

INTRO TO STATSBOMB #SPORTSVIZSUNDAY

This post covers an introduction to python to get hold of soccer data through the Statsbomb Python package that offers free public data! We will look to create a multitude of datasets from competition level, to the matches within that competition, as well as getting to the more granular event level data and even shot freeze frames! The hope is to get more people into coding through starting material.

ACCESSING STATSBOMB DATA

This chart is created using the Statsbomby package and exporting the match results for the Womens Super League 2020/21. The full tutorial on accessing statsbombs open data can be found on cj-mayes.com

Winning Team
home
draw
away

Home Team	Away Team											
	ARS	ASV	BIR	BHA	BRI	CHE	EVE	MCI	MNU	REA	TOT	WHU
Arsenal WFC		0-0	3-0	2-0	3-1	1-1	4-0	1-2	2-0	6-1	6-1	2-0
Aston Villa	0-4		0-1	0-2	2-2	0-4	0-6	0-2	0-2	2-2	1-0	0-0
Birmingham City WFC	0-4	1-1		0-0	1-1	0-1	0-4	0-4	2-5	1-1	0-1	1-2
Brighton & Hove Albion WFC	0-5	0-2	2-0		3-1	0-1	0-5	1-7	1-0	1-3	2-0	1-0
Bristol City WFC	0-4	0-4	0-4	3-0		0-5	0-4	0-3	0-1	3-2	2-2	0-4
Chelsea FCW	3-0	2-0	6-0	1-2	9-0		4-0	3-1	2-1	5-0	4-0	3-2
Everton LFC	1-2	3-1	1-1	2-2	4-0	0-3		0-3	0-2	1-1	1-0	3-1
Manchester City WFC	2-1	7-0	4-0	0-0	8-1	2-2	1-0		3-0	1-0	4-1	4-0
Manchester United	1-0	3-0	2-0	3-0	6-1	1-1	2-0	2-2		0-2	4-1	2-0
Reading WFC	1-1	3-1	0-1	3-2	1-1	0-5	1-1	1-1	1-2		0-0	0-5
Tottenham Hotspur Women	0-3	3-1		3-1	1-1	0-2	2-3	0-3	0-1	1-1		1-1
West Ham United LFC	1-9	0-0	2-2	0-1	1-1	0-2	0-0	0-1	2-4	0-1	0-1	

Author: CJ Mayes

Data: Statsbomb

Tutorial: Cj-Mayes.com

Hi all,

You may have remembered some previous posts on scraping from understat which you can find [here](#) for visualising shot data. Since then Statsbomb have made it really easy to access similar soccer open data through a python package.

The tutorial today for sake of keeping it concise will only look at code, but in future tutorials will look to create some visualisations in Tableau! I have lots of exciting examples in the pipeline for how we can recreate some soccer related charts. This blog is specifically aimed at beginners.

STATSBOMB

Where to begin?

Lets cover off some resources I came across that I found useful and why.

I would consider this page by Statsbomb required reading

–**Statsbompy** – essentially this is the package we will use.

–**Statsbomb Open Data** – Definitely worth reading the getting started section as our theory will come from this.

StatsBomb Added 0 new games, updated 0 games.		a8f01fb 16 hours ago	692 commits
 data	Added 0 new games, updated 0 games.	16 hours ago	
 doc	Added 360 doc.	25 days ago	
 img	Initial commit.	4 years ago	
 LICENSE.pdf	Update open data to latest versions.	2 years ago	
 README.md	Updated with new data.	25 days ago	

You might also want to dig through Statsbomb's terms and conditions, [here](#) as a reference for future data usage. A final thing worth raising is to use [Stackoverflow](#) for when you get stuck. Hopefully todays walk through gets you most of the datasets you need but this website comes in handy more times than not!

Let's begin,

If you'd like to download my code you can find it at the link under the title name in the github repo. We will look to explain the code as we go along.

```

"""
pip install statsbombpy
pip install pandas
pip install numpy
"""

from statsbombpy import sb
import pandas as pd
from pandas import json_normalize
import numpy as np

# Get competitions
comp = sb.competitions()
comp.to_csv('competitions.csv', index=False)

# Get Matches from WSL - 2020/21
df = sb.matches(competition_id=37, season_id=90)
df.to_csv('matches.csv', index=False)

# Find a match_id required
match = 3764235
match_events = sb.events(match_id=match)

# split locations into x and y components
match_events[['location_x', 'location_y']] = match_events['location'].apply(pd.Series)
match_events[['pass_end_location_x', 'pass_end_location_y']] =
    match_events['pass_end_location'].apply(pd.Series)

# split the shot_end_locations into x,y and z - some z missing
match_events['shot_end_location_x'], match_events['shot_end_location_y'], \
    match_events['shot_end_location_z'] = np.nan, np.nan, np.nan

end_locations = np.vstack(match_events.loc[match_events.type == 'Shot'].shot_end_location.apply(
    lambda x: x if len(x) == 3 else x + [np.nan]).values)

match_events.loc[match_events.type == 'Shot', 'shot_end_location_x'] = end_locations[:, 0]
match_events.loc[match_events.type == 'Shot', 'shot_end_location_y'] = end_locations[:, 1]
match_events.loc[match_events.type == 'Shot', 'shot_end_location_z'] = end_locations[:, 2]

# clean up and choose the columns wanted
events_df = match_events[
    ['index', 'id', 'duration', 'match_id', 'minute', 'pass_angle', 'pass_height', 'pass_length',
     'pass_outcome',
     'pass_recipient', 'pass_shot_assist', 'period', 'play_pattern', 'player', 'player_id', 'position',
     'possession',
     'possession_team', 'possession_team_id', 'shot_type', 'shot_outcome', 'team', 'timestamp', 'type',
     'location_x',
     'location_y', 'pass_end_location_x', 'pass_end_location_y', 'shot_end_location_x',
     'shot_end_location_y',
     'shot_end_location_z'
]
events_df.to_csv('match_events.csv', index=False)

# create separate data sheet with freeze frame
shots = match_events.loc[match_events['type'] == 'Shot'].set_index('id', 'match')
shot_freeze_frame = match_events['shot_freeze_frame']

ffs = {}

for id_, row in shots.iterrows():
    try:
        ff = json_normalize(row.shot_freeze_frame, sep="")
        ff = ff.assign(x=ff.apply(lambda x: x.location[0], axis=1)). \
            assign(y=ff.apply(lambda x: x.location[1], axis=1)). \
            drop('location', axis=1). \
            assign(id=id_)
        ffs[id_] = ff
    except:
        pass

# concatenate all the Freeze Frame dataframes
ff_df = pd.concat(ffs)
ff_df.to_csv('match_shot_freeze_frames.csv', index=False)

```

You may have previously read viz legend [Alexander Varlamov's](#) tutorial on [extracting pass data](#). This too, was my starting point. In addition this [towards data science blog](#) has a run through of utilising the repo, to extract datasets.

Luckily Statsbomb have made this alot easier to do now, but the theory from these blogs we will want to carry forward.

What do I mean by that?

Here is the repo for the [open data](#). We'll actually be using a package that stores this information but it will be useful as a reference point as we dive in, so will look to explore the folder structure. As we will be using a prebuilt package there is no requirement to download this repo specifically.

The screenshot shows a GitHub repository interface. At the top, there is a dropdown menu showing 'master', a 'Go to file' button, an 'Add file' button, and a three-dot menu. Below this is a table showing the contents of the 'data' folder:

	StatsBomb Added 0 new games, updated 0 games.	bbd8639 11 hours ago	History
..			
events	Added 0 new games, updated 4 games.	yesterday	
lineups	Added 0 new games, updated 0 games.	11 hours ago	
matches	Added 0 new games, updated 11 games.	4 days ago	
three-sixty	Added 0 new games, updated 1014 games.	10 days ago	
competitions.json	Added 0 new games, updated 11 games.	4 days ago	

Below the table is a code diff showing changes to the 'competitions.json' file. The changes are as follows:

```

183 }, {
184     "competition_id": 16,
185     "season_id": 76,
186     "country_name": "Europe",
187     "competition_name": "Champions League",
188     "competition_gender": "male",
189     "competition_youth": false,
190     "competition_international": false,
191     "season_name": "1999/2000",
192     "match_updated": "2020-07-29T05:00",
193     "match_updated_360": "2021-06-13T16:17:31.694",
194     "match_available_360": null,
195     "match_available": "2020-07-29T05:00"
196 },
197     "competition_id": 37,
198     "season_id": 98,
199     "country_name": "England",
200     "competition_name": "FA Women's Super League",
201     "competition_gender": "female",
202     "competition_youth": false,
203     "competition_international": false,
204     "season_name": "2020/2021",
205     "match_updated": "2021-07-01T18:14:40.756",
206     "match_updated_360": "2021-06-13T16:17:31.694",
207     "match_available_360": null,
208     "match_available": "2021-07-01T18:14:40.756"
209 },
210     "competition_id": 37,
211     "season_id": 42,
212     "country_name": "England",
213     "competition_name": "FA Women's Super League",
214     "competition_gender": "female",
215     "competition_youth": false,
216     "competition_international": false,
217     "season_name": "2019/2020",
218     "match_updated": "2021-06-01T13:01:18.188",
219     "match_updated_360": "2021-06-13T16:17:31.694",
220     "match_available_360": null,
221     "match_available": "2021-06-01T13:01:18.188"
222 },

```

I've chosen the FA Women's Super League data for this example. You will note that each competition has an ID associated to it (37 in this case) and each season for that competition will have an ID (90 in this case).

Load up your Python IDE, I currently use Pycharm.

You will want to pip install statsbomypy, pip install pandas and pip install numpy for this run-through.

```

"""
pip install statsbombpy
pip install pandas
pip install numpy
"""

from statsbombpy import sb
import pandas as pd
from pandas import json_normalize
import numpy as np

# Get competitions
comp = sb.competitions()
comp.to_csv('competitions.csv', index=False)

```

Wow. So this gets all the competition details and exports it to a csv for us in a nice clean readable format.

This dataset will host a whole range of different competitions with the season details and time frame of competition.

A	B	C	D	E	F	G	H	I
competition_id	season_id	country_name	competition_name	competition_gender	competition_youth	competition_international	season_name	match_updated
16	4	Europe	Champions League	male	FALSE	FALSE	2018/2019	2021-08-27T11:26:39.802832
16	1	Europe	Champions League	male	FALSE	FALSE	2017/2018	2021-08-27T11:26:39.802832
16	2	Europe	Champions League	male	FALSE	FALSE	2016/2017	2021-08-27T11:26:39.802832
16	27	Europe	Champions League	male	FALSE	FALSE	2015/2016	2021-08-27T11:26:39.802832
16	26	Europe	Champions League	male	FALSE	FALSE	2014/2015	2021-08-27T11:26:39.802832
16	25	Europe	Champions League	male	FALSE	FALSE	2013/2014	2021-08-27T11:26:39.802832
16	24	Europe	Champions League	male	FALSE	FALSE	2012/2013	2021-08-27T11:26:39.802832
16	23	Europe	Champions League	male	FALSE	FALSE	2011/2012	2021-08-27T11:26:39.802832
16	22	Europe	Champions League	male	FALSE	FALSE	2010/2011	2021-06-22T21:17:46.381
16	21	Europe	Champions League	male	FALSE	FALSE	2009/2010	2021-06-22T21:24:20.506
16	41	Europe	Champions League	male	FALSE	FALSE	2008/2009	2021-11-07T14:20:01.699993
16	39	Europe	Champions League	male	FALSE	FALSE	2006/2007	2021-03-31T04:18:30.437060
16	37	Europe	Champions League	male	FALSE	FALSE	2004/2005	2021-04-01T06:18:57.459032
16	44	Europe	Champions League	male	FALSE	FALSE	2003/2004	2021-04-01T00:34:59.472485
16	76	Europe	Champions League	male	FALSE	FALSE	1999/2000	2020-07-29T05:00
37	90	England	FA Women's Super League	female	FALSE	FALSE	2020/2021	2021-07-01T18:14:40.756
37	42	England	FA Women's Super League	female	FALSE	FALSE	2019/2020	2021-06-01T13:01:18.188
37	4	England	FA Women's Super League	female	FALSE	FALSE	2018/2019	2021-12-02T12:09:35.585046
43	3	International	FIFA World Cup	male	FALSE	TRUE	2018	2021-12-06T23:11:59.985953
11	90	Spain	La Liga	male	FALSE	FALSE	2020/2021	2021-11-28T09:47:02.505122
11	42	Spain	La Liga	male	FALSE	FALSE	2019/2020	2021-06-15T15:35:02.673
11	4	Spain	La Liga	male	FALSE	FALSE	2018/2019	2021-11-02T17:53:14.529952
11	1	Spain	La Liga	male	FALSE	FALSE	2017/2018	2021-08-27T11:26:39.802832
11	2	Spain	La Liga	male	FALSE	FALSE	2016/2017	2021-08-07T22:30:18.242
11	27	Spain	La Liga	male	FALSE	FALSE	2015/2016	2020-07-29T05:00
11	26	Spain	La Liga	male	FALSE	FALSE	2014/2015	2020-07-29T05:00
11	25	Spain	La Liga	male	FALSE	FALSE	2013/2014	2020-07-29T05:00
11	24	Spain	La Liga	male	FALSE	FALSE	2012/2013	2021-10-27T15:44:43.940862
11	23	Spain	La Liga	male	FALSE	FALSE	2011/2012	2020-07-29T05:00
11	22	Spain	La Liga	male	FALSE	FALSE	2010/2011	2021-11-11T22:57:42.361902
11	21	Spain	La Liga	male	FALSE	FALSE	2009/2010	2021-10-26T13:56:40.989214
11	41	Spain	La Liga	male	FALSE	FALSE	2008/2009	2020-07-29T05:00

Small side note – You may see that Statsbomb print in the run space “credentials were not supplied. open data access only”

credentials were not supplied. open data access only

Fear not, this just means that we haven't provided details to access private paid for data, hence the reference to the open-data source at the start of the tutorial! If all goes as expected, your code will still finish with exit code 0.

So let's next take the competition 37 and season 90 to find all the match details with this league. This refers to the 2020/21 WSL.

```
# Get Matches from WSL - 2020/21
df = sb.matches(competition_id=37, season_id=90)
df.to_csv('matches.csv', index=False)
```

The WSL has 12 teams. So in our dataset we would expect to see $(12 \times 12) - 12$ matches. That's $144 - 12 = 132$.
I.e Each team plays each other twice but can't play themselves.

Interesting, our data only shows 131 records. Why is this? You will see the Tottenham – Birmingham game does not show as it was a walkover.

Home \ Away	ARS	ASV	BIR	BHA	BRI	CHE	EVE	MCI	MNU	REA	TOT	WHU
Arsenal	—	0–0	3–0	2–0	3–1	1–1	4–0	1–2	2–0	6–1	6–1	2–0
Aston Villa	0–4	—	0–1	0–2	2–2	0–4	0–6	0–2	0–2	2–2	1–0	0–0
Birmingham City	0–4	1–1	—	0–0	1–1	0–1	0–4	0–4	2–5	1–1	0–1	1–2
Brighton & Hove Albion	0–5	0–2	2–0	—	3–1	0–1	0–5	1–7	1–0	1–3	2–0	1–0
Bristol City	0–4	0–4	0–4	3–0	—	0–5	0–4	0–3	0–1	3–2	2–2	0–4
Chelsea	3–0	2–0	6–0	1–2	9–0	—	4–0	3–1	2–1	5–0	4–0	3–2
Everton	1–2	3–1	1–1	2–2	4–0	0–3	—	0–3	0–2	1–1	1–0	3–1
Manchester City	2–1	7–0	4–0	0–0	8–1	2–2	1–0	—	3–0	1–0	4–1	4–0
Manchester United	1–0	3–0	2–0	3–0	6–1	1–1	2–0	2–2	—	0–2	4–1	2–0
Reading	1–1	3–1	0–1	3–2	1–1	0–5	1–1	1–1	1–2	—	0–0	0–5
Tottenham Hotspur	0–3	3–1	W.O.[a]	3–1	1–1	0–2	2–3	0–3	0–1	1–1	—	1–1
West Ham United	1–9	0–0	2–2	0–1	1–1	0–2	0–0	0–1	2–4	0–1	0–1	—

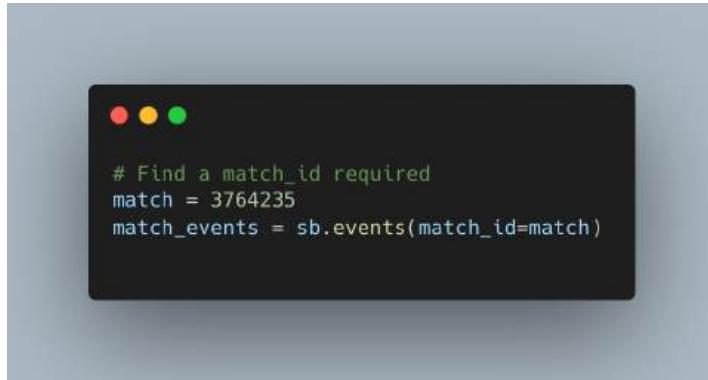
Source: [The FA](#)

Legend: Blue = home team win; Yellow = draw; Red = away team win.

Therefore, I am happy with the dataset. Again, we have exported it into a nice readable format. This dataset includes when the matches were played, the teams and score amongst other useful metrics.

