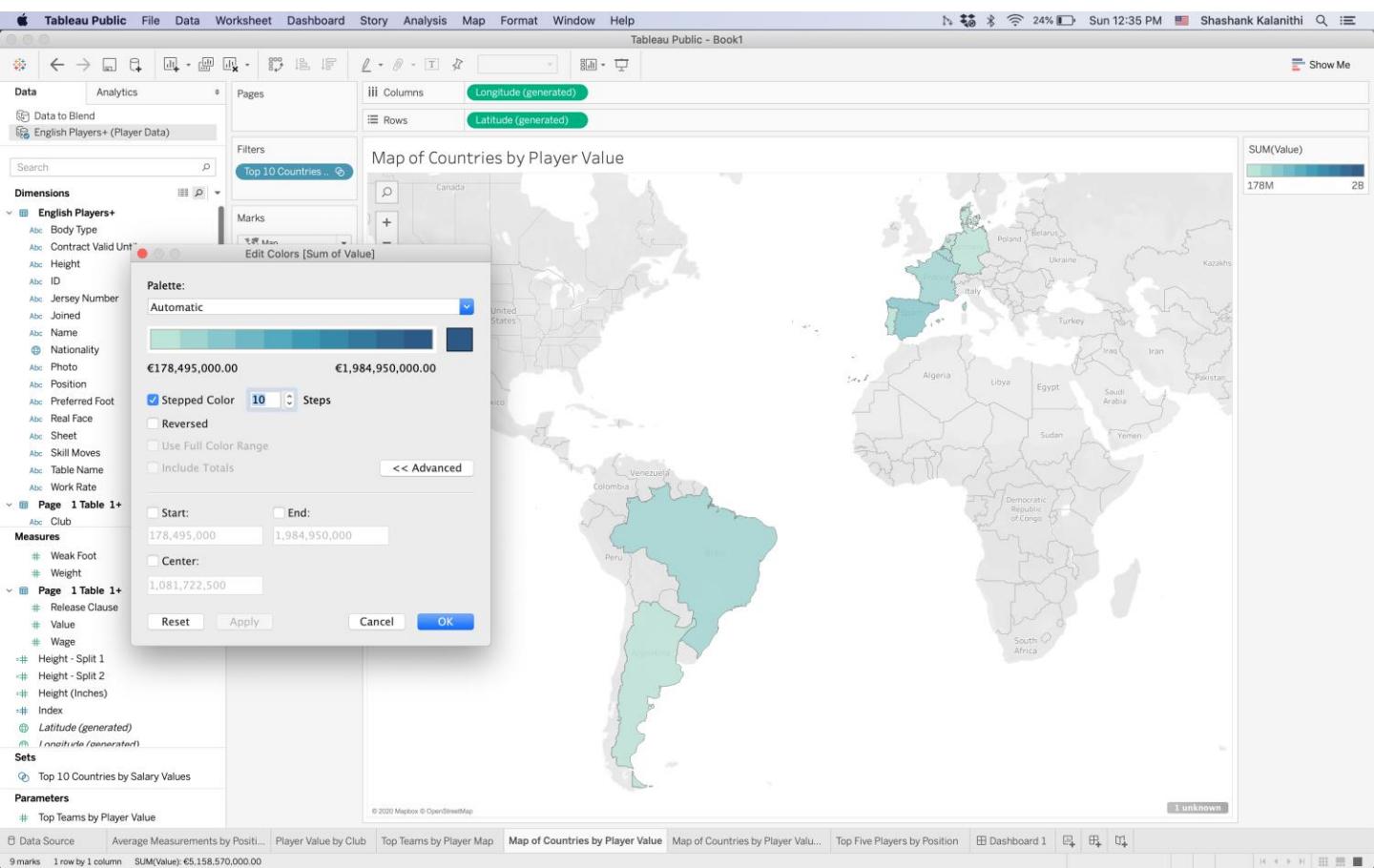
The interface includes a top navigation bar with links like Tableau Public, File, Data, Worksheet, Dashboard, Story, Analysis, Map, Format, Window, Help, and a user name Shashank Kalanithi. Below the navigation is a toolbar with various icons. The left sidebar contains a Data section with a "Data to Blend" option and a "English Players+ (Player Data)" connection. It also lists Dimensions (e.g., English Players+, Body Type, Contract Valid Until, Height, ID, Jersey Number, Joined, Name, Nationality, Photo, Position, Preferred Foot, Real Face, Sheet, Skill Moves, Table Name, Work Rate) and Measures (e.g., Age, International Reputation, Overall, Potential, Special, Weak Foot, Weight). A "Sets" section at the bottom contains a "Top 10 Countries by Salary Values" item, which is highlighted with a red box and has a red arrow pointing to it from step 9. The bottom of the screen shows a footer with links like Data Source, Average Measurements by Position, Player Value by Club, Top Teams by Player Map, Map of Countries by Player Value, Map of Countries by Player Value, Top Five Players by Position, Dashboard 1, and other navigation icons.

