

# Creating Data Visualisations with Tableau

**Bruin Sports Analytics**

# What is Tableau?

- Tableau is a data visualization software that allows you to easily create plots that are interactive, flexible and tell stories with the data you have
- Tableau also has built in analytic tools which makes it very easy to make plots and perform basic feature engineering (e.g. finding the mean of a group of variables)
- In Tableau you can create simple one-off plots, or integrate multiple plots into one visualization through either the story or dashboard visualizations
- This tutorial will focus on the basic one-off plots you can create with Tableau so you can explore and present your findings quickly and easily

# Installing Tableau

- Two Options:
    - a. Tableau Public - this is free but everything you save will be published publicly
    - b. Tableau Desktop - this is usually paid but UCLA provides a product key for students to use it for free
1. [Download Tableau Desktop](#)
    - a. On the form enter your school email under the business email section and the name of your school under the organization section
    - b. Activate with your product key: TC00-5EFD-9500-2EEC-5DFC

# Importing Data into Tableau

Step 1: Choose the appropriate file-type on the sidebar and find that file on your computer



# Importing Data into Tableau

You will then get to a page that shows you a preview of your data source

The screenshot shows the Tableau interface for importing data. At the top, there's a 'Connections' section with an 'Add' button, showing one connection named 'all\_seasons'. Below it is a 'Files' section with a checkbox for 'Use Data Interpreter' and a note about its benefits. A file named 'all\_seasons.csv' is listed. A 'New Union' section is also present. On the right, a preview pane displays the data from 'all\_seasons.csv' with 12 columns: #, Player Name, Team Abbreviation, Age, Player Height, Player Weight, College, Country, Draft Year, and Draft Round. The preview shows 12 rows of player data. At the bottom, there are navigation buttons for 'Data Source' and 'Sheet 1', along with other standard Tableau interface elements.

#	Player Name	Team Abbreviation	Age	Player Height	Player Weight	College	Country	Draft Year	Draft Round
0	Travis Knight	LAL	22.0000	213.3600	106.5941	Connecticut	USA	1996	1
1	Matt Fish	MIA	27.0000	210.8200	106.5941	North Carolina-Wilm...	USA	1992	2
2	Matt Bullard	HOU	30.0000	208.2800	106.5941	Iowa	USA	Undrafted	Undrafted
3	Marty Conlon	BOS	29.0000	210.8200	111.1300	Providence	USA	Undrafted	Undrafted
4	Martin Muursepp	DAL	22.0000	205.7400	106.5941	None	USA	1996	1
5	Martin Lewis	TOR	22.0000	198.1200	102.0582	Seward County Com...	USA	1995	2
6	Mark West	CLE	36.0000	208.2800	111.5836	Old Dominion	USA	1983	2
7	Mark Strickland	MIA	26.0000	208.2800	99.7902	Temple	USA	Undrafted	Undrafted
8	Mark Price	GSW	33.0000	182.8800	81.6466	Georgia Tech	USA	1986	2
9	Mark Jackson	IND	32.0000	190.5000	83.9145	St. John's (NY)	USA	1987	1
10	Mark Hendrickson	PHI	23.0000	205.7400	99.7902	Washington State	USA	1996	2
11	Mark Davis	PHI	24.0000	200.6600	95.2543	Texas Tech	USA	1995	2

# Importing Data into Tableau

Step 3: Look through your variables and convert them to correct data-types by clicking on the icon above their name

The screenshot shows the Tableau Data Source interface for a connection named "all\_seasons". The interface includes sections for Connections, Files, and New Union. A dropdown menu is open over a column header in the data preview area, specifically for the "At" column. The menu options are:

- Number (decimal) Number (whole)
- Date & Time
- Date
- ✓ String
- Boolean
- ✓ Default
- Geographic Role ►

The data preview shows a table with columns such as Round, Draft Number, Gp, Pts, Reb, Ast, Net Rating, Oreb Pct, Dreb Pct, Usg Pct, Ts Pct, and At. The "At" column has a dropdown arrow icon above its header, indicating it is currently being converted.