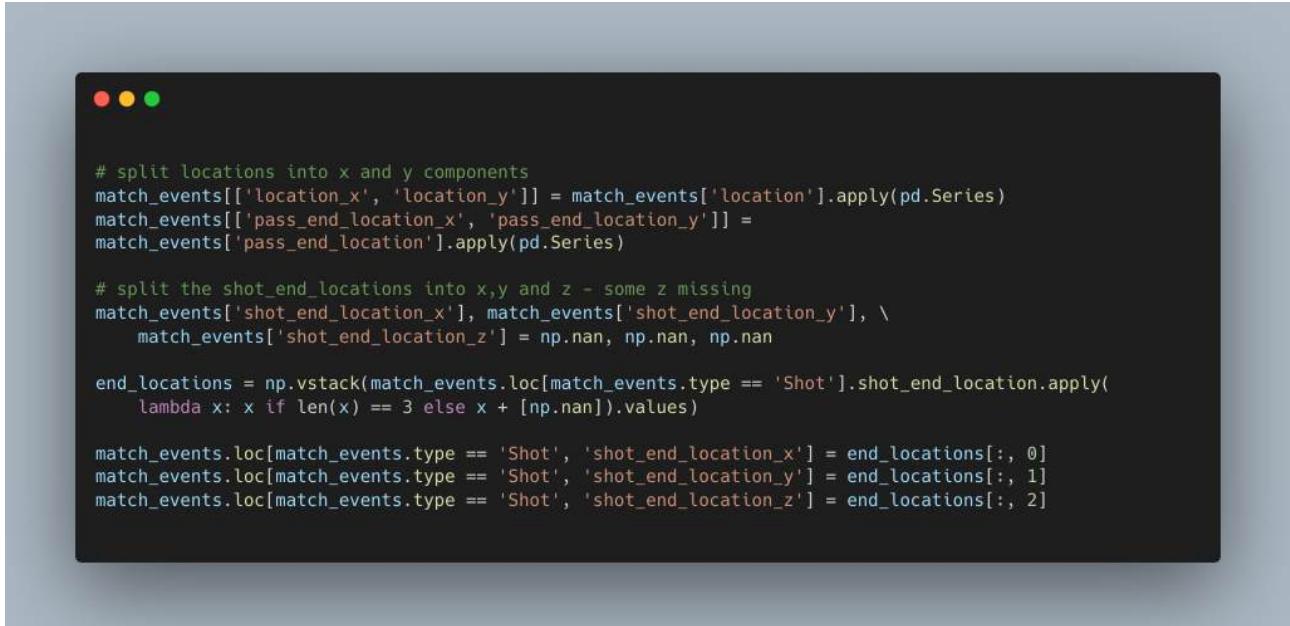
A	B	C	D	E	F	G	H	I	J	K	L	M	N
match_id	match_date	competition	season	home_team	away_team	home_score	away_score	match_status	match_status	last_update	last_update	match_week	
3764240	06/09/20	England - FA Women's Super	2020/2021	Bristol City WFC	Everton LFC	0	4	available	scheduled	2020-09-25T	2021-06-13T	1 f	
3764233	06/09/20	England - FA Women's Super	2020/2021	Arsenal WFC	Reading WFC	6	1	available	scheduled	2020-09-10T	2021-06-13T	1 f	
3775585	09/05/21	England - FA Women's Super	2020/2021	Brighton & Hove Albion WFC	Bristol City WFC	3	1	available	scheduled	2021-05-13T	2021-06-13T	22 f	
3775593	09/05/21	England - FA Women's Super	2020/2021	Chelsea FCW	Reading WFC	5	0	available	scheduled	2021-05-16T	2021-06-13T	22 f	
3775602	04/10/20	England - FA Women's Super	2020/2021	West Ham United LFC	Reading WFC	0	1	available	scheduled	2020-10-16T	2021-06-13T	3 f	
3775620	11/10/20	England - FA Women's Super	2020/2021	Everton LFC	West Ham United LFC	3	1	available	scheduled	2020-10-12T	2021-06-13T	4 f	
3764232	06/09/20	England - FA Women's Super	2020/2021	Manchester United	Chelsea FCW	1	1	available	scheduled	2021-06-12T	2021-06-13T	1 f	
3775559	20/12/20	England - FA Women's Super	2020/2021	Arsenal WFC	Everton LFC	4	0	available	scheduled	2021-06-12T	2021-06-13T	10 f	
3775606	10/01/21	England - FA Women's Super	2020/2021	Reading WFC	Chelsea FCW	0	5	available	scheduled	2021-06-12T	2021-06-13T	11 f	
3775567	17/01/21	England - FA Women's Super	2020/2021	Chelsea FCW	Manchester United	2	1	available	scheduled	2021-06-12T	2021-06-13T	12 f	
3775638	07/03/21	England - FA Women's Super	2020/2021	Brighton & Hove Albion WFC	Tottenham Hotspur Women	2	0	available	scheduled	2021-06-12T	2021-06-13T	16 f	
3775607	08/03/21	England - FA Women's Super	2020/2021	Bristol City WFC	Reading WFC	3	2	available	scheduled	2021-06-12T	2021-06-13T	16 f	
3764230	06/09/20	England - FA Women's Super	2020/2021	Tottenham Hotspur Women	West Ham United LFC	1	1	available	scheduled	2020-09-07T	2021-06-13T	1 f	
3764241	13/09/20	England - FA Women's Super	2020/2021	Manchester City WFC	Brighton & Hove Albion WFC	0	0	available	scheduled	2020-09-25T	2021-06-13T	2 f	
3764239	13/09/20	England - FA Women's Super	2020/2021	Chelsea FCW	Bristol City WFC	9	0	available	scheduled	2020-09-15T	2021-06-13T	2 f	
3764239	13/09/20	England - FA Women's Super	2020/2021	Everton LFC	Tottenham Hotspur Women	1	0	available	scheduled	2020-09-15T	2021-06-13T	2 f	
3764236	13/09/20	England - FA Women's Super	2020/2021	Reading WFC	Aston Villa	3	1	available	scheduled	2020-10-17T	2021-06-13T	2 f	
3764231	06/09/20	England - FA Women's Super	2020/2021	Brighton & Hove Albion WFC	Birmingham City WFC	2	0	available	scheduled	2021-07-01T	2021-06-13T	1 f	
3764234	05/09/20	England - FA Women's Super	2020/2021	Aston Villa	Manchester City WFC	0	2	available	scheduled	2020-09-29T	2021-06-13T	1 f	
3775543	11/10/20	England - FA Women's Super	2020/2021	Brighton & Hove Albion WFC	Arsenal WFC	0	5	available	scheduled	2020-10-13T	2021-06-13T	4 f	
3775551	08/11/20	England - FA Women's Super	2020/2021	Manchester United	Arsenal WFC	1	0	available	scheduled	2020-11-09T	2021-06-13T	6 f	
3775540	24/04/21	England - FA Women's Super	2020/2021	Aston Villa	Bristol City WFC	2	2	available	scheduled	2021-05-10T	2021-06-13T	20 f	
3775550	17/03/21	England - FA Women's Super	2020/2021	Everton LFC	Chelsea FCW	0	3	available	scheduled	2021-05-16T	2021-06-13T	17 f	
3775545	04/10/20	England - FA Women's Super	2020/2021	Manchester City WFC	Tottenham Hotspur Women	4	1	available	scheduled	2020-10-10T	2021-06-13T	3 f	
3775556	08/11/20	England - FA Women's Super	2020/2021	Brighton & Hove Albion WFC	Aston Villa	0	2	available	scheduled	2020-11-10T	2021-06-13T	6 f	
3775575	03/10/20	England - FA Women's Super	2020/2021	Aston Villa	Everton LFC	0	6	available	scheduled	2020-10-04T	2021-06-13T	3 f	
3775562	04/10/20	England - FA Women's Super	2020/2021	Manchester United	Brighton & Hove Albion WFC	3	0	available	scheduled	2020-10-17T	2021-06-13T	3 f	
3775561	18/10/20	England - FA Women's Super	2020/2021	West Ham United LFC	Manchester United	2	4	available	scheduled	2020-10-19T	2021-06-13T	5 f	
3775582	18/10/20	England - FA Women's Super	2020/2021	Everton LFC	Brighton & Hove Albion WFC	2	2	available	scheduled	2020-10-31T	2021-06-13T	5 f	
3775558	13/12/20	England - FA Women's Super	2020/2021	Reading WFC	Manchester United	1	2	available	scheduled	2020-12-21T	2021-06-13T	9 f	
3775552	28/02/21	England - FA Women's Super	2020/2021	Tottenham Hotspur Women	Everton LFC	2	3	available	scheduled	2021-04-06T	2021-06-13T	13 f	

So next we want to get the event details for a specific match. It looks like the Chelsea – Bristol game was an action packed game at 9-0. The match ID for this was 3764235. We follow the documentation to extract the event level data.



```
# Find a match_id required
match = 3764235
match_events = sb.events(match_id=match)
```

Next is a chunk of code that may get a little more confusing. Firstly, the location details in the event table need a little reformatting. In summary, we are splitting the values out into new columns holding coordinate integers.



```
# split locations into x and y components
match_events[['location_x', 'location_y']] = match_events['location'].apply(pd.Series)
match_events[['pass_end_location_x', 'pass_end_location_y']] =
match_events['pass_end_location'].apply(pd.Series)

# split the shot_end_locations into x,y and z - some z missing
match_events['shot_end_location_x'], match_events['shot_end_location_y'], \
match_events['shot_end_location_z'] = np.nan, np.nan, np.nan

end_locations = np.vstack(match_events.loc[match_events.type == 'Shot'].shot_end_location.apply(
    lambda x: x if len(x) == 3 else x + [np.nan]).values)

match_events.loc[match_events.type == 'Shot', 'shot_end_location_x'] = end_locations[:, 0]
match_events.loc[match_events.type == 'Shot', 'shot_end_location_y'] = end_locations[:, 1]
match_events.loc[match_events.type == 'Shot', 'shot_end_location_z'] = end_locations[:, 2]
```

We do the same type of transformation for the shot location column. The shot column doesn't always have three values in so we make sure to assign the x,y and z of the shot. Here is a before and after of the

transformation we apply to the location field.

goalkeeper_id	goalkeeper_id	goalkeeper_id	goalkeeper_id	goalkeeper_id	index	interception_location	match_id	minute	off_camera	out	pass_aerial	pass_angle	pass_ass
				c4c3f83-8d:	1		3764235	0					
				cb7a8e30-17	2		3764235	0					
				e06b78ac-ec	3		3764235	0					
				972ec393-8c	4		3764235	0					
				e85fcffa-595	1767		3764235	45					
				5b654c84-03	1768		3764235	45					
				d4d1a8ca-79	5	[61.0, 40.1]	3764235	0			-2.9865959		
				549c46de-92	8	[60.4, 40.6]	3764235	0			-2.8305943		
				c0abb5b5-de	11	[52.0, 37.9]	3764235	0			2.562146		
				38b85dec-0c	14	[28.3, 48.5]	3764235	0			-1.8411536		
				14ef080f-96	17	[18.7, 12.4]	3764235	0			-0.0195233		
				e69f49b4-15	20	[94.5, 7.0]	3764235	0			-2.9845629		
				044553f1-d7	24	[81.4, 5.7]	3764235	0			-2.6734607		
				63413df5-a8	26	[72.2, 1.5]	3764235	0			0.6267429		
				c5617a48-1a	27	[27.6, 63.9]	3764235	0			-2.390834		
				379041aa-f5	30	[14.2, 43.7]	3764235	0			-0.464571		
				70063abb-1c	32	[62.6, 58.1]	3764235	0			-0.2782997		
				d4be28d9-0f	34	[47.0, 25.0]	3764235	0			-2.0123887		
				c44e024-3t	37	[42.2, 13.3]	3764235	0			2.8893502		
				1799f7cd-e9	40	[22.8, 18.2]	3764235	0			1.605917		
				b7341254-65	43	[22.6, 60.0]	3764235	0			0.7638188		
				18925d04-7e	46	[36.5, 71.4]	3764235	0			-0.9990195		
				d4c4c99e-45	50	[43.7, 64.2]	3764235	0			1.5707964		
				be8dd46b-3t	52	[43.4, 73.8]	3764235	0			-2.5834692		
				da29ec16-3e	55	[25.7, 60.3]	3764235	0			-1.5336705		
				19ae05ce-1f	58	[44.7, 23.5]	3764235	0			0.9652517		
				d0b6f4fb-cef	62	[47.8, 27.8]	3764235	0			1.8700788		
				0d689128-d4	65	[44.3, 61.1]	3764235	1			0.8275188		
				b2c59024-25	69	[63.6, 72.5]	3764235	1			0		
				8cbeab6a-98	73	[70.6, 73.6]	3764235	1			-1.8736812		
				6c0da46b-33	76	[69.8, 66.4]	3764235	1			0.3172663		
				2d902937-0t	85	[31.9, 6.0]	3764235	1			2.9020934		

player	player_id	position	possession	possession_t	possession_tshot_type	shot_outcome	team	timestamp	type	location_x	location_y	pass_end_x	pass_end_y
			1	Chelsea FCW	971		Chelsea FCW	0:00:0	Starting XI				
			1	Chelsea FCW	971		Bristol City V	0:00:0	Starting XI				
			1	Chelsea FCW	971		Bristol City V	0:00:0	Half Start				
			1	Chelsea FCW	971		Chelsea FCW	0:00:0	Half Start				
			90	Chelsea FCW	971		Chelsea FCW	0:00:0	Half Start				
			90	Chelsea FCW	971		Bristol City V	0:00:0	Half Start				
Chloe Logarz	25547	Left Center F	2	Bristol City V	973		Bristol City V	0:00:4	Pass	61	40.1	57.8	39.6
Charlie Welli	15563	Right Center	2	Bristol City V	973		Bristol City V	0:00:9	Pass	60.4	40.6	52	37.9
Ella Jade Mat	46737	Left Center M	2	Bristol City V	973		Bristol City V	0:02:3	Pass	52	37.9	30.3	52.1
Jasmine Mat	15618	Right Center	2	Bristol City V	973		Bristol City V	0:05:8	Pass	28.3	48.5	18.6	13.5
Gemma Evar	16381	Left Center B	2	Bristol City V	973		Bristol City V	0:08:5	Pass	18.7	12.4	90.4	11
Yana Daniels	10093	Left Midfield	2	Bristol City V	973		Bristol City V	0:29.8	Pass	94.5	7	82.5	5.1
Chloe Logarz	25547	Left Center F	2	Bristol City V	973		Chelsea FCW	0:31.7	Pass	81.4	5.7	72.5	1.2
Jemma Elizal	24239	Left Back	2	Bristol City V	973		Chelsea FCW	0:33.5	Pass	72.2	1.5	92.5	16.2
Millie Bright	4642	Right Center	3	Chelsea FCW	971		Chelsea FCW	0:41.4	Pass	27.6	63.9	6.7	44.4
Ann-Katrin B	15560	Goalkeeper	3	Chelsea FCW	971		Chelsea FCW	0:44.0	Pass	14.2	43.7	57.5	22
Florence Alle	24922	Right Back	3	Chelsea FCW	971		Chelsea FCW	0:46.9	Pass	62.6	58.1	73.1	55.1
Erin Cuthber	4660	Left Center M	3	Chelsea FCW	971		Chelsea FCW	0:47.7	Pass	47	25	41.8	14
Hannah Jayn	17275	Left Back	3	Chelsea FCW	971		Chelsea FCW	0:51.0	Pass	42.2	13.3	22.8	18.3
Magdalena L	4633	Left Center B	3	Chelsea FCW	971		Chelsea FCW	0:56.6	Pass	22.8	18.2	21.5	55.2
Millie Bright	4642	Right Center	3	Chelsea FCW	971		Chelsea FCW	0:41.4	Pass	36.5	71.4	43.9	59.9
Maren NÄ;v	10395	Right Back	3	Chelsea FCW	971		Chelsea FCW	0:44.0	Pass	43.7	64.2	43.7	75
Maren NÄ;v	10395	Right Back	3	Chelsea FCW	971		Chelsea FCW	0:47.7	Pass	43.4	73.8	24.5	62
Millie Bright	4642	Right Center	3	Chelsea FCW	971		Chelsea FCW	0:51.0	Pass	25.7	60.3	27	25.3
Magdalena L	4633	Left Center B	3	Chelsea FCW	971		Chelsea FCW	0:58.1	Pass	44.7	23.5	49.2	30
So-Yun Ji	4647	Right Center	3	Chelsea FCW	971		Chelsea FCW	0:01:4	Pass	47.8	27.8	39.5	54.7
Millie Bright	4642	Right Center	3	Chelsea FCW	971		Chelsea FCW	0:03:9	Pass	44.3	61.1	56.8	74.7
Maren NÄ;v	10395	Right Back	3	Chelsea FCW	971		Chelsea FCW	0:04:8	Pass	63.6	72.5	70.6	72.5
Francesca Kii	4641	Center Forward	3	Chelsea FCW	971		Chelsea FCW	0:06:3	Pass	70.6	73.6	68.6	67.2
Maren NÄ;v	10395	Right Back	3	Chelsea FCW	971		Chelsea FCW	0:08:3	Pass	69.8	66.4	76.5	68.6

The final transformation I make is solely choosing the columns I want to keep within my final table. If you want the full list of columns you could remove this step and export the match events DataFrame to a csv.

```
# clean up and choose the columns wanted
events_df = match_events[[
    'index', 'id', 'duration', 'match_id', 'minute', 'pass_angle', 'pass_height', 'pass_length',
    'pass_outcome',
    'pass_recipient', 'pass_shot_assist', 'period', 'play_pattern', 'player', 'player_id', 'position',
    'possession',
    'possession_team', 'possession_team_id', 'shot_type', 'shot_outcome', 'team', 'timestamp', 'type',
    'location_x',
    'location_y', 'pass_end_location_x', 'pass_end_location_y', 'shot_end_location_x',
    'shot_end_location_y',
    'shot_end_location_z'
]]
events_df.to_csv('match_events.csv', index=False)
```

The last thing we do is create a final dataset that takes all the shot events for the chosen match.

```
# create separate data sheet with freeze frame
shots = match_events.loc[match_events['type'] == 'Shot'].set_index('id', 'match')

shot_freeze_frame = match_events['shot_freeze_frame']

ffs = {}

for id_, row in shots.iterrows():
    try:
        ff = json_normalize(row.shot_freeze_frame, sep="_")
        ff = ff.assign(x=ff.apply(lambda x: x.location[0], axis=1)). \
            assign(y=ff.apply(lambda x: x.location[1], axis=1)). \
            drop('location', axis=1). \
            assign(id=id_)
        ffs[id_] = ff
    except:
        pass

# concatenate all the Freeze Frame dataframes
ff_df = pd.concat(ffs)
ff_df.to_csv('match_shot_freeze_frames.csv', index=False)
```

The shot event data is stored in a column that we have to unpack. Here is a before and after to show what the code is doing.