A context menu is open on the right side of the map, indicated by a red box and the number 10. The menu options are: SUM(Value), Edit Colors..., Format Legends..., Show Title (with a checked checkmark), Edit Title..., and Hide Card. The "Edit Colors..." option is highlighted with a blue selection bar.



Creating a Set

9. Drag your newly created Set to the filter card





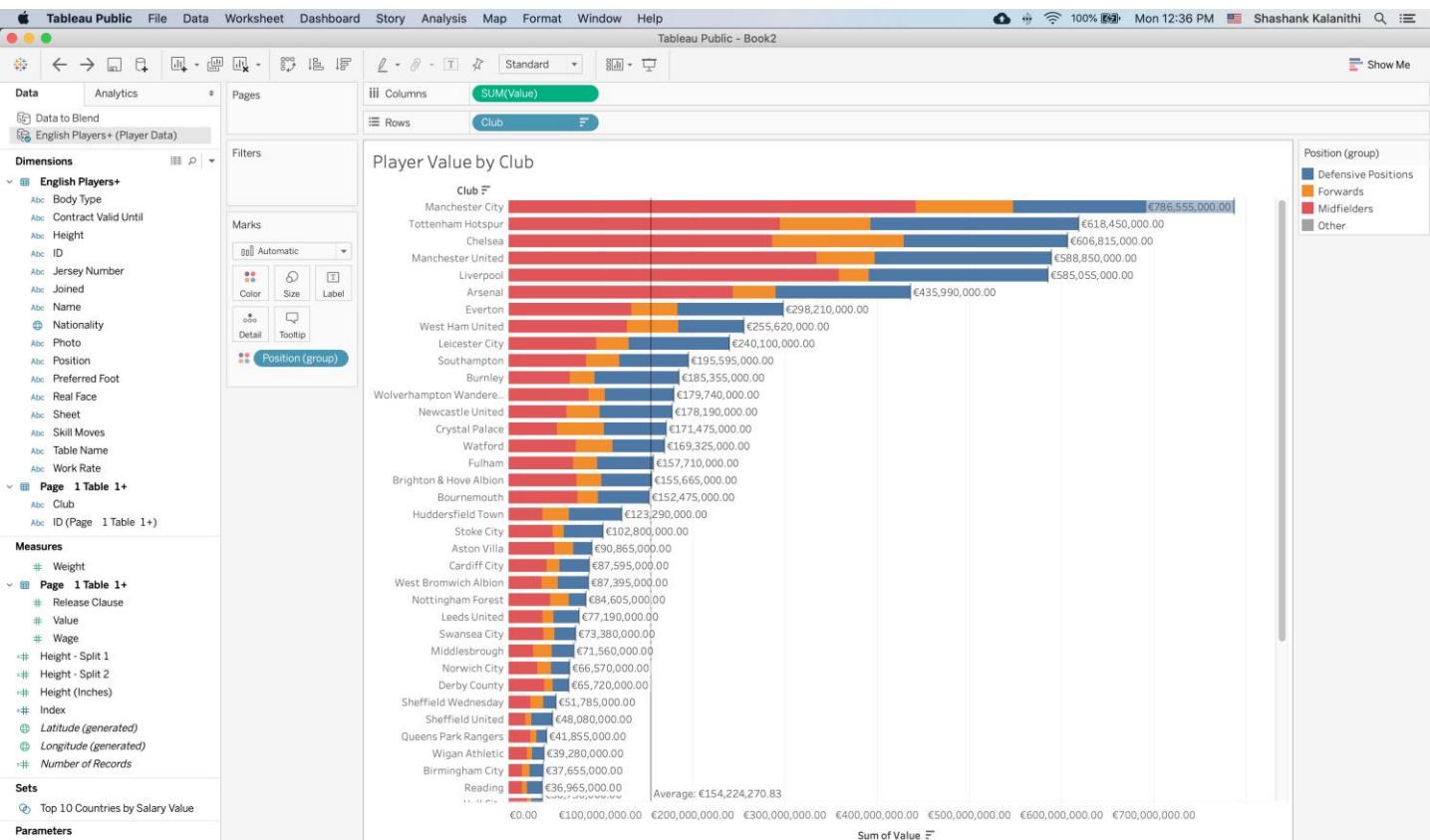
Sets

In Tableau there are generally multiple ways to accomplish a desired result. A set provides a very easy way to add a custom field that defines a subset of data as either “In” or “Out” of the set. In this case we use it to limit our map to only countries with large combined player salaries. As you might have figured, we could have also accomplished this result using an Index, a set is just another way to do so.



Section 3: Done

Congratulations! This is the end of Section 3. You now have several visualizations you can use to analyze player salaries. The point of this section was not so much to answer a question as it was to show you how you could do the same thing multiple ways in Tableau.





Section 3: Done

In Section 3 you learned how to:

- Connect to PDF data
- Union Data
- Join Data
- Blend Data
- Alias Data
- Split Columns
- Define Data Types
- Aggregate data
 - SUM
 - AVG
 - COUNT and COUNTD
- Edit Axes
- Make Scatterplots
- Group Data
- Use the Marks Card
- Add Labels to the end of a Bar Graph
- Create Parameters and Parameter Actions
- Correct Locations
- Create Dashboard Actions
- Create Sets



End of Course

Section 1

- What is Tableau
- The Importance of Data Visualization
- What Makes Tableau so Great
- Ease of Visual Exploration and VizQL
- Hyper Database System
- How to Install Tableau
- Connecting to Static Data
- Anatomy of the Tableau Data Page
- Anatomy of the Tableau Workspace
- Cleaning Data
- Dimensions vs. Measures
- Tables
- Bar Charts
- Geospatial Data
- Basic Troubleshooting
- Resizing Dashboards
- Saving our Work