Round	Draft Number	Gp	Pts	Reb	Ast	Net Rating	Oreb Pct	Dreb Pct	Usg Pct	Ts Pct	At	
29	71	4.8000	4.5000	0.5000	6.200	0.127000	0.182000	0.14200	0.53600			
50	6	0.3000	0.8000	0.0000	-15.100	0.143000	0.267000	0.26500	0.33300			
afted	Undrafted	71	4.5000	1.6000	0.9000	0.900	0.016000	0.115000	0.15100	0.53500		
afted	Undrafted	74	7.8000	4.4000	1.4000	-9.000	0.083000	0.152000	0.16700	0.54200		
25	42	3.7000	1.6000	0.5000	-14.500	0.109000	0.118000	0.23300	0.48200			
50	9	1.6000	0.7000	0.4000	-3.500	0.087000	0.045000	0.13500	0.47000	0.125000	1996-97	
30	70	3.2000	2.7000	0.3000	3.500	0.092000	0.146000	0.13700	0.55500	0.034000	1996-97	
afted	Undrafted	31	2.0000	1.2000	0.0000	-17.100	0.109000	0.152000	0.23200	0.44800	0.013000	1996-97
	25	70	11.3000	2.6000	4.9000	-3.100	0.023000	0.088000	0.19200	0.59700	0.289000	1996-97
	18	82	9.9000	4.8000	11.4000	-2.000	0.035000	0.116000	0.15500	0.52500	0.464000	1996-97
	31	29	2.9000	3.2000	0.1000	-5.100	0.113000	0.201000	0.13300	0.48100	0.014000	1996-97
	48	75	8.5000	4.3000	1.8000	-7.400	0.086000	0.122000	0.17700	0.52500	0.125000	1996-97

# Internal Visualizations vs. External Visualizations

## Internal Visualizations:

- These are used for your own exploration of data; for example to understand the distribution of a variable.
- Often with large amounts of data it can be very hard to understand different trends, patterns and insights by just looking at the table
- Internal visualizations allow you to view this data and find potential interesting observations, trends or outliers that you can dive further into
- Since Internal Visualizations are meant for ‘you’ as the data analyst, less time is spent on the actual presentation side of these visuals

# Internal Visualizations vs. External Visualizations

## External Visualizations:

- These are used as explanatory tools to help explain your findings to your audience.
- With these, it is extremely important that they clearly communicate the point you're trying to make with the accompanying analysis
- These visualizations need to be clearly labelled, titled, cited, etc. since they will be presented to the public

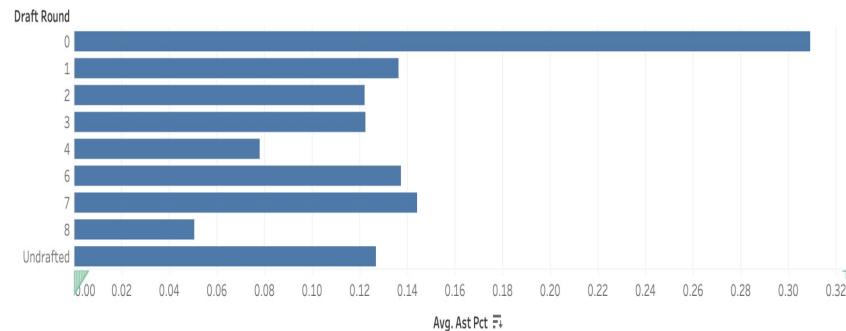
# Creating a Basic Visualization

Click the variables of interest (use Cmd/Ctrl to multi-select) and click show-more to see all the recommended visuals you can make with these variables

The screenshot shows the Tableau Data Source interface. On the left, the 'Tables' pane lists various variables: College, Country, Draft Number, Draft Round, Draft Year, Player Name, Season, Team Abbreviation, and Measure Names. Below these are numerous measures starting with '#': Age, Ast, Ast Pct, Dreb Pct, F1, Gp, Net Rating, Oreb Pct, Player Height, Player Weight, Pts, Reb, Ts Pct, Usg Pct, and all\_seasons.csv (Count). Some variables like 'Ast Pct' and 'Net Rating' are highlighted with green boxes. The 'Show Me' pane on the right displays a grid of recommended visualizations, including bar charts, line graphs, pie charts, and bubble charts, categorized by type like 'Horizontal bars', 'Dimensions', and 'Measures'. The interface includes standard Tableau navigation and search tools.