What you will see is that the raw data previously held in “Shot freeze frame” column is now split out. The shot freeze frame column is only populated on where “type” is equal to “shot”

A	B	C	D	E	F	G	H	I	J
teammate	player_id	player_name	position_id	position_name	x	y	id		
TRUE	4647	So-Yun Ji	13	Right Center	89.9	27	dfbf1f06-161d-45a3-a598-bc6141f4ec27		
TRUE	4961	Samantha M	21	Left Wing	104.6	31.3	dfbf1f06-161d-45a3-a598-bc6141f4ec27		
TRUE	4641	Francesca Kii	23	Center Forward	99.5	39.6	dfbf1f06-161d-45a3-a598-bc6141f4ec27		
FALSE	36801	Aimee Palme	13	Right Center	95.5	21	dfbf1f06-161d-45a3-a598-bc6141f4ec27		
FALSE	16384	Carla Humphrey	12	Right Midfield	101.8	18	dfbf1f06-161d-45a3-a598-bc6141f4ec27		
FALSE	46737	Ella Jade Mason	15	Left Center Forward	96.8	25.2	dfbf1f06-161d-45a3-a598-bc6141f4ec27		
FALSE	25547	Chloe Logarzka	24	Left Center Forward	92.9	27.8	dfbf1f06-161d-45a3-a598-bc6141f4ec27		
FALSE	10093	Yana Daniels	16	Left Midfield	98.7	40	dfbf1f06-161d-45a3-a598-bc6141f4ec27		
FALSE	24239	Jemma Elizab	6	Left Back	103.2	38.2	dfbf1f06-161d-45a3-a598-bc6141f4ec27		
FALSE	16381	Gemma Evar	5	Left Center Back	103.2	31.8	dfbf1f06-161d-45a3-a598-bc6141f4ec27		
FALSE	15618	Jasmine Mat	3	Right Center	105.3	29.4	dfbf1f06-161d-45a3-a598-bc6141f4ec27		
FALSE	24922	Florence Alle	2	Right Back	103.1	22.4	dfbf1f06-161d-45a3-a598-bc6141f4ec27		
TRUE	4660	Erin Cuthber	15	Left Center Back	104.5	21.2	dfbf1f06-161d-45a3-a598-bc6141f4ec27		
FALSE	16376	Sophie Baggaley	1	Goalkeeper	119.4	40.3	dfbf1f06-161d-45a3-a598-bc6141f4ec27		
TRUE	4641	Francesca Kii	23	Center Forward	100.9	35.4	a2470127-9060-4119-aea2-fa98e839a5d0		
TRUE	10395	Maren Åsveig	2	Right Back	88.9	50	a2470127-9060-4119-aea2-fa98e839a5d0		
TRUE	4961	Samantha M	21	Left Wing	108.6	40.8	a2470127-9060-4119-aea2-fa98e839a5d0		
TRUE	15550	Bethany Eng	17	Right Wing	105.1	44.2	a2470127-9060-4119-aea2-fa98e839a5d0		
FALSE	16376	Sophie Baggaley	1	Goalkeeper	118.8	36.9	a2470127-9060-4119-aea2-fa98e839a5d0		
FALSE	16384	Carla Humphrey	12	Right Midfield	102.2	25.9	a2470127-9060-4119-aea2-fa98e839a5d0		
FALSE	25547	Chloe Logarzka	24	Left Center Forward	105	27.4	a2470127-9060-4119-aea2-fa98e839a5d0		
FALSE	36801	Aimee Palme	13	Right Center	105.5	31	a2470127-9060-4119-aea2-fa98e839a5d0		
FALSE	24922	Florence Alle	2	Right Back	107.6	29.9	a2470127-9060-4119-aea2-fa98e839a5d0		
FALSE	15618	Jasmine Mat	3	Right Center	108.9	32	a2470127-9060-4119-aea2-fa98e839a5d0		
FALSE	46737	Ella Jade Mason	15	Left Center Back	103.1	40.1	a2470127-9060-4119-aea2-fa98e839a5d0		
FALSE	16381	Gemma Evar	5	Left Center Back	108.9	37.8	a2470127-9060-4119-aea2-fa98e839a5d0		
FALSE	10093	Yana Daniels	16	Left Midfield	100.3	48.6	a2470127-9060-4119-aea2-fa98e839a5d0		
FALSE	24239	Jemma Elizabet	6	Left Back	107.9	44.2	a2470127-9060-4119-aea2-fa98e839a5d0		
TRUE	17275	Hannah Jayne	6	Left Back	105.2	21.2	a2470127-9060-4119-aea2-fa98e839a5d0		
TRUE	15648	Melanie Leupolz	10	Center Defender	96.8	35.3	a2470127-9060-4119-aea2-fa98e839a5d0		
TRUE	4647	So-Yun Ji	13	Right Center	106.7	27	a2470127-9060-4119-aea2-fa98e839a5d0		
FALSE	10093	Yana Daniels	16	Left Midfield	100	60.9	7c968b37-16a3-46f5-95b0-91aa54031128		

This new data is saved to a separate CSV (shot_freeze_frame).

How can we double check this is correct? Well we can compare our 37 shots from the events data, and

compare the id's to that seen in the freeze frame data by deduplicating it. It gives 37 unique id's.

And there we have it, a short run through of how to go through multiple levels of StatsBomb data from competition level to individual event level.

One last thing to note is that if we wanted to start visualising the shot data with the freeze frame added in we could left join our match_shot_freeze_frame dataset to match_events on id = id. This is the id of that specific event! (do not confuse it with match_id!!)

As mentioned before we will look to build some visualisations off the back of the datasets created in future blogs.

Going further:

Why not try apply this logic to a different competition?

Why not try capture all events within a competition using a loop?

Try using the dataset to build a visualisation in Tableau

Why not use some of the **MPLSoccer tutorials**?

Consider what further data preparations would be needed to transform the dataset for building out specific chart types, shot maps, freeze frames etc.

Here are some starting resources for when we start to visualise the data:

[Drawing a passmap.](#)

[Advanced sports visualisations.](#)

[Pass maps by the information lab.](#)

[LOGGING OFF,](#)

CJ

TUTORIALS & BLOGGING WITH KEVIN FLERLAGE

Welcome to the Final edition in 2021 of “What’s Good?”

Hi all,

A warm greeting to the final “What’s Good?” blog for 2021. What a journey this year has been – the community I have been welcomed into, and also have the delight of welcoming others into is unmatched.

Onto the blog today...How do I introduce a man that has so much love, respect and accolades in the community? I certainly can't do it justice!

I am DELIGHTED to finish season 1 with the perfect guest to mark the occasion, **Kevin Flerlage**. Kevin is a Zen Master, Public Ambassador, TUG co-lead and co-hosts one of the most used Tableau content websites globally. Kevin joins to reminisce on his own journey and look back at the impact he's made through tutorials, blogs, presentations and dashboarding.

You can find Kevin on [Tableau](#), [Twitter](#) and his co-authored blog with Ken, at the [Flerlage Twins](#).



CJ: Your journey started in Feb 2018, and you shot to Zen Master by 2020. Can you tell us a little about your background and how you got into data visualisation?

K: Like so many, I spent years and years using Excel for analytics. Most of what I did was just with the numbers (often employing highlight tables). I did some level of data visualization as well. I did the normal 3D pie charts that come standard in Excel, lots of bar charts that were categorically colored and everything was heavily cluttered. But I just did what Excel defaulted to. I mean, I made it look fairly nice, but it was still sloppy.

I knew about Ken using Tableau and in January 2018, he became a Zen Master. At the same time, I started thinking about my future outside of the role I was in at the time. I started looking for other analytics positions within my company and every one I looked at listed Tableau as a required skill set. So although Ken had told me about Tableau months and months prior, I decided to hit him up for some training and advice. I loved it, seemed to have a talent for it, and did it far too much in my spare time...until the point where my wife had to call me out on it. It became my hobby and I just loved doing it (and still do). Who would have thought a software could be so fun?

CJ: I loved your history of Tableau's Iron Viz entry. It secured your fifth Top 10 entry. It was awesome to read about the different entrants by year. What is your fondest IronViz memory?

K: I am, perhaps, the biggest fan of Iron Viz ever! I absolutely love the process, love competing, love watching what others put out, love picking my own top ten and love predicting the finalists (This year, I predicted Sam and Pradeep as 1 & 2 with Lisa as number 4. Congratulations to all three of them for crushing it and for Lisa taking home the trophy!) I remember every feeder distinctly and each has lots of fond memories.

But if I were to pick one, it would definitely be my first feeder. I had been using Tableau for a couple of months and decided to compete knowing there would be no chance of me winning. I waited intently for the topic to be announced. That topic was literature! Noooooooooo! I really don't read much...honestly, I never read anything outside of blog posts and emails. This was not a good fit for me. But, there are a lot of books that were made into movies, right? I did some google searches for books made into movies and saw a striking image of the Lorax. I'd seen the movie with my kids a number of times and it instantly hit me: tell the story of deforestation through the view of the Lorax.

I remember spending just about every waking minute on this viz. I bet I spent 40 hours on it. It was so much fun. When I was done, I sent it to my brother to review it. His response... “oh crap, this could win”. I was

really excited by those words, but that excitement quickly turned to terror. I was in no position to be on that stage. And in fact, that workbook contained zero calculated fields. I did 100% of the calculations in Excel. In the end, I landed in 3rd behind **Mike Cisneros** and finalist, **Ludovic Tavernier** (The Letter E). As you mentioned, I have five top ten finishes out of six entries. This was my best finish ever and certainly my fondest memory.

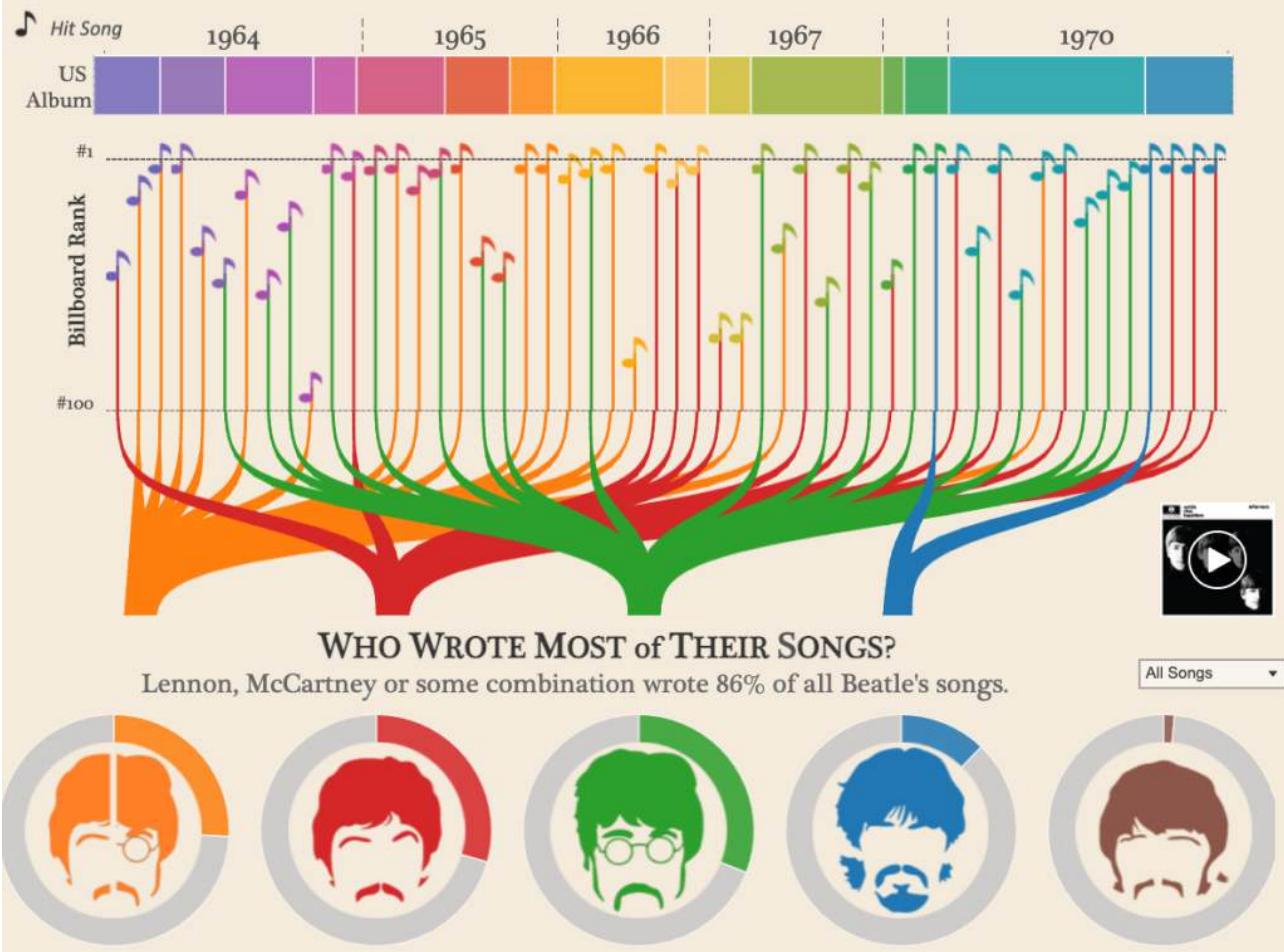


CJ: To carry on the idea of Tableau history. What are some of your favourite vizzes ever?

K: It's interesting that you asked that. This is a conversation that Ken and I have all the time...probably a couple dozen times. Recently we had the same conversation and just decided to pick our top ten ever and talk about them on video. You can check that out [on our website](#).

WHAT WERE THEIR BIGGEST HITS?

This list shows top 100 U.S. hits written by the Beatles excluding covers or albums after *Let it Be*.



Snippet from Adam McCann's Beatle Viz

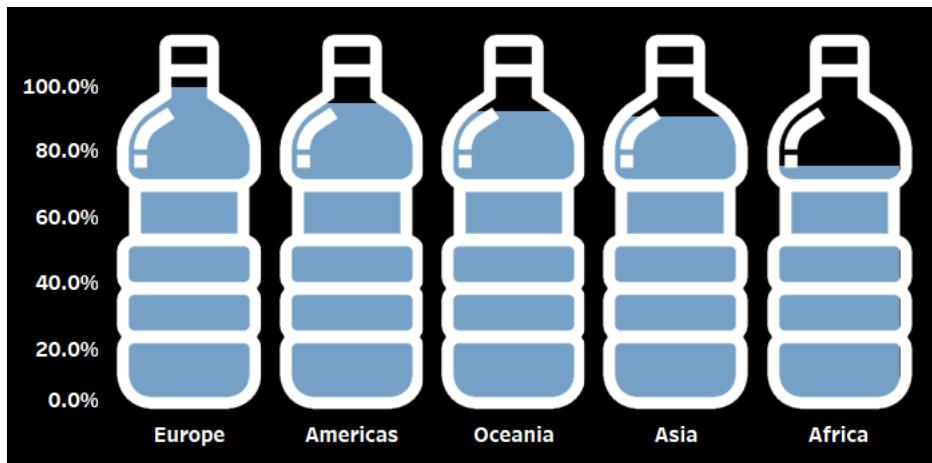
That said, I think my favorite Tableau Public vizzes aren't just amazing vizzes, but they hit me at a special time. For example, I recall seeing **Adam McCann's Beatles Analysis** when I first started using Tableau. I was so amazed that you could do that in the software...plus the Beatles are my favorite band. So that one really stuck with me.

When developing my top ten list, I struggled. There were 15 or so that could have easily landed in my top ten. One of those is from **Wendy Shijia** where she did the “curves on a map” technique that eventually led to a guest blog post on our site. I remember looking at that in the airport and just being blown away. This technique ended up being used in dozens (if not hundreds) of Tableau Public vizzes including **Christian Felix's Iron Viz** winner.

Another one that just missed my top ten was “**A Brief History of Modern Music**” by one of my absolute favorite Tableau author/artists, **Kasia Gasiewska-Holc**. This is just beautifully done from top to bottom.

CJ: My journey like many others started with some of your brilliant templates. I think my favourite when I started was your curvy bump chart. Can you remember your first tutorial? What made you start wanting to create templates? ([Link](#))

K: My first tutorial was actually a guest blog post on KenFlerlage.com. Ken was a Zen Master before I even started using Tableau and his site was well established. About a month after I started using Tableau, I got my **first VOTD**. The portion that got a ton of attention was the filled water bottles showing regional access to clean water (note that over time, this viz has taken on some weird rendering issues). I received lots of comments about that chart, which was something I had seen **Simon Beaumont** do in the past. So Ken asked me to write it as a **guest blog** on his site.



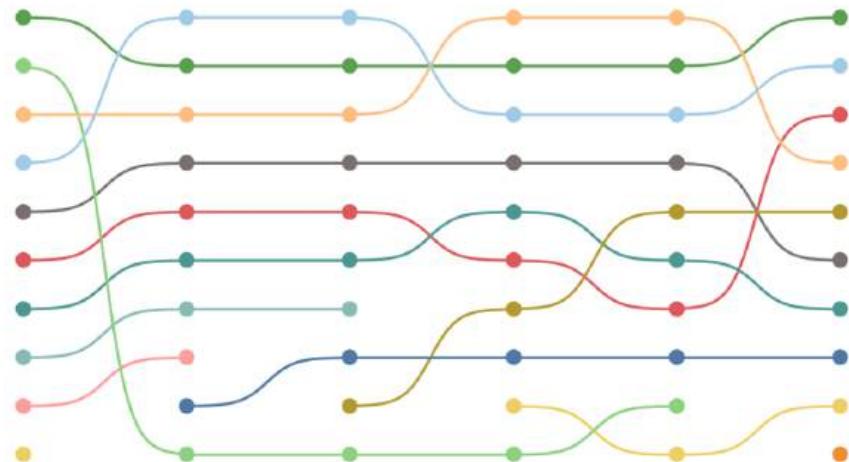
In regards to templates, I really picked this up from Ken. He had previously created several sankey templates, a radar chart template, a sunburst, and several others. The truth is, this stuff is complicated.