- Sheets, Dashboards, Stories
- Seven Data Stories

Section 2:

- Calculated Fields
 - Date Calculations
 - If-Then statements
- Filtering Data
- Line Graphs
 - Continuous vs. Discrete Dates

Section 3:

- Connect to PDF data
- Union Data
- Join Data
- Blend Data
- Alias Data
- Split Columns
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Resources

- kb.tableau.com
 - Tableau's online documentation. Information on all the features and examples are available here. Most questions about Tableau can be answered here or on Tableau's forums
- Storytelling With Data
 - A great book to get you started with learning how to present data. It is platform agnostic but everything here can be easily applied to Tableau
- Makeover Monday
 - This is a global movement where every Monday a new dataset along with visualization is released and participants are asked to redesign the visualization usually using Tableau
- The Big Book of Dashboards
 - Probably the best resource I know to help build Tableau dashboards specifically. Has lots of tips on specific improvements you can make to your dashboards.



Data Checklist

Over time you'll find that a large proportion of your time will be dedicated to gathering and cleaning data. Developing a process to do this effectively and efficiently will save you a lot of time in the future. This is a checklist of things to look out for when forming your data sources.

This list is by no means comprehensive but hopefully will help save you some time and improve the quality of your deliverables

- What is the question I'm trying to answer
- Is all my data in the right format
- Do I have too much data
- Is there any information I can Join or Blend to improve my analysis
- Do I need to split any columns
- Are all my fields logically named
- Should I Alias any fields
- What filters can I apply at the get go
- What calculated fields do I need and do I have all the information to make them
- Is my data aggregated at a level that allows me to provide useful insights