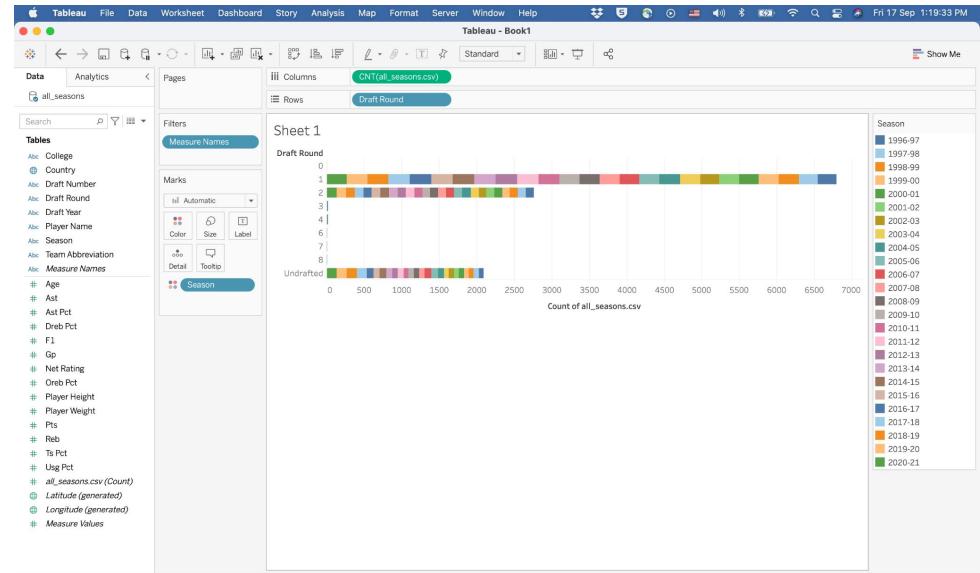
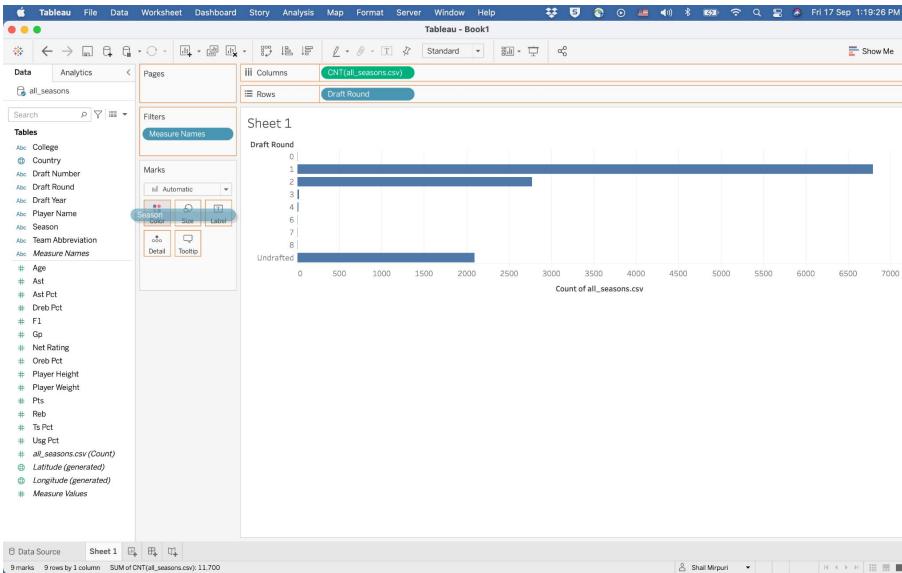
# Creating a Basic Visualization

Click through to see which visualizations best fits what you want (Note: you can change/customize these further but they provide a good starting point)