Curvy lines require data densification and complicated table calcs...it's not easy stuff. So by creating templates, this allows other users (and myself) to quickly reproduce these charts. And although they all use Excel as their data source, this can be easily swapped out for an actual table or Custom SQL. In fact, I built my first ever sankey chart at work to show flow of accounts and I used his template by swapping out his spreadsheet for Custom SQL. Truth is, I've NEVER created a sankey diagram on my own without his template, not once. And to be honest, I've only created a "curvy bump chart" from scratch one time – ever since, I've used my own template. So yeah, the reason for creating templates, eliminate a pile of work for myself and others.

CJ: What template has been your favourite to create? Why?

K: Ken is really the “template guy”. He’s done so many and you see them everywhere. I’d say 90% of the time I see a Sankey on Tableau Public, it comes from one of Ken’s templates. So for me, that’s probably easy...the curvy bump chart is my favorite that I created...just because I’ve created so few.

That said, Ken and I actually collaborated on one of our most recent templates, [the equal width sankey template](#). Truth is, Ken did 99% of the work on that, I just came up with one key idea. Check out the blog for more information. It’s an interesting read and definitely my favorite template on our site.



CJ: Bit of a cheeky question. What's the most popular blog/tutorial on the Flerlage Twins site? What do you think made it so popular?

K: How about this...I'll give you the top 3. But before I do, I should say that Ken kicks my butt when it comes to website views. He owns 6 of our top 10 and 4 of our top 5.

1. [20 Uses for Tableau Level of Detail Calculations \(LODs\)](#)
2. [The Key to Dynamic Parameters & Some Good Use Cases](#)
3. [Datafam Colors: A Tableau Color Palette Crowdsourcing Project](#)

I should note that number 1 (LODs) has nearly twice as many views as number 2 (dynamic parameters).

CJ: Your website has all kinds of content ranging from tips to building complicated charts to simple design techniques and advice. What are the blog posts that you share with people the most often; which might you like if they were “required reading” for all Tableau users?

I love this question...and it's an easy one. There are four blog posts that I recommend constantly, two from Ken and two from me.

1. **Mastering Tableau** by Ken. This blog post lays out a perfect plan on how to start using Tableau and how to continue to improve your skills. I recommend it to new users constantly. It's probably my most recommended blog post.
2. **Why & How to Connect with the Tableau Community** by me. This talks about how and why it is important to connect to the community. It discusses Twitter, user groups, Tableau Public, community projects, mentors and so much more. Community has been the key to my growth and I hope others read this, engage, and grow like I did.
3. **20 Uses for Tableau Level of Detail Calculations (LODs)** by Ken. As you just read, this is our most popular blog post on the website. People tend to struggle with LODs and this is just an amazing resource.
4. **Simple Steps for Better Design** by me. This started off as a “pet peeves of dataviz” blog post. It ended up as 26 different ways to improve design in Tableau (but can absolutely be applied to the wider dataviz community). When I say design, I am referring to a lot of different things, but the major focus is on best practices. I've sent this to hundreds of people and have presented on the topic at least a dozen times (with another one this month). It's a great resource for new and intermediate users.



CJ: I've personally struggled sometimes when it comes to the user testing side of creating new ideas for the community. Do you have a list of tips to consider?

K: To use technical terms “test the cr*p out of it”. In my opinion, it's not a lot different from a business dashboard. I test them myself and have colleagues test them. I try to do crazy stuff in order to break them.

And in the final blog post, I always ask people to let me know if they encounter any issues.

CJ: Your follow-along blogs are so eloquently written. What are important factors to note when putting together a run-through?

K: Easy, jokes. Jokes are the key!

Honestly, its a great question. Truth is, I'm a horrible reader. I never enjoyed reading and do not do it for fun (although I do enjoy reading a good Tableau blog post). However, I think my writing has benefited from that.

I try to make very complicated content easy to read, understand, and implement. I also understand that inadvertently skipping a step in a technical blog post would ultimately lead readers to unsuccessful outcomes.

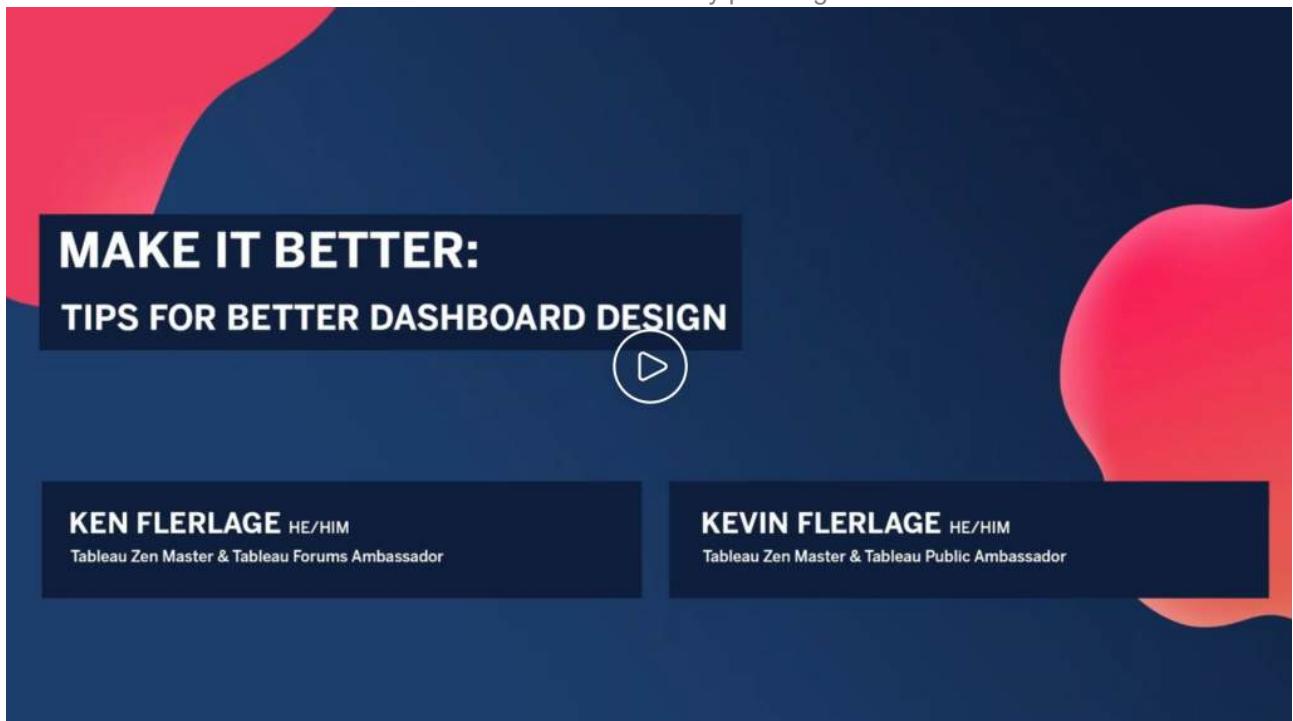
CJ: Some of your more recent tutorials on, axis', tile containers, workbook design and BAN's have helped elevate companies dashboards to the next level. Would you say this is where most of your interest lies?

K: I recently had a related discussion with **Zach Bowders'** on his podcast **Data + Love**. He commented that analysis is easier than design. I personally think that analysis is easier than design on average for the type of people that end up in this job. We all know that we have a wide range of skill sets and degrees in the dataviz community. One of the best in the world, **Jeff Shaffer**, has a degree in music. Iron Viz 2019

cowinner, Josh Smith, has a degree in poetry. But I once read (I believe it was in the Dataviz Society's annual report) that the top two degrees of dataviz practitioners are computer science and mathematics (note that Ken has a computer science degree and I have a mathematics degree). I don't have data to support it, but my inclination is that people with those degrees tend to be more skilled in analysis than they are at design.

With that said, if you look back at my history of writing blogs, I've spent a lot of time on technical topics. Over time, I've started to see what I noted above, a lot of people in the community seem to struggle with design. Every time I share something related to design, people go nuts over it. So yes, as of late, I've focused a lot on writing about simple ways for better design. I've also intentionally kept most of that focused on better design *within the tool*, not in other tools (I completely support using other tools, but I think the average user just wants to make things look better within Tableau).

If you watch our **session at TC21**, the goal was simple: take a "rough" dashboard and make it better. That included some technical tips and tricks, but most of it was focused on making the dashboard more legible and more aesthetically pleasing.



CJ: Has there been any charts that you've seen in the broader data visualisation design community that you've been itching to try re-create in Tableau?

I am constantly on the search for things I've never seen done in Tableau. There isn't anything on my list currently, but if anybody has any suggestions, I'd love to know about it!

CJ: To some it would seem you've checked off every accolade there could be from early VOTDS, to Ambassador to Zen. Is there anything else on the bucket list achievement wise you're working towards? Catch up to **Andy Kriebel** as the most favorited author on Tableau Public??? Just joking – he's uncatchable and deserves that top spot.

I am blessed to have been successful. I've worked hard, but I've also been surrounded by great people like **Ken**, **Jeff Shaffer**, and brilliant colleagues like **Ethan Hahn** and **Dinushki De Livera**. I consider myself incredibly lucky and incredibly blessed.

As far as accolades, it's always wonderful to be recognized and I am grateful for Tableau's recognition programs like Ambassador and Zen Master. Truth is, I love this stuff. It's my hobby. It's great fun. But I like helping people even more. This is why Ken and I publish a blog post on our site nearly every week. We don't advertise on the site and we have not profited a single nickel on it. But when someone you help gets a VOTD or becomes an ambassador, well, that's the profit, that's the award.

CJ: You and Ken publish a blog post pretty much every single week and you each publish dozens of Tableau Public vizzes each year. What drives you to continue to put out so much content?

Hey, it's like you read my mind. We both love Tableau and we both love helping others. Since I was in my early 20's working a job, I always thought that there should be more to life than just working a job and making money. I often considered getting into ministry or a non-profit so that I could help others. Truth is, I think I've found my calling. Writing blog posts, creating vizzes, and doing presentations is great fun, but it also has the potential to help a lot of people grow in their skills and their careers. For me, that is motivation to keep pushing out content.

CJ: Last year, you started a thread asking what were some of the communities favourite vizzes from the last year. I'd like to ask you the same – what has impressed you in 2021?

K: Ha ha, great question! As I mentioned, Ken and I recently chose our favorite Tableau Public vizzes ever. When we did this, we laid out four important ground rules.

1) We couldn't pick any of our own vizzes. (I mean, who would do something like that???)

2) We would allow ourselves to include one of the other twin's vizzes IF WE WISH, but there was zero obligation to do so.

3) We were only allowed to pick a maximum of two vizzes from any single author. We called this the "Adam McCann Rule".

4) We had to pick our annual favorites each year moving forward, starting in 2021.

So, CJ...people will just have to wait until early 2022 to see what we loved in 2021! Spoiler-Alert, a **Pradeep Kumar** viz will be on the list.

CJ Round-up:

How awesome has it been hearing Kevins journey and content history to date? There are a few FlerlageTwins blogs outlined in the mini interview that I always revisit. Kevins ability to do design within the tool itself as oppose to leveraging external tools is simply sublime.

I really enjoy it when things come somewhat full circle. Kevin undoubtedly helped me in my early journey with his shout-outs, the opportunity of a guest blog and useful tutorials. In fact my first ever VOTD came from using his bump chart tutorial. We then collaborated to hack the tutorial into a **sports bracket template**. Funny to think about the amount of VOTD's that have been inspired by his impact over the years. I'm sure many others have a similar story.

"When someone you help gets a VOTD or becomes an ambassador, well... that's the award."

LOGGING OFF,

CJ

UNDERSTANDING POLYGONS 003

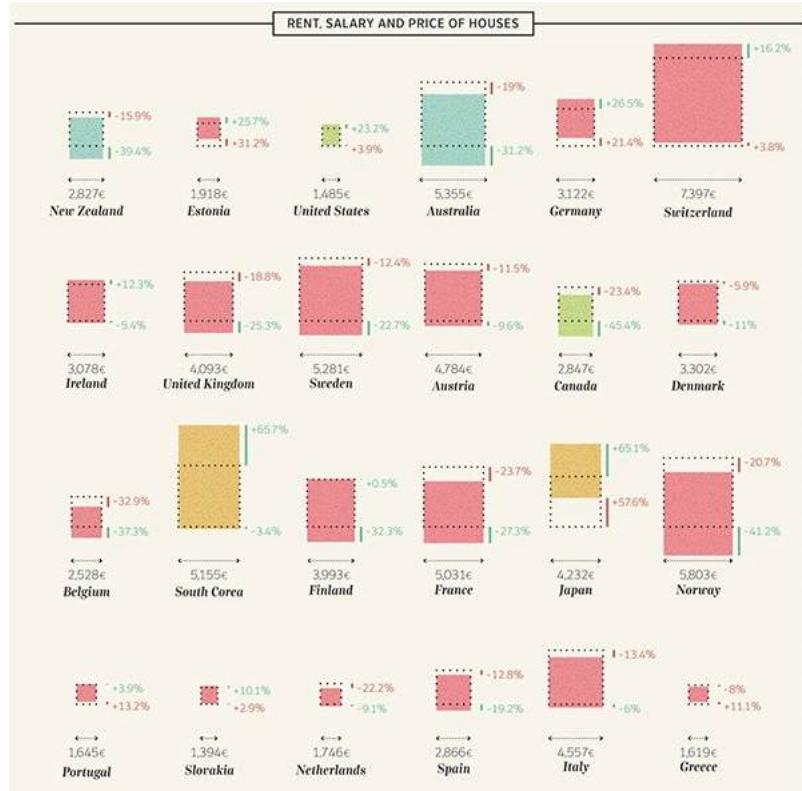
Hi All,

This will be one of the last few of my Tableau blogs until 2022!

This will also be the final Polygon blog for the series, before I get a public lynching from the Tableau community for ruining every best practice that exists, ha.

Polygon V003: Building upon sizing measures and adding flair.

Each blog, I will link some interesting artwork from the data visualisation community and showcase a small snippet of how a similar effect can be done within Tableau. None of the visualisations I produce will be considered fully complete, just *half-baked ideas*, that I hope help others think differently about design. This blogs inspiration is this **US Hate** project by Marianna Piazza, Silvia Castagna, Maria Alma Girasoli – which I came across on Behance. Followed by this **Let's stay home visualisation** by Francesco Pontiroli and Benedetta Signaroldi.



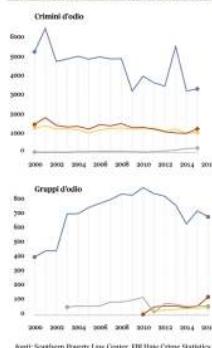
Come si legge?

I grafici di Poly sono stati creati dal pregiudizio verso uno specifico gruppo di persone.
La visualizzazione rappresenta la diffusione dell'odio sul territorio statunitense sotto forma violenta (crimini) e sotto forma ideologica (gruppi).

Discriminazione per:
■ Raza / Etnia ■ Orientamento sessuale
■ Religione ■ Altro

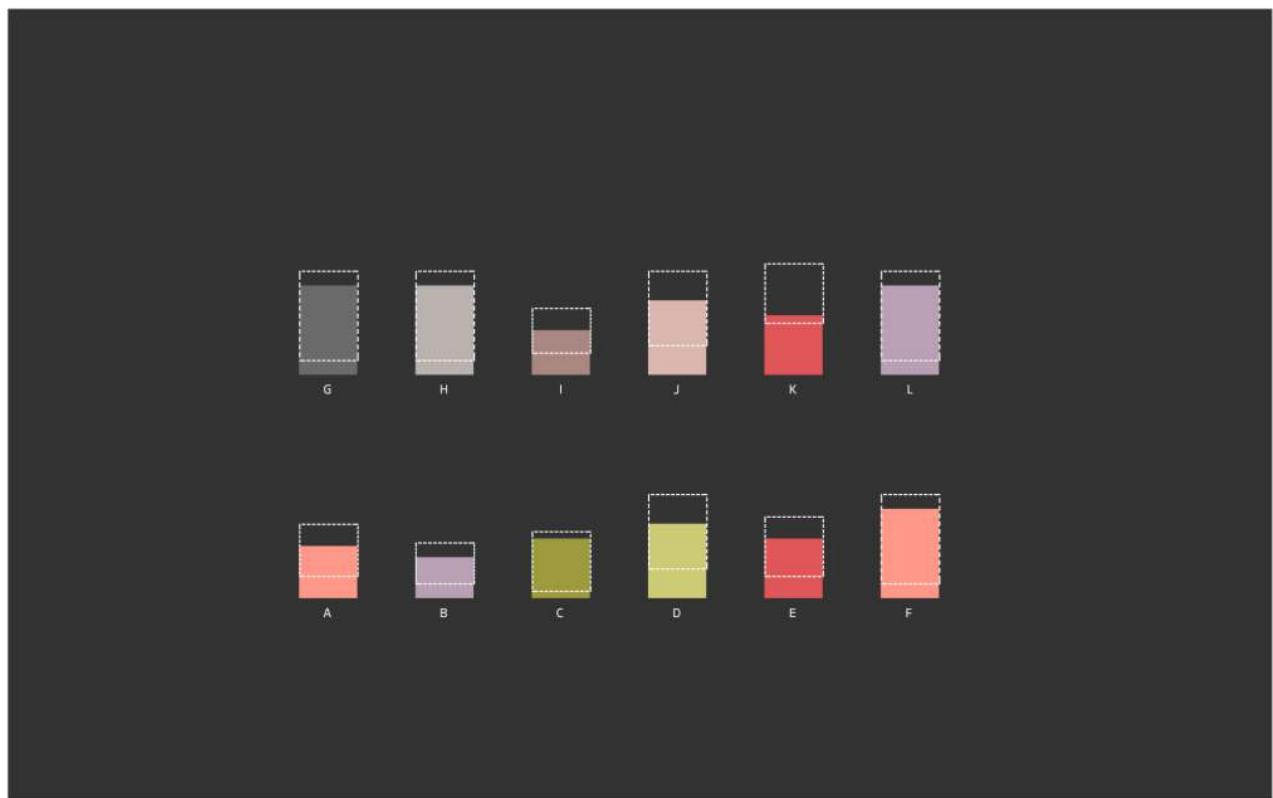
Numero dei gruppi d'odio (totali)
■ = 1 gruppo
■ = > 1 gruppo
■ = Crimini d'odio per uno solo abitanti
■ = Numero totale dei crimini d'odio (2015)

Andamento dei crimini e dei gruppi d'odio in USA.

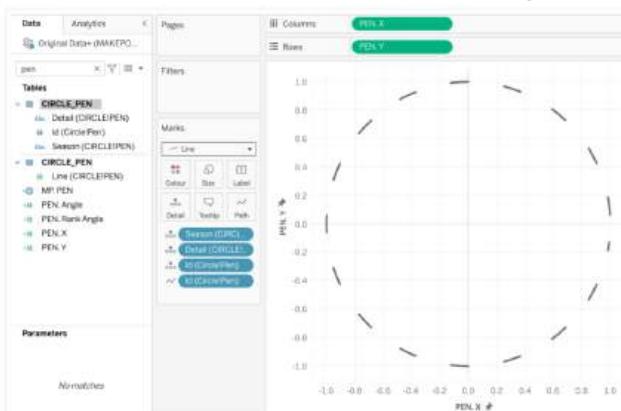


From Polygon blog part 1 and part 2, we will have covered off some of the methods to recreating this visual using polygons. Such as, rotating a shape, plotting multiple shapes on a page, joining the polygon marks up effectively, and transforming the shapes in terms of size and position.

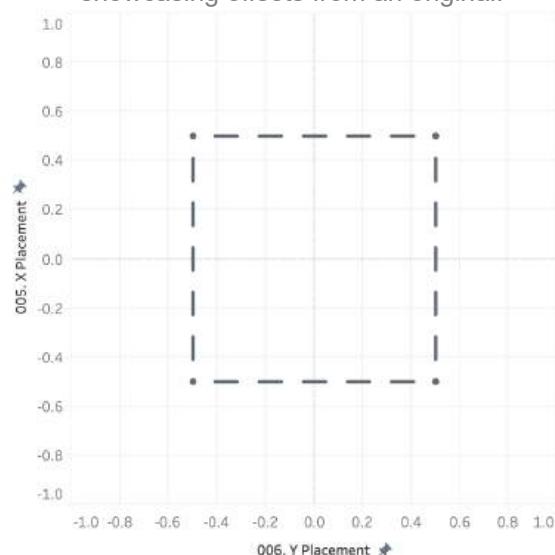
The final piece to the puzzle I want to make is the dashed effect seen in the Let's stay home visualisation.



I have briefly covered-off how this is done for circles in a previous UEFA blog.



Today we will look to apply the same logic but to a square/rectangle. In this case, it is a fun way of showcasing offsets from an original.



The negative to this methodology is the amount of additional rows of data that it requires in order to make what simply is a bar chart.

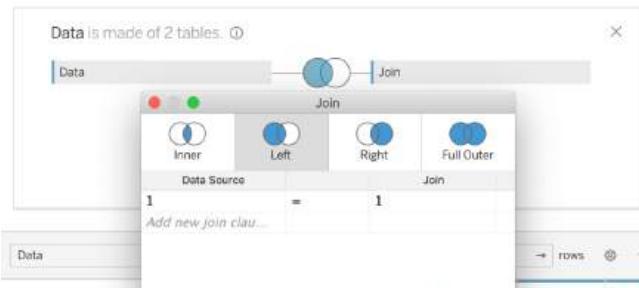
To follow along, download the dataset from the top of the page, alongside the link to the workbook.

A	B
T	Line Detail
1	A
2	A
3	B
4	B
5	C
6	C
7	D
8	D
9	E
10	E
11	F

A	B	C	D	E
Start X	Start Y	End X	End Y	Path
-0.5	0.5	0.5	0.5	1
0.5	0.5	0.5	-0.5	2
0.5	-0.5	-0.5	-0.5	3
-0.5	-0.5	-0.5	0.5	4
-0.5	0.5	0.5	0.5	5

THE DATA

Join your dataset with a custom calculation of 1=1.

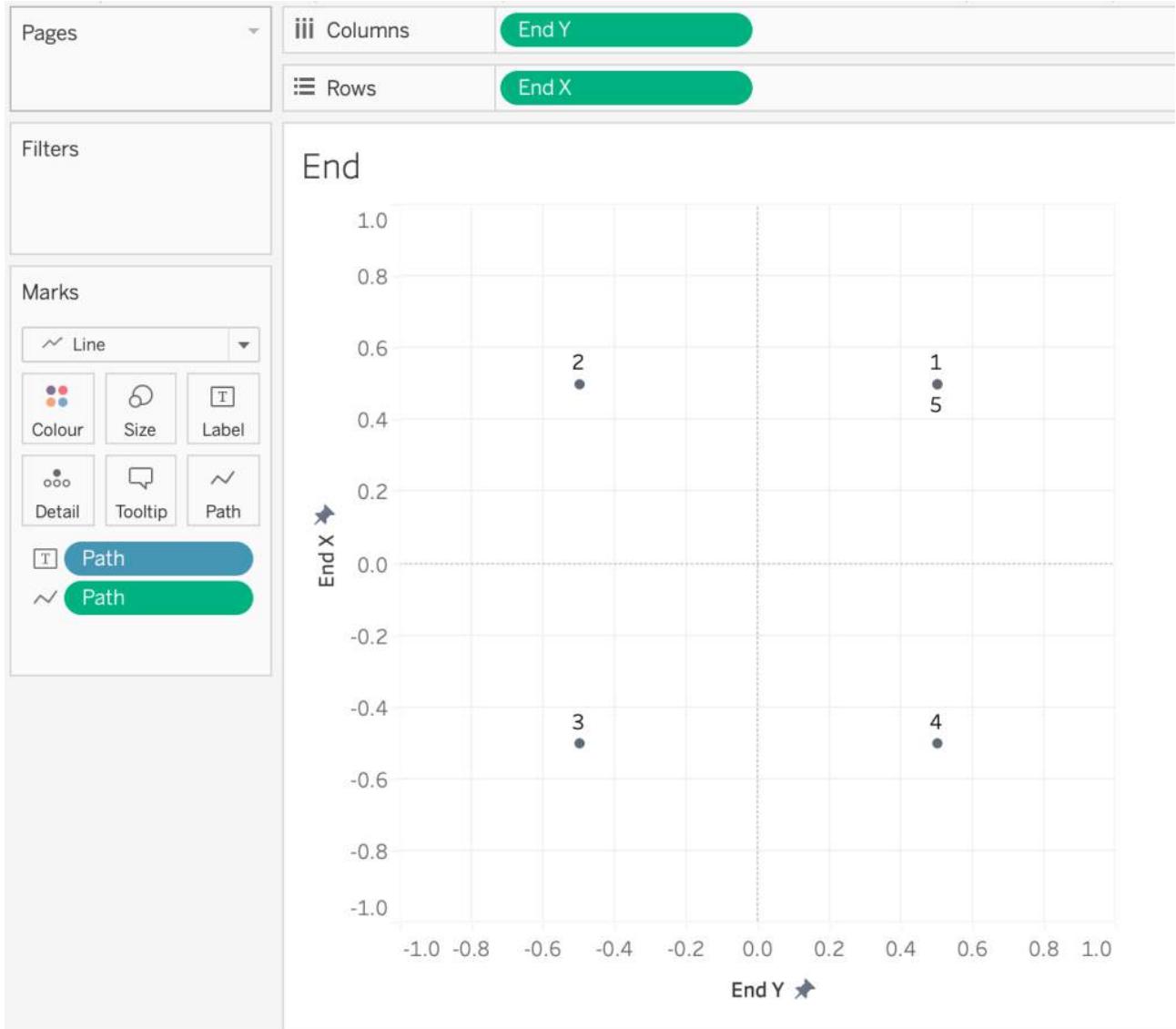


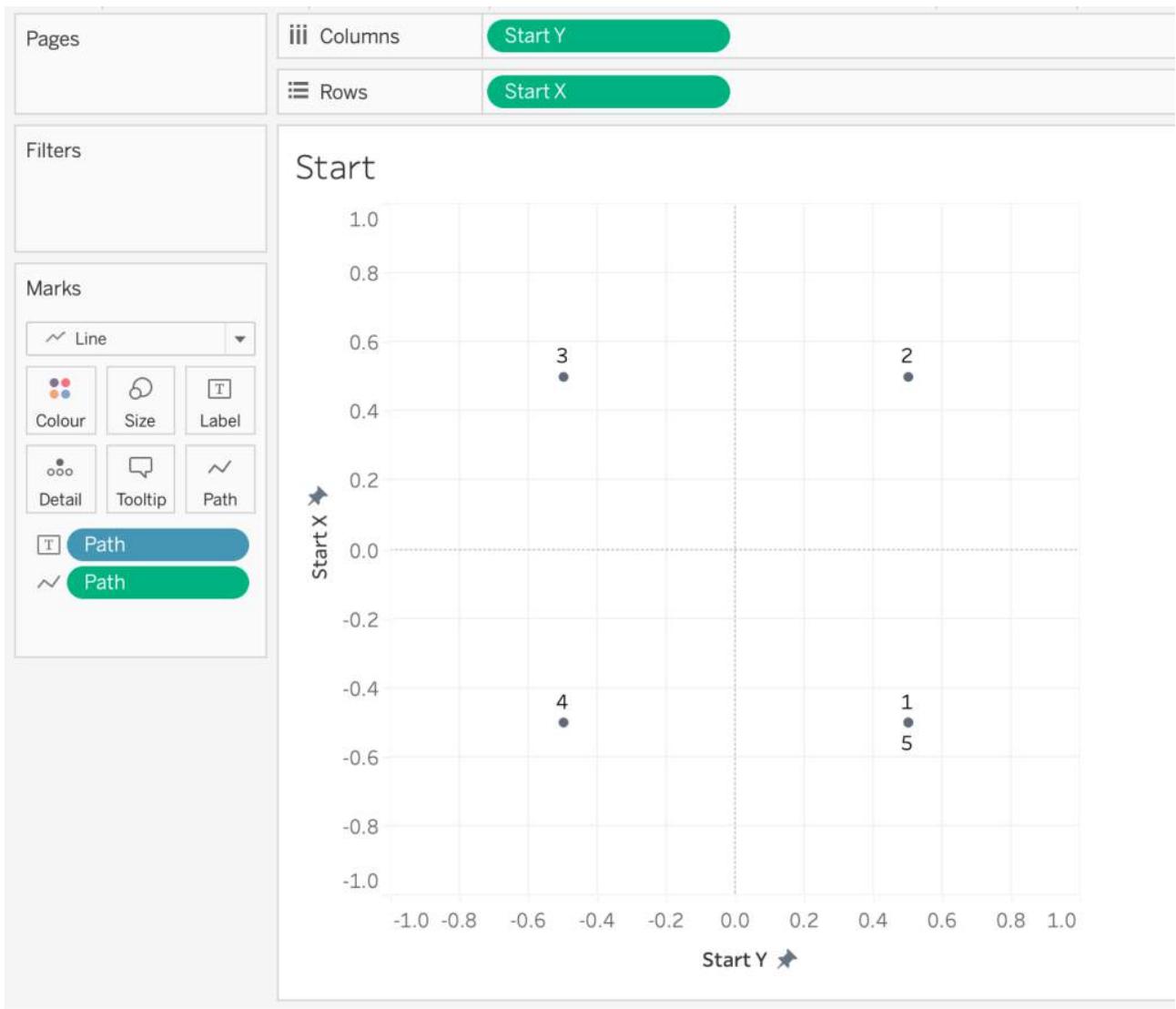
You will see the Start X and Start Y plot a simple square. If we plot these points and join them using a path, It would create a simple line/polygon square. This is concepts we have covered off in V001 and V002 of this blog series.



The end X and End Y are the same points but offset to say the end of the path is the start of the next path. All will become clear when we look at the calculations but for now just know we need to know where our path starts and finishes.

I've labelled these to make it easier to understand, and colour coded it in the excel for extra clarification.





The last thing to note is our second Tab of data that has two columns.

T is the number of points we want between each line. Line Detail will be used to create how these values are split out (I.e used to make a full path length into dashes)

Download the workbook to follow the rest of the tutorial, it can be found at the top of the page under the title header.

Firstly we find the total distance between the start and end point of our lines.

002.Y Distance



```
/*
Find the gap between the two points for Y
*/
[End Y] - [Start Y]
```

The calculation is valid.

5 Dependencies

Apply

OK

001.X Distance



```
/*
Find the gap between the two points
*/
[End X] - [Start X]
```

The calculation is valid.

5 Dependencies

Apply

OK

We take the total length of the distance and divide it by the number of points (T) we have.

D04. Y Spacing

X

```
/*
Divide the gap by number of points we will add in
*/
[002. Y Distance] / { FIXED: MAX([T])}
```

The calculation is valid.

4 Dependencies

Apply

OK

D03. X Spacing

X

```
/*
Divide the gap by number of points we will add in
*/
[001. X Distance] / { FIXED: MAX([T])}
```

The calculation is valid.

4 Dependencies

Apply

OK

We use a fixed calculation because we want to maximum value of T (In this case 11, for all our rows of data) Finally, we want to take the start point and add the required distance of the spacing for each extra value we want to plot.

006. Y Placement

X

```
/*
For each starting point position the extra points along
the line
*/
[Start Y] + ([004. Y Spacing] * [T])
```



The calculation is valid.

3 Dependencies ▾

Apply

OK

005. X Placement

X

```
/*
For each starting point position the extra points along
the line
*/
[Start X] + ([003. X Spacing] * [T])
```



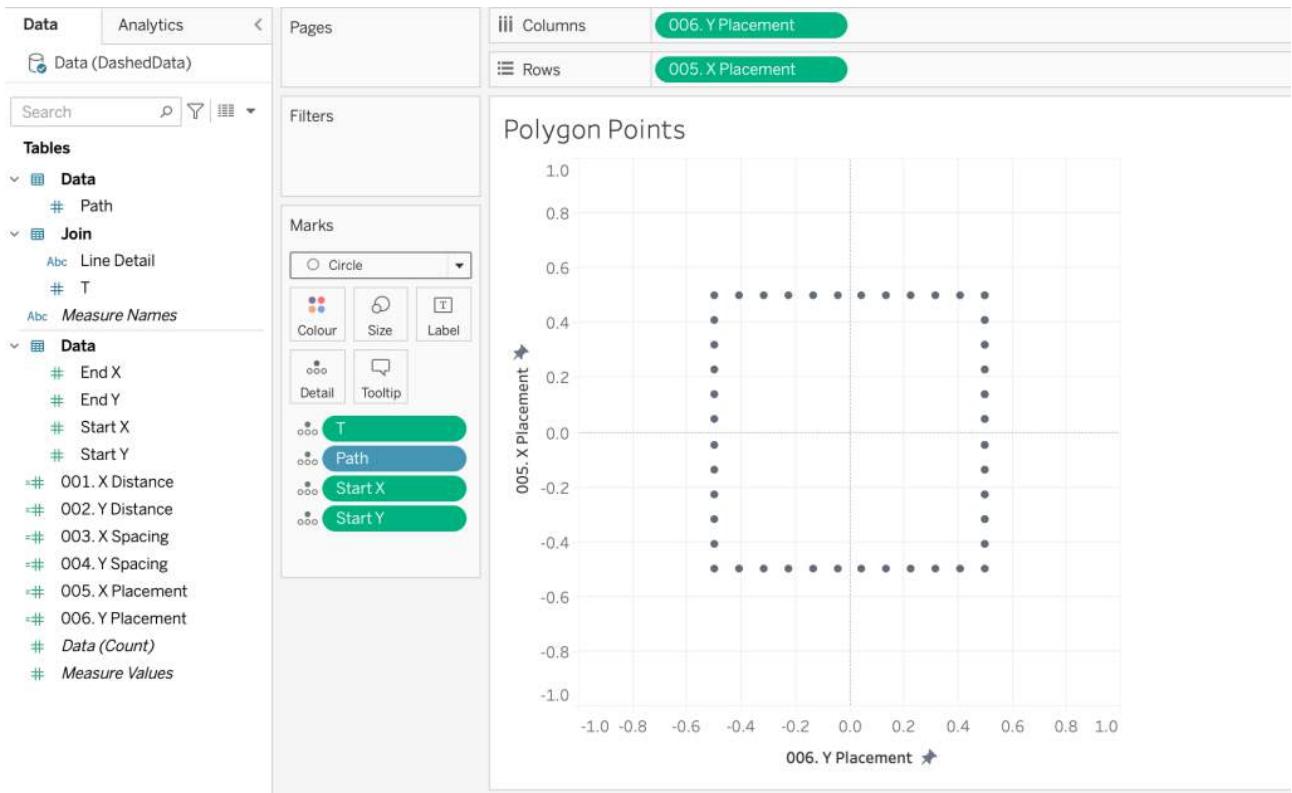
The calculation is valid.