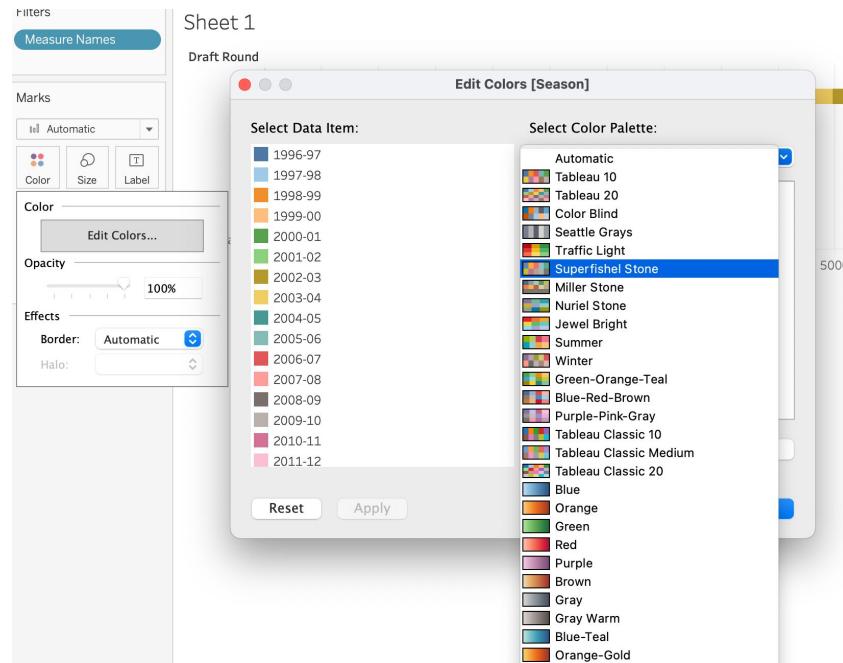
# Mapping Attributes to Colors

To Map an Attribute to a Color You can Drag the Attribute to the Color Panel in Tableau



# Changing Default Colors

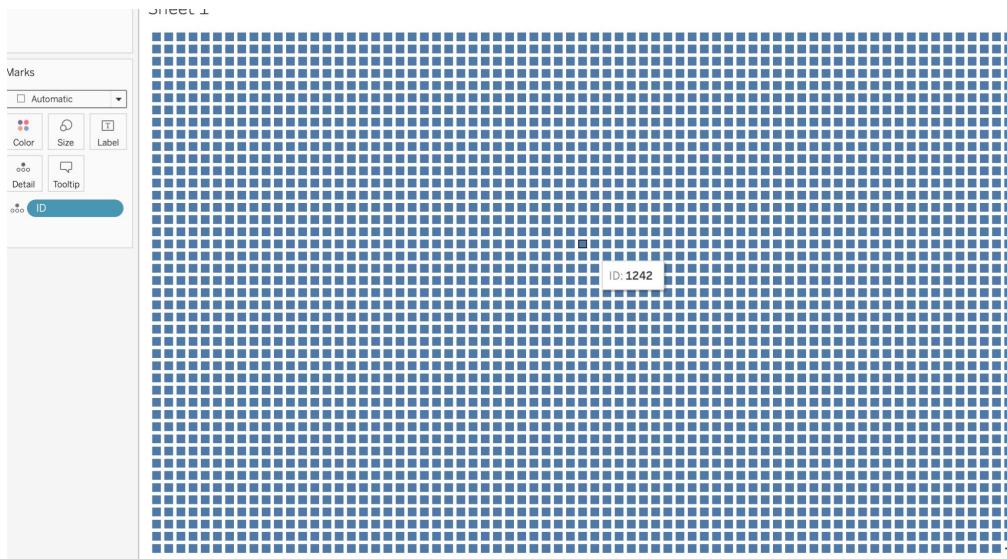
By clicking on the color panel you can change the default color mappings to a custom set of colors. You should try to make your visuals as accessible as possible; one way to do this by using color-blind friendly colors.



# Mapping Attributes to Additional Details

Tableau can also allow us to easily make pictographs by using shapes and details.

We first need to drag and drop an attribute to the 'Detail' tab to get it to appear on the visual



# Changing the Shapes of your Data Points in Tableau

Tableau can also help us change the shape we represent these data points with.