3 Dependencies ▾

Apply

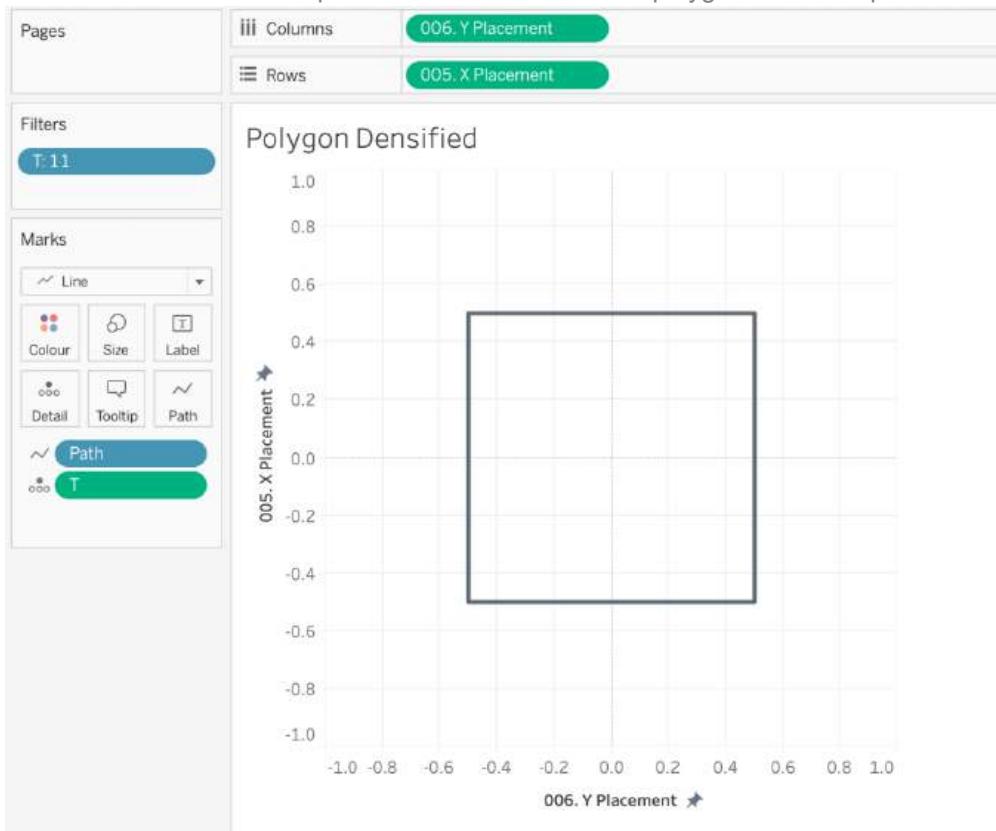
OK

All goes well you should be able to recreate this:

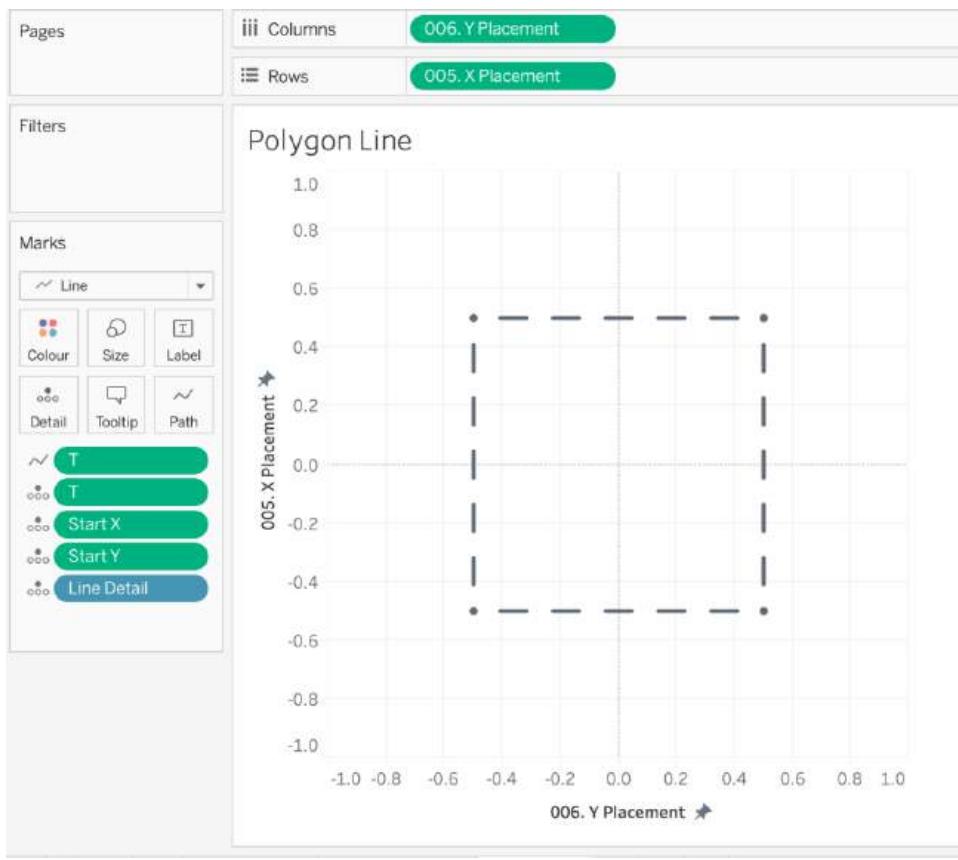


So far we have taken the start and end co-ordinate, added in extra points in between! fun.

Even with the added points we can still make our polygon or lined square.



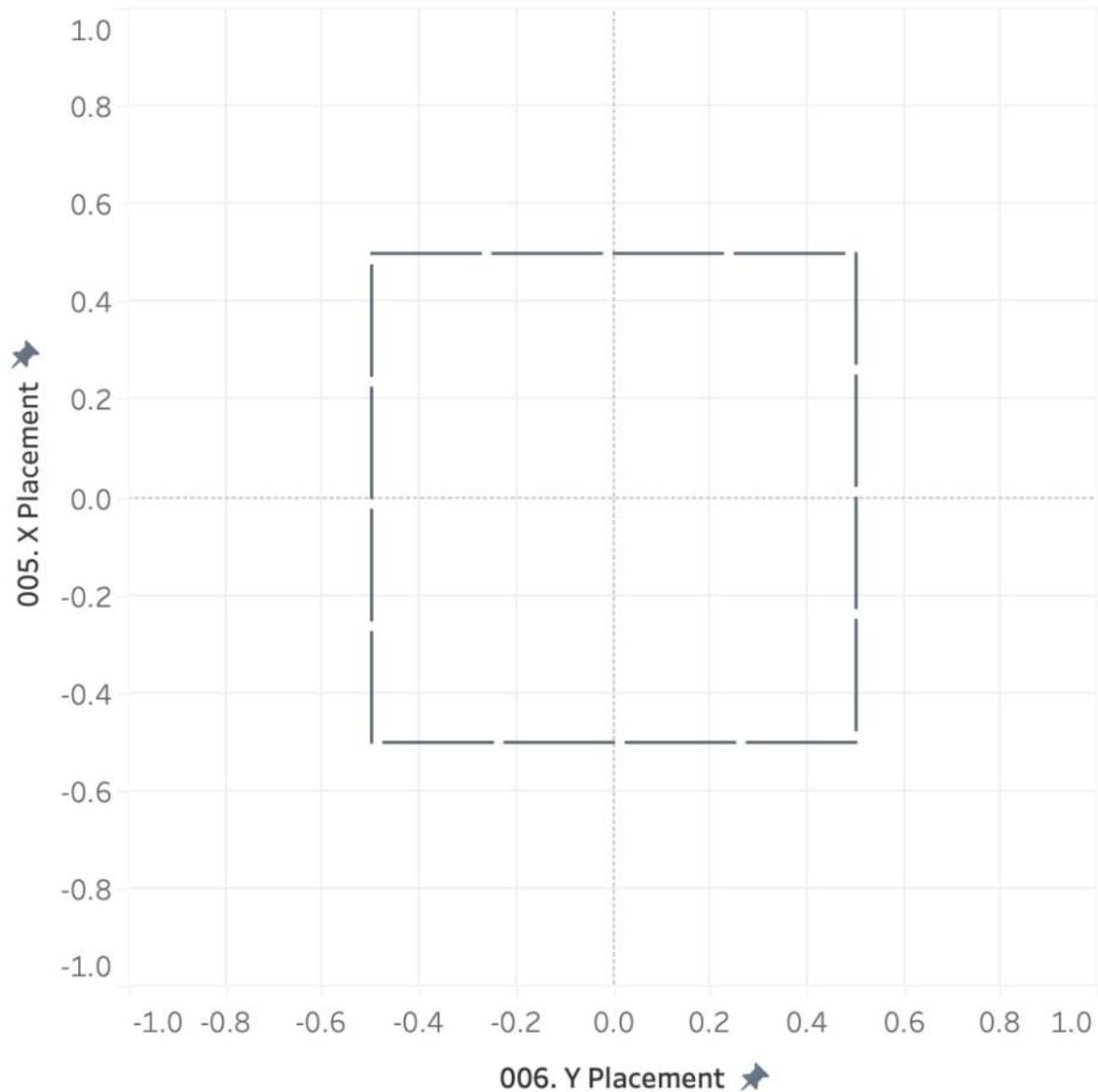
So now with our individual polygon plots sheet, how do we create it to be a dashed line?



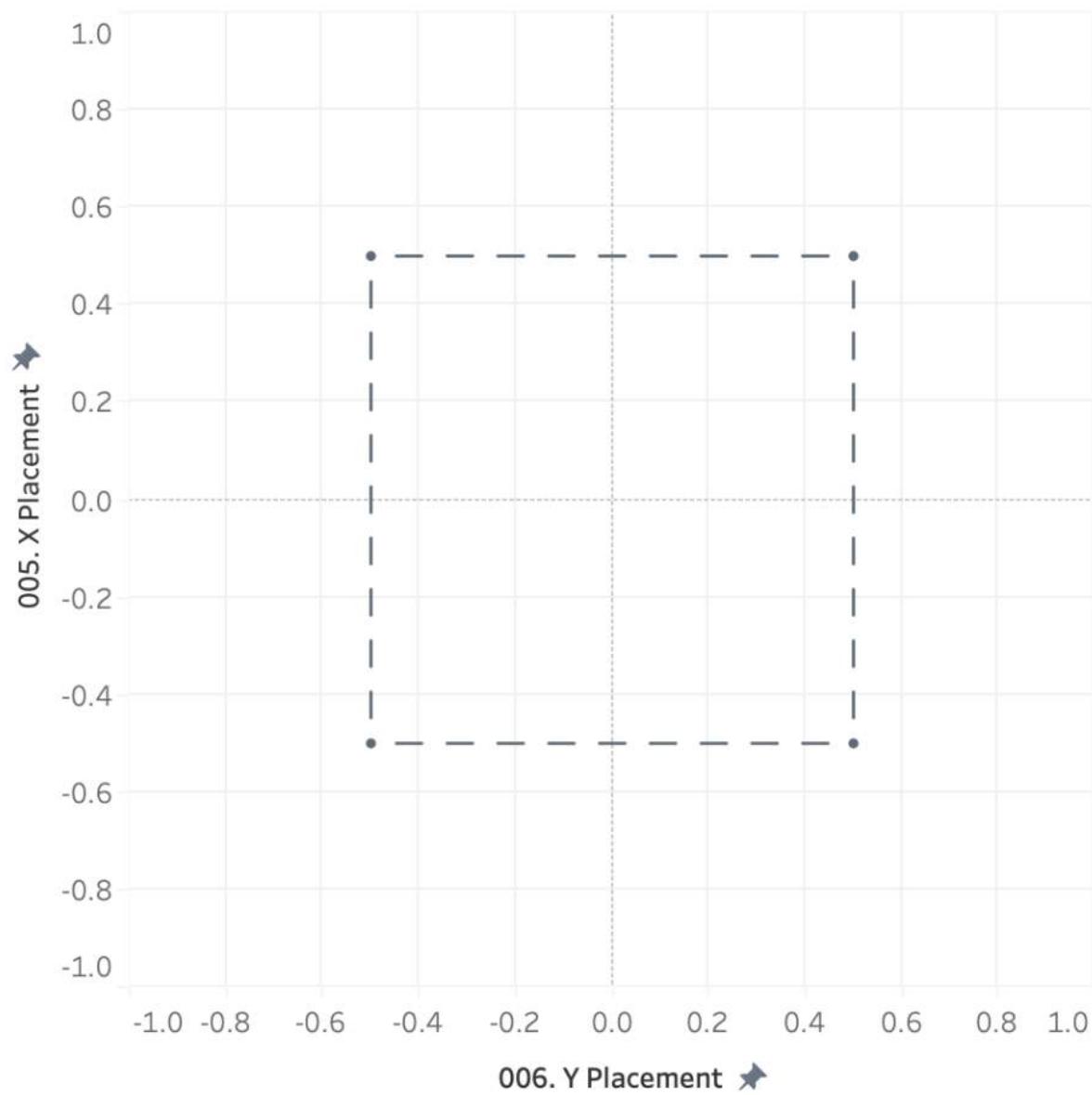
Drag Line Detail onto the detail mark. It will split the dashes out by what you have in this column. For example in the above it joins two of the marks together.

Of course, you can amend the column of T and the Line Detail to create different length lines and points.

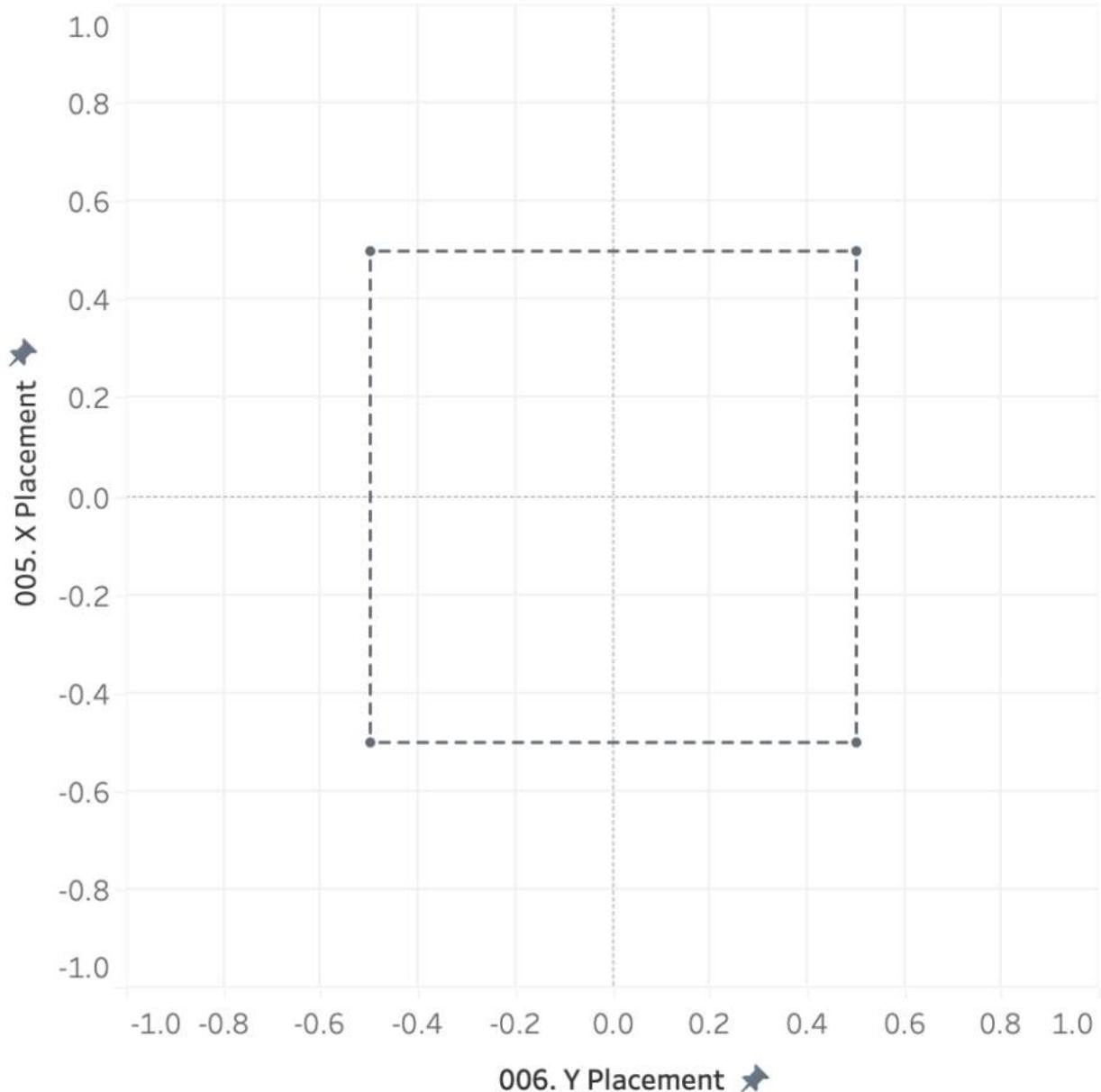
Polygon Line



Polygon Line



Polygon Line

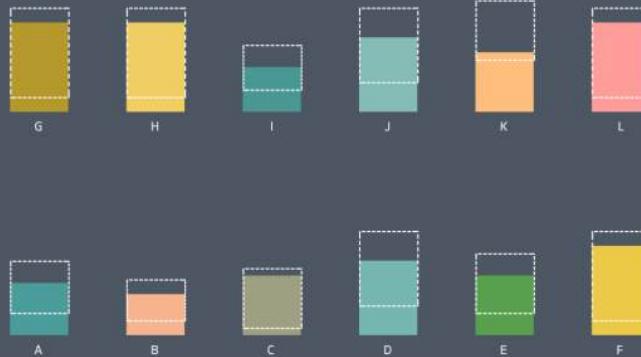


For today, we will end it their for the half-baked mess. Obviously you can apply these calculations to almost any shape.

Here is me playing around to create a similar viz style to that of Francesco Pontiroli and Benedetta Signaroldi. I've included the data I used to create the below from the Github Repo as a reference point. If you're a little lost as how I made the rectangles for this – I'd recommend revisiting [blog 002](#) of the series that covers of creating polygon shapes!