The screenshot shows the Tableau interface with the Shape palette open. On the left, the Marks shelf lists various mark types, with 'Shape' selected. The central part of the screen displays the Shape palette, which includes tabs for Color, Size, Label, Detail, Tooltip, and Shape. The 'Shape' tab is active, showing a grid of icons representing different shapes like circles, squares, diamonds, and arrows. A specific shape icon, labeled 'ID', is highlighted with a blue border. To the right, a 'Select Data Item:' dialog box is open, listing categories such as Filled, Arrows, Bars, Bug Tracking, Custom, Gender, Proportions, Ratings, Thin Arrows, and Weather. The 'KPI' category is currently selected, indicated by a checked checkbox. At the bottom right of the palette are buttons for 'Assign Palette' and 'Reload Shapes'.

# Adding Custom Shapes

We can also use custom shapes by adding our desired icon as a .png to the shapes folder in the ‘My Tableau Repository’ located on your computer. Make sure you click reload shapes in Tableau to get it to appear

The screenshot shows the 'My Tableau Repository' sidebar with several sections: Today, Previous 30 Days, August, 2020, and a list of categories like Logs, Workbooks, Datasources, OAuthConfigs, Bookmarks, Connectors, Extensions, Mapsources, Preferences.tps, Services, and Shapes. The 'Shapes' folder is highlighted with a gray selection bar.

Today

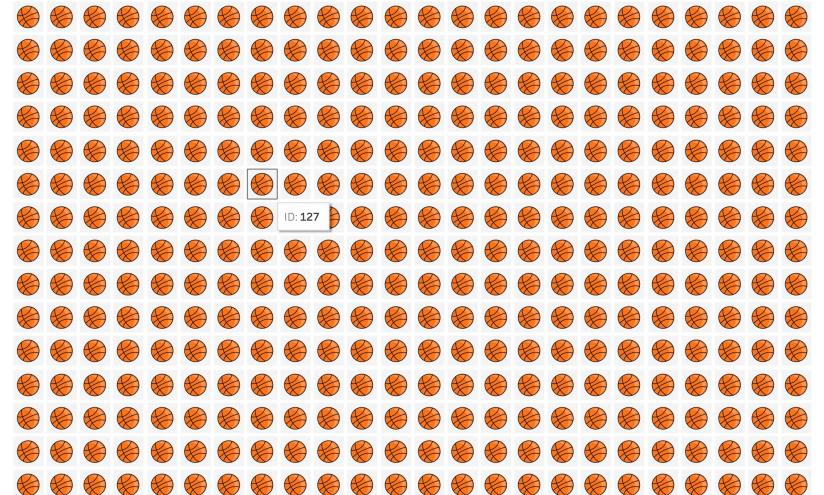
- Logs
- Workbooks
- Previous 30 Days
- Datasources
- August
- OAuthConfigs
- 2020
- Bookmarks
- Connectors
- Extensions
- Mapsources
- Preferences.tps
- Services
- Shapes