POLYGON V003 BLOG

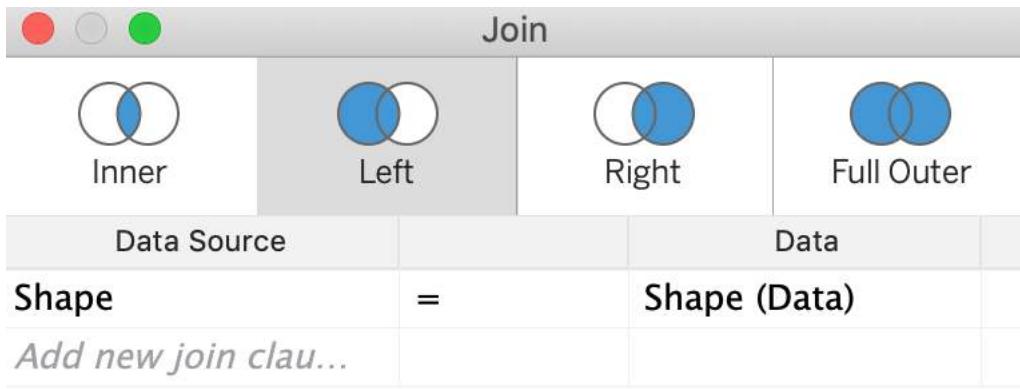
DASHED LINES



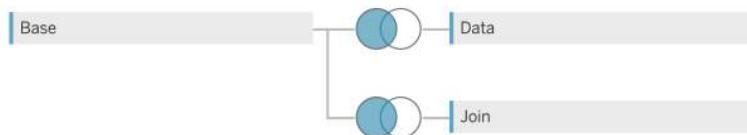
The above chart was used making the 'extra' excel sheet within the google drive. It can be a little complex to digest, so as a brief reminder, remember I plot each of the original base points, allocate 4 points to join up for each bar (or more if its the dashed line).

My data joins are as below. With Data joining to the base on shape, and then the join sheet left joining to base on a 1 = 1 relationship. These joins are covered off in polygon blog v002.

Join	
	Inner
	Left
	Right
	Full Outer
Data Source	Join
1	= 1
Add new join clau...	



Base is made of 3 tables. ⓘ



Some final thoughts:

This method does increase the dataset size quite drastically.

Personally I think its quite artistic the dashed line effect within circles, squares and diamonds. It's subtle yet effective to show change of previous measures.

It allows quite a lot of flexibility in terms of how long you want the dashes. You will have seen in my [UEFA viz](#), I use two different lengths of lines to represent two different categories of [match results](#).

Use the ideas outlined in Polygon 001,002,003 sparingly and with what you consider good effect. I've put together this short series really so people can understand different ways of approaching a problem that are a little different to the norm. If you've enjoyed the series please reach out, I'd love to hear your thoughts.

I can be reached on Twitter, @_CJMayes.

LOGGING OFF,

CJ

UNDERSTANDING POLYGONS 002

Hi All,

I hope everyone is looking forward to the Tableau conference. What a great time to come together. I am so excited!

I have the pleasure of hosting some 1 on 1 brain-dates during the three allotted days, so wanted to say a special thank you to all those who are getting involved. I never thought I'd be able to connect with people from all around the world. Cool huh.

Why do I mention my brain-dates? They are specifically on how to use non conform chart types, which ties nicely into this short series on polygons.

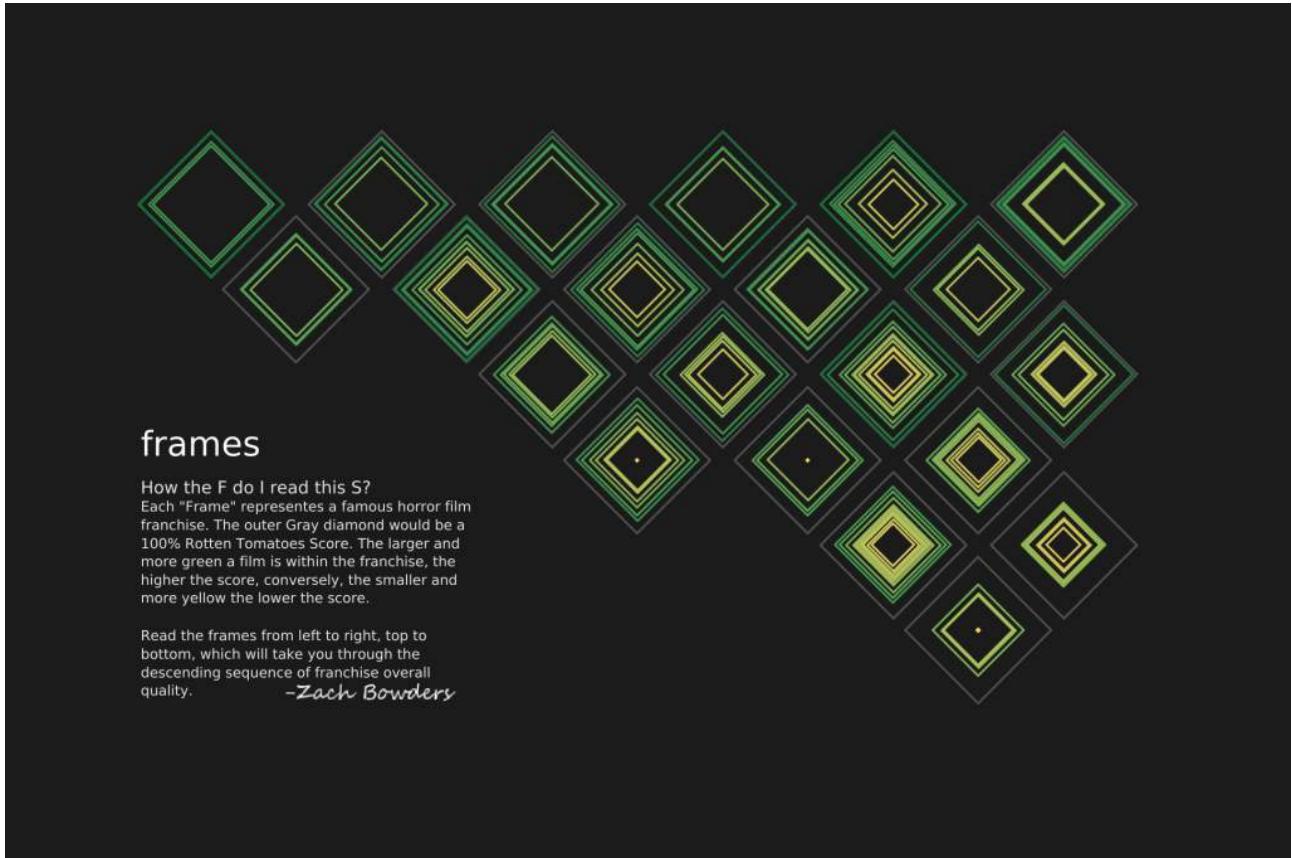
Polygon V002: How to frame and size your polygons.

Each blog, I will link some interesting artwork from the data visualisation community and showcase a small snippet of how a similar effect can be done within Tableau. None of the visualisations I produce will be considered fully complete, just *half-baked ideas*, that I hope help others think differently about design.

This blogs inspiration is **Zach Bowders** – Tableau Zen Master, who many of you will already be aware of and hugely admire.

It's always a pleasure chatting with **Zach**. I secretly learn a lot from him – mostly Tableau stuff (but occasionally random facts to do with America). He is always willing to help people in the community to talk

through new ideas, and kindly went through my original polygons blog with me.



You can view Zach's work, [here](#).

For this tutorial you can download the workbook and dataset from the top of the page. Although inspiration comes from Zach's work you will see if you download his workbook that he uses a different methodology. Zach's methodology is probably the right one for what he was trying to achieve but it worked so well for what I wanted to cover in terms of polygons.

Before we start, I'd just like to make sure readers are aware Zach has allowed me to reference his viz in greater detail.

DATA

I've taken Zach's original data and added in an extra shapes tab. If you'd like to follow along, join the data like this:



Preparing the data can be tricky for things like this. We take the original franchise data (the dataset that has some co-ordinates to plot) and left join to it the 'data join tab'. This in effect is joining all the different sub-categories for each franchise. As we are joining franchise to franchise. The reason for this means all the points for each film we then plot will be split out for each franchise.

The next thing we do is join a shape file to the Franchise data with a join of 1 to 1. This means that for each film, we want to have our shape (4 points for a diamond)

#	#	#	#	#	Abc	#	Abc
Franchise Data	Franchise Data	Shape	Shape	Shape	Data Join	Data Join	Data Join
X	Y	X (Shape)	Y (Shape)	Path	Franchise	Number	Title
2	8	0.50000	1.00000	1	Nightmare on Elm Street	1	A Nightmare on Elm Street
2	8	1.00000	0.50000	2	Nightmare on Elm Street	1	A Nightmare on Elm Street
2	8	0.50000	0.00000	3	Nightmare on Elm Street	1	A Nightmare on Elm Street
2	8	0.00000	0.50000	4	Nightmare on Elm Street	1	A Nightmare on Elm Street
2	8	0.50000	1.00000	5	Nightmare on Elm Street	1	A Nightmare on Elm Street
2	8	0.50000	1.00000	1	Nightmare on Elm Street	2	A Nightmare on Elm Street 2:..
2	8	1.00000	0.50000	2	Nightmare on Elm Street	2	A Nightmare on Elm Street 2:..
2	8	0.50000	0.00000	3	Nightmare on Elm Street	2	A Nightmare on Elm Street 2:..
2	8	0.00000	0.50000	4	Nightmare on Elm Street	2	A Nightmare on Elm Street 2:..
2	8	0.50000	1.00000	5	Nightmare on Elm Street	2	A Nightmare on Elm Street 2:..

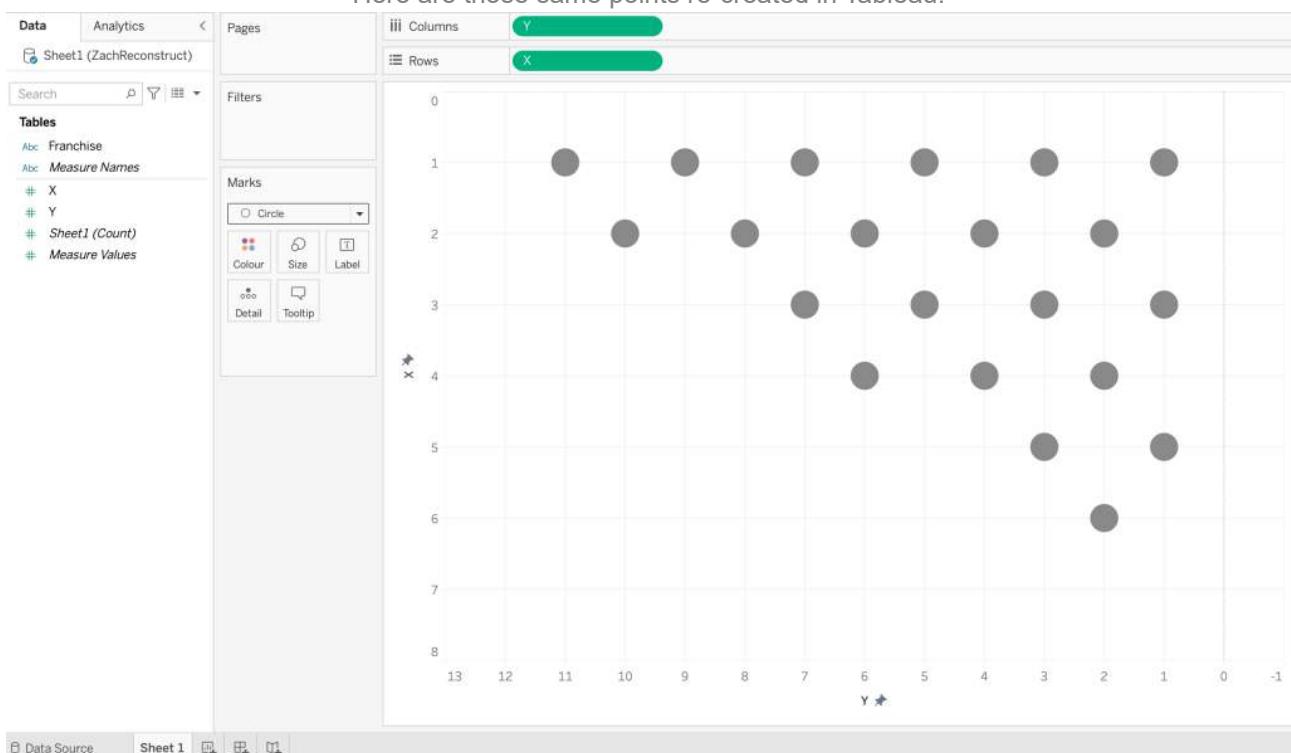
PLOTTING POINTS

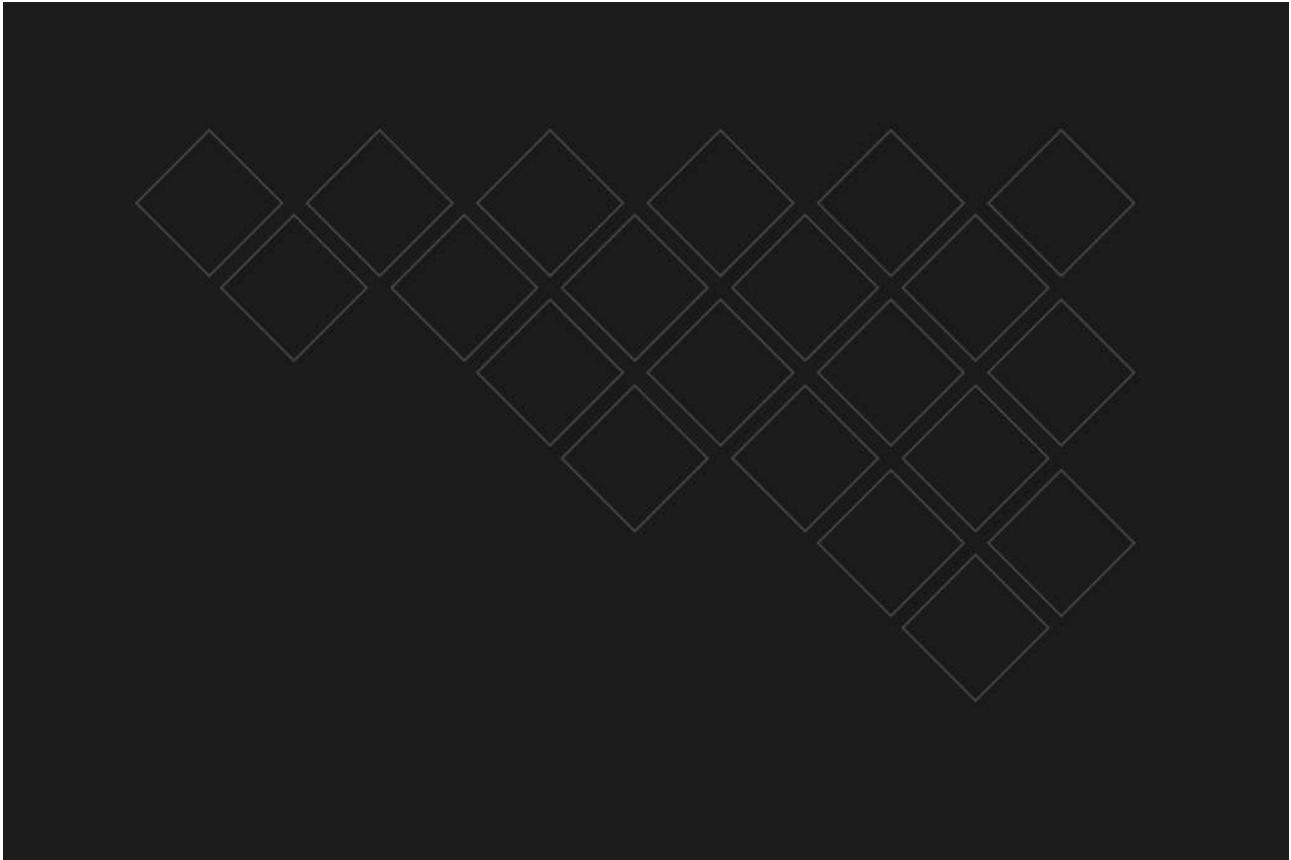
One key ingredient to using custom polygons in this fashion is knowing what it'll look like plotted, and how much room it will take up. Normally with a lot of small multiple ideas and newer map layer ideas you tend to see community members build each block in 1×1 . Not always, but it makes life a little easier to think about.

In fact, Zach's piece above is a perfect example of that.



Here are those same points re-created in Tableau.





Consider:

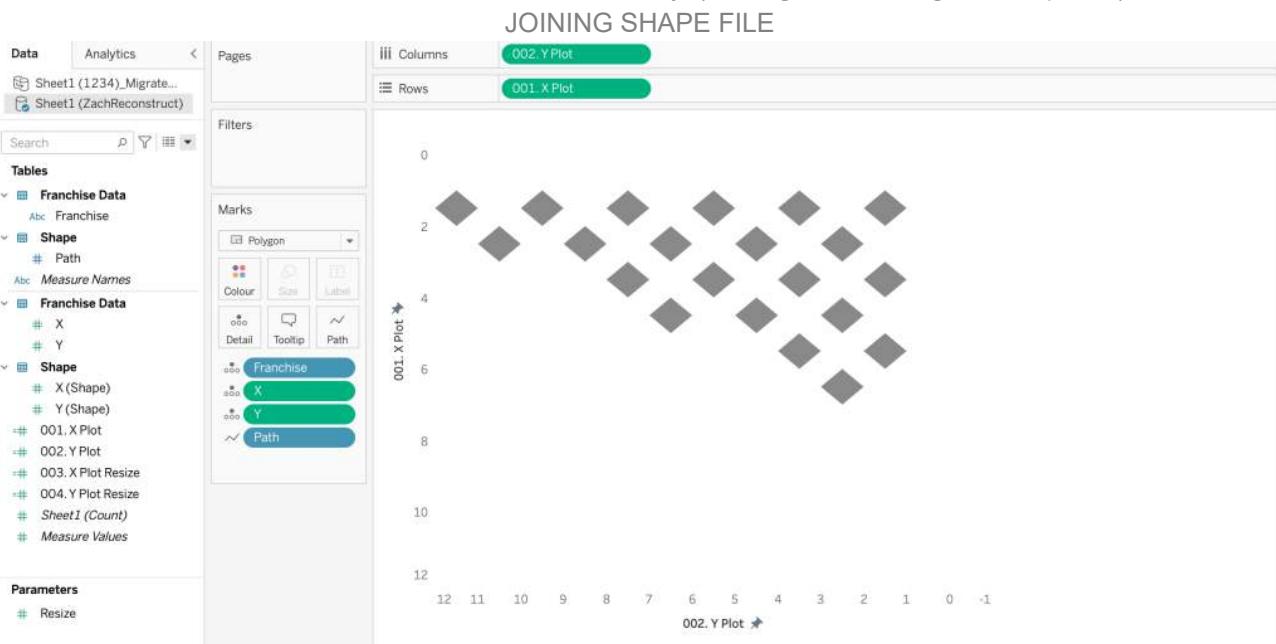
What polygon shape you will use?