Today

- Custom
- August
- 2020

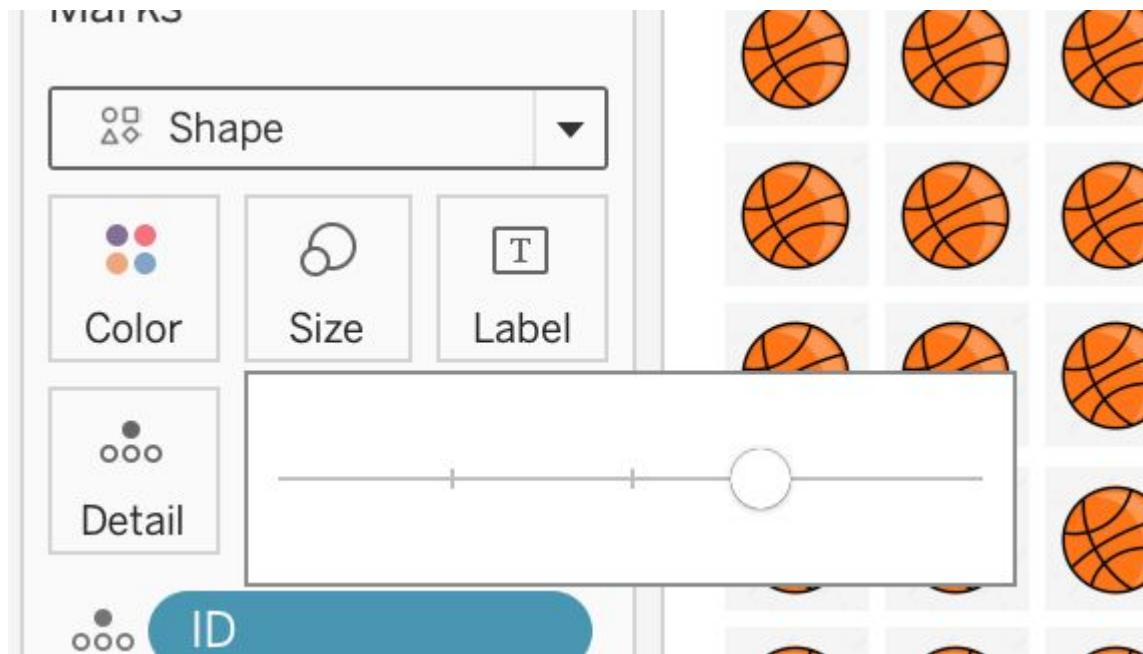
Custom

- pngtree-ba...85730.jpeg
- canoe-221...873930.png
- musc-artist.png
- musc-artsit.png
- FantasyFoo...48887.png
- NINTCHDB...678941.jpg



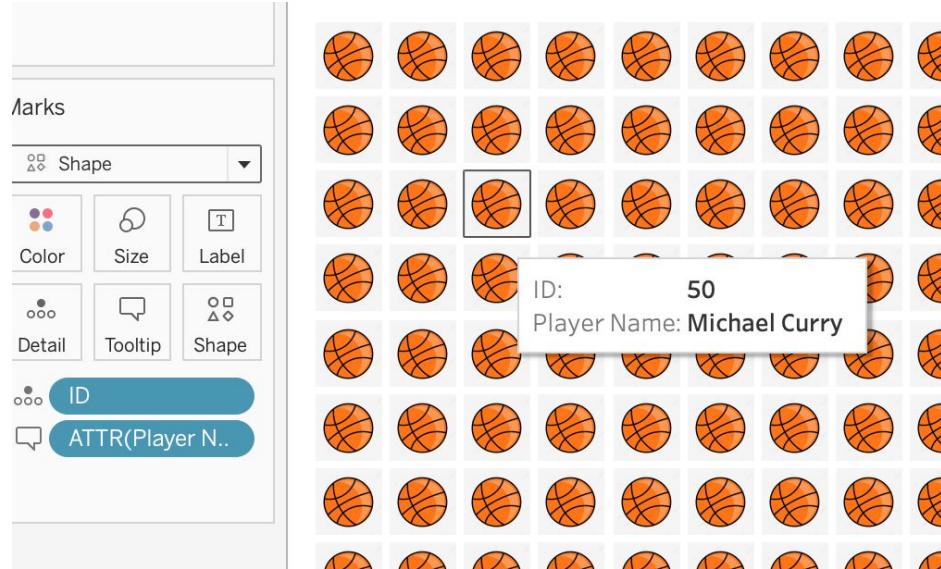
# Changing the Size of the Points/Bars/Lines

- Click on the size bar and change it accordingly



# Adding Tooltip Detail

- Tooltip Details allows the user to hover over the points and find out more information that may not be visually represented.
- Again you can just drag and drop the attributes you want to display under the tooltip menu



# Filtering Data Out Of Your Visualisations

Let's say you only want to visualize data from the latest NBA season.

With filters in Tableau, you can easily do this. Again drag and drop what you want to filter into the filter tab and select which filters you want to apply.

The screenshot shows two instances of the Tableau application side-by-side, illustrating the filtering process.

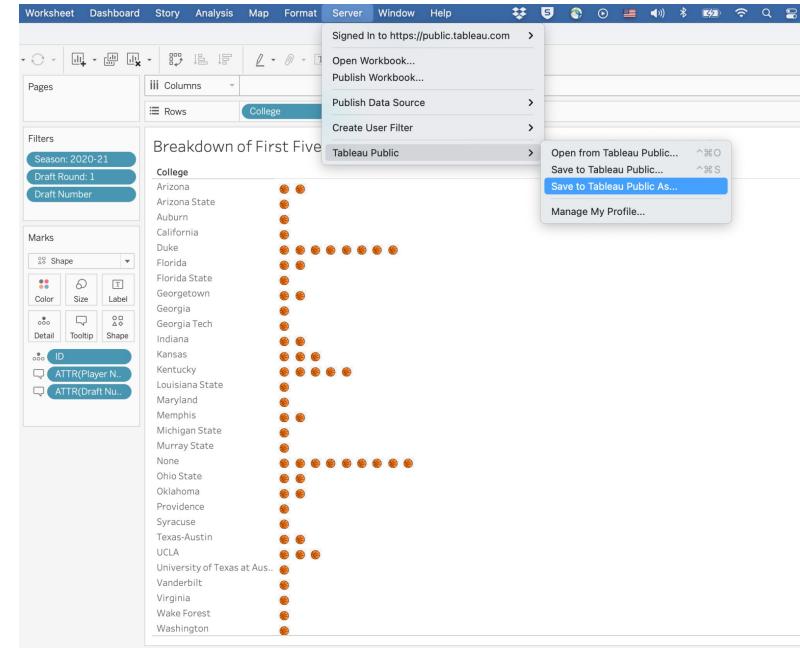
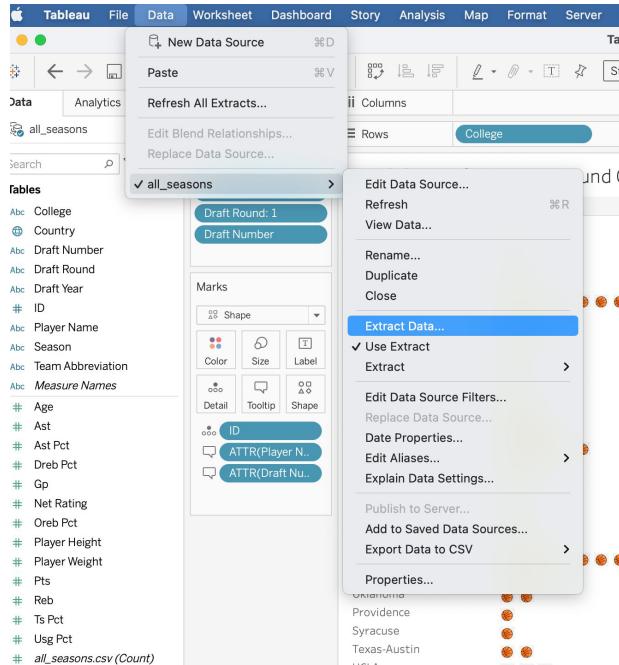
**Left Instance:** Shows the initial state where the "Season" field is selected in the "Filters" pane. The data source, "all\_seasons", is connected and contains 11700 marks across 334 columns.

**Right Instance:** Shows the "Season" filter applied. The "Season" field is now highlighted in the "Filters" pane. A "Filter [Season]" dialog box is open, displaying a list of seasons from 2010-11 to 2020-21. The "2020-21" season is checked under the "Select from list" tab. The summary at the bottom indicates "Selected 1 of 25 values". The data source, "all\_seasons", is connected and contains 11700 marks across 334 columns.

# Exporting Visualizations in Tableau

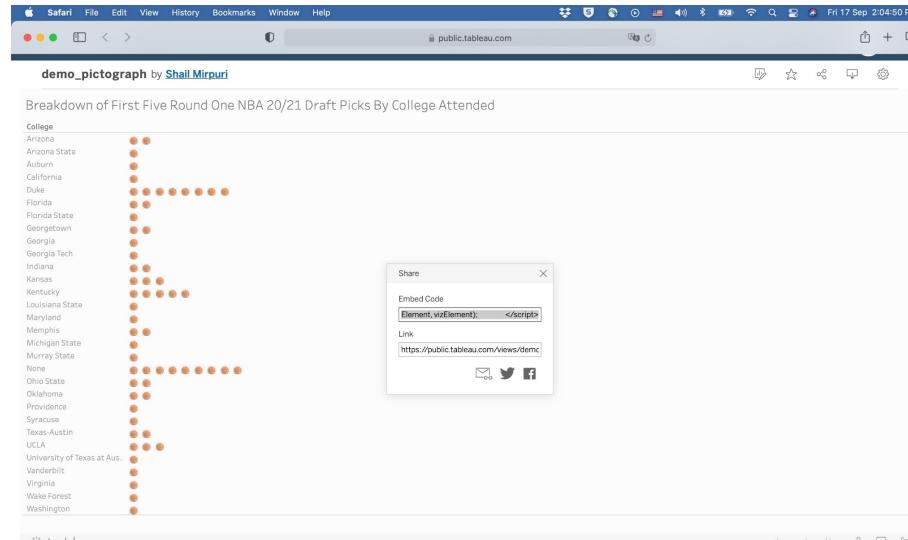
Once you're happy with your visualization, you can export it easily onto Tableau Public and embed that into your article so that it retains its interactivity.

You will need to create a Tableau Public Account for this. (You also may need to extract the data source first before you're able to publish your visualization)



# Getting the Embed Code

Once you've published your visualization, click the share button in the bottom right corner to get the embed code or share link for it.



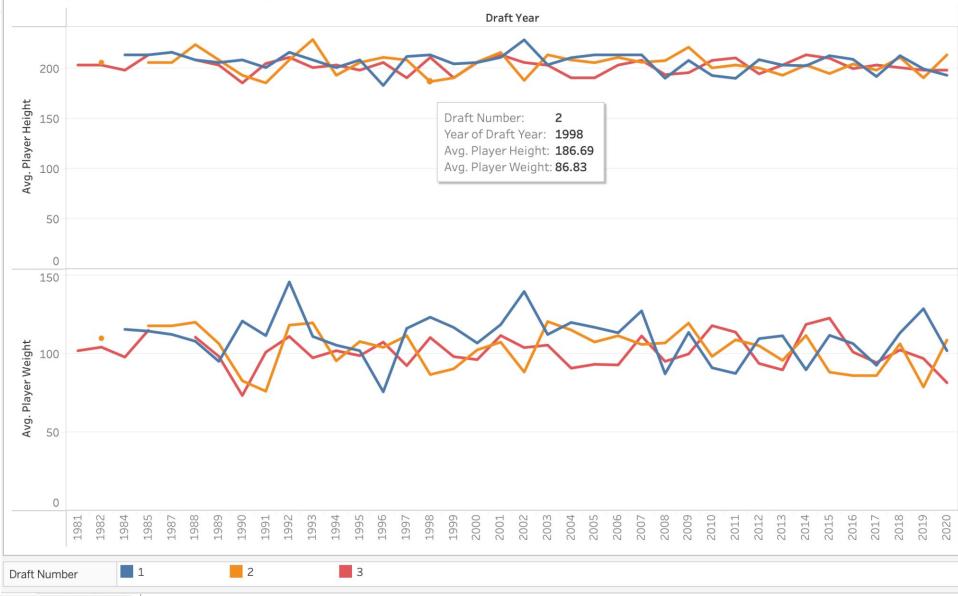
# Live Demonstration on a Dataset

We will now demonstrate live how to use Tableau on a NBA Players Dataset to create the following visualizations:

Breakdown of First Five Round One NBA 20/21 Draft Picks By College Attended



Average Player Height and Weight of the First Three Round One Picks in the NBA Draft Over Time



## Learn More: Other Resources

[freeCodeCamp Tableau Crash Course](#)

[Getting Started with Tableau for Sports](#)

[Tableau Dashboard Design Tips](#)

Courses at UCLA: DH 101 (Introduction to Digital Humanities)

## Activity: Now it's your turn!

You will be working with the same dataset which you can download from this link:

[https://github.com/shailm09/BSA-workshops/blob/main/Fall%202021/Workshop-2/all\\_seasons.csv](https://github.com/shailm09/BSA-workshops/blob/main/Fall%202021/Workshop-2/all_seasons.csv)

Create any sorts of data visualizations you'd like to find some interesting insights!