What is the size of the polygon shape?

To rebuild Zach's Viz using polygons you could create four points of (0,0.5) (0.5,0) (0-0.5) (-0.5,0) for a diamond, and draw a path between them. This is my thought process behind each diamond spanning 0.5 each way, total length and height of 1 in total.

Of course then it may need to scale them all slightly when plotting them to make sure there is no overlap. A couple of things with this method is fixed axis work in your favour. When you have square shapes you'll want the axis to be the same for both x and y. (same goes for using circular points)

JOINING SHAPE FILE



Above we take the original points and offset them in the 4 directions by the co-ordinates I mention above. You will see how this is done in calculation 001 and 002.

RELATIVE SIZING

Here's me realising the diamonds are nowhere near large enough, so I add in a resize parameter.

Check X 003 and Y 004 – you will see something like:

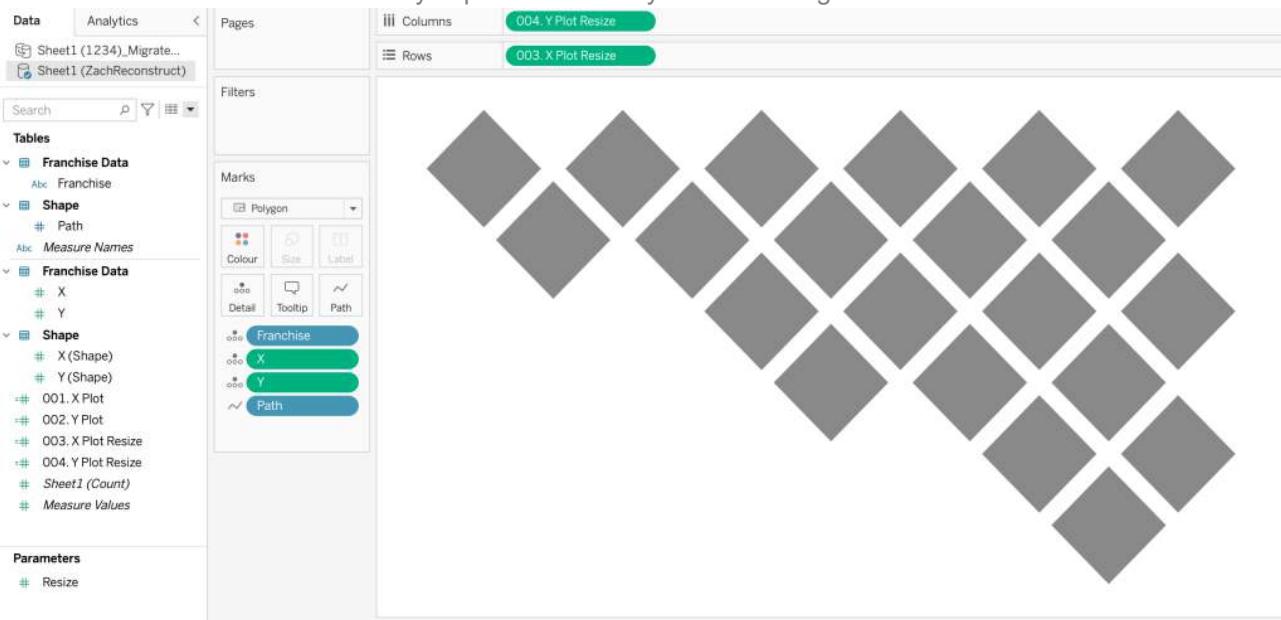
+ (*)

What does this mean?

Take our original x and y co-ordinates for the centre point of each diamond from the original data.

From this we offset the 4 points of our diamond from that centre by the co-ordinates I listed above.

Realising these co-ordinates were too small I added a value that we multiply to the 4 offset points to be able to evenly expand them away from their original centre.



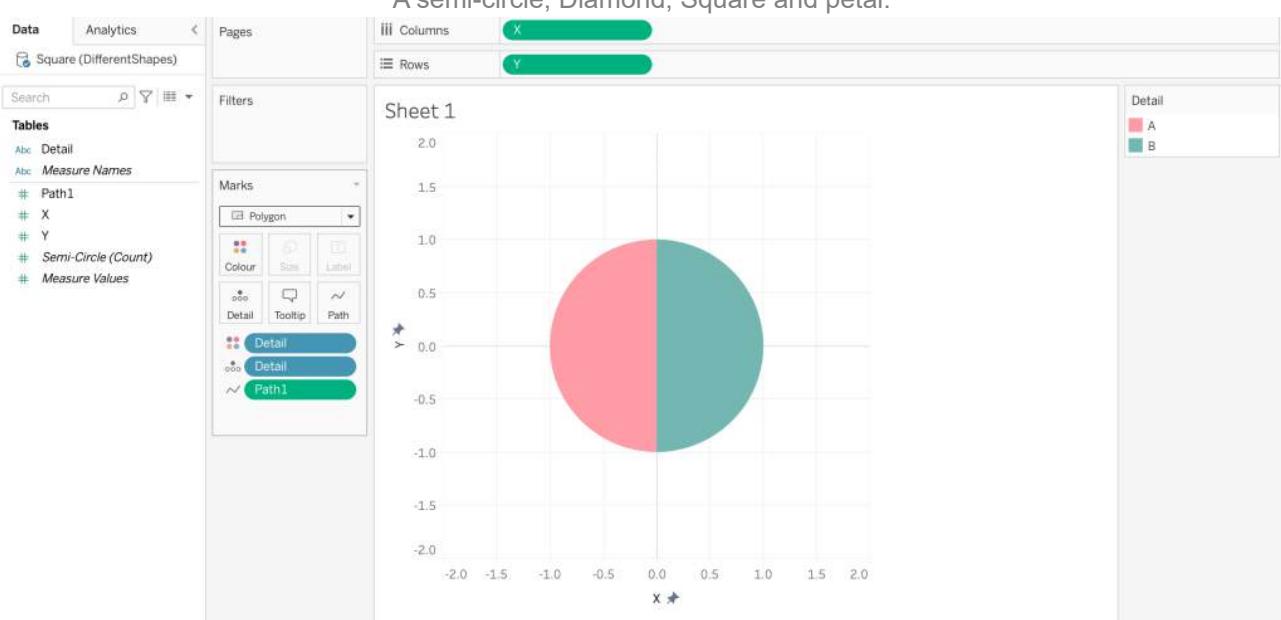
SHAPE FILES

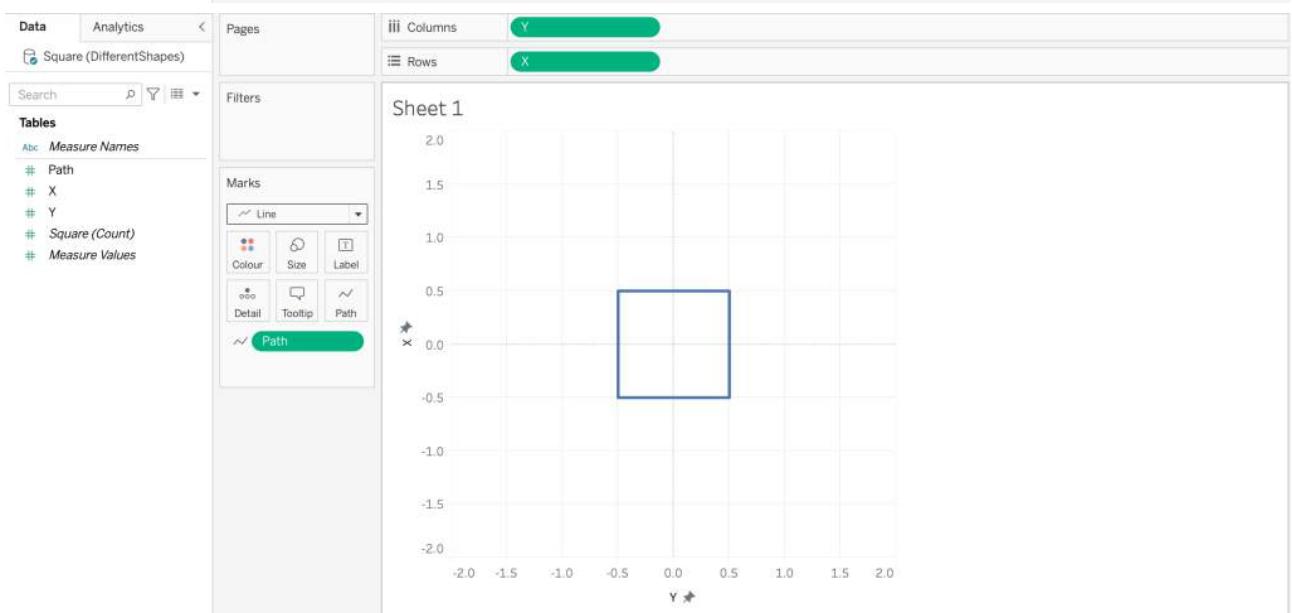
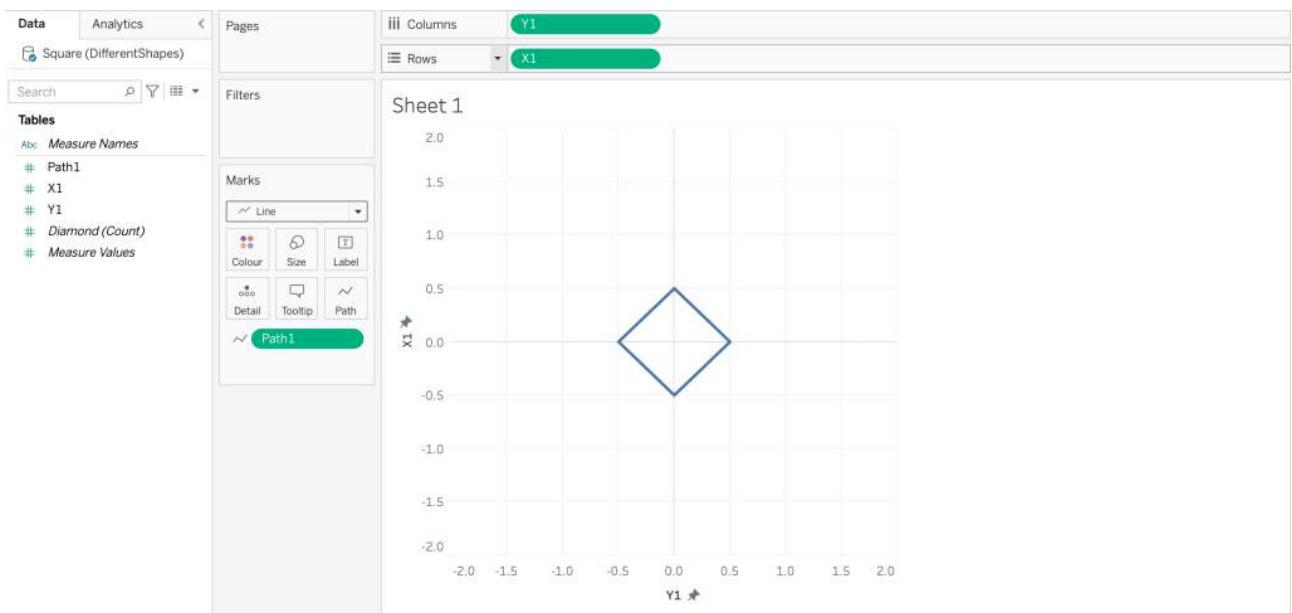
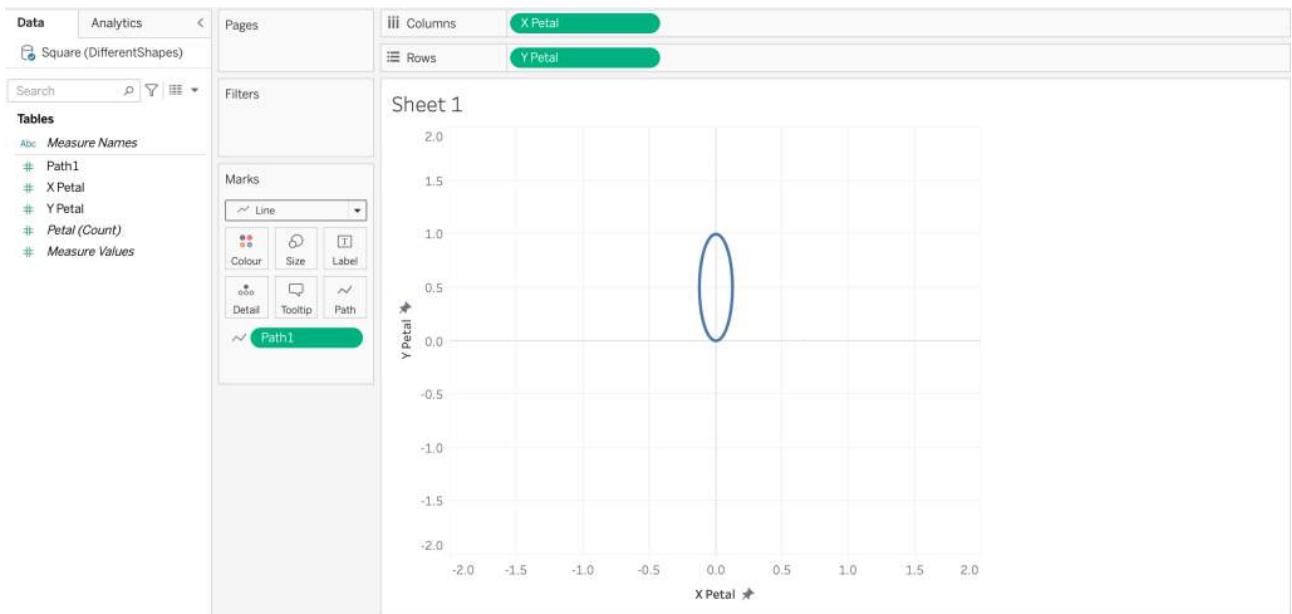
Of course, Zach's work is simply a reference point where I've created a shape file of 4 co-ordinates for a polygon. (5 for the line)

In fact, polygon blog 001 showed how we converted our points into a circle.

Realistically you can create a shape of any kind:

A semi-circle, Diamond, Square and petal.





I Digress,

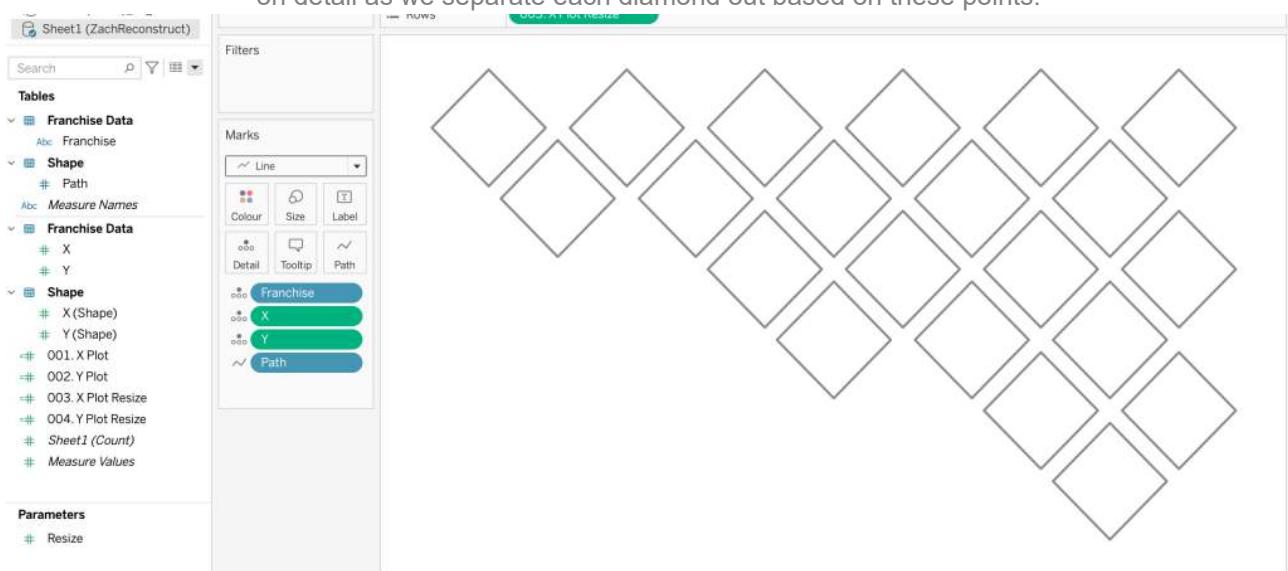
BUT WHAT ABOUT LINES?

Line paths and polygon paths work differently. Polygon paths will join up your start and end position naturally as it wants to fill in the blank area. Line paths don't work this way because... well its a line. If you want to connect the points your start point and end point would be the same.

For example in the case of the above rather than having the four co-ordinates mentioned previous you will have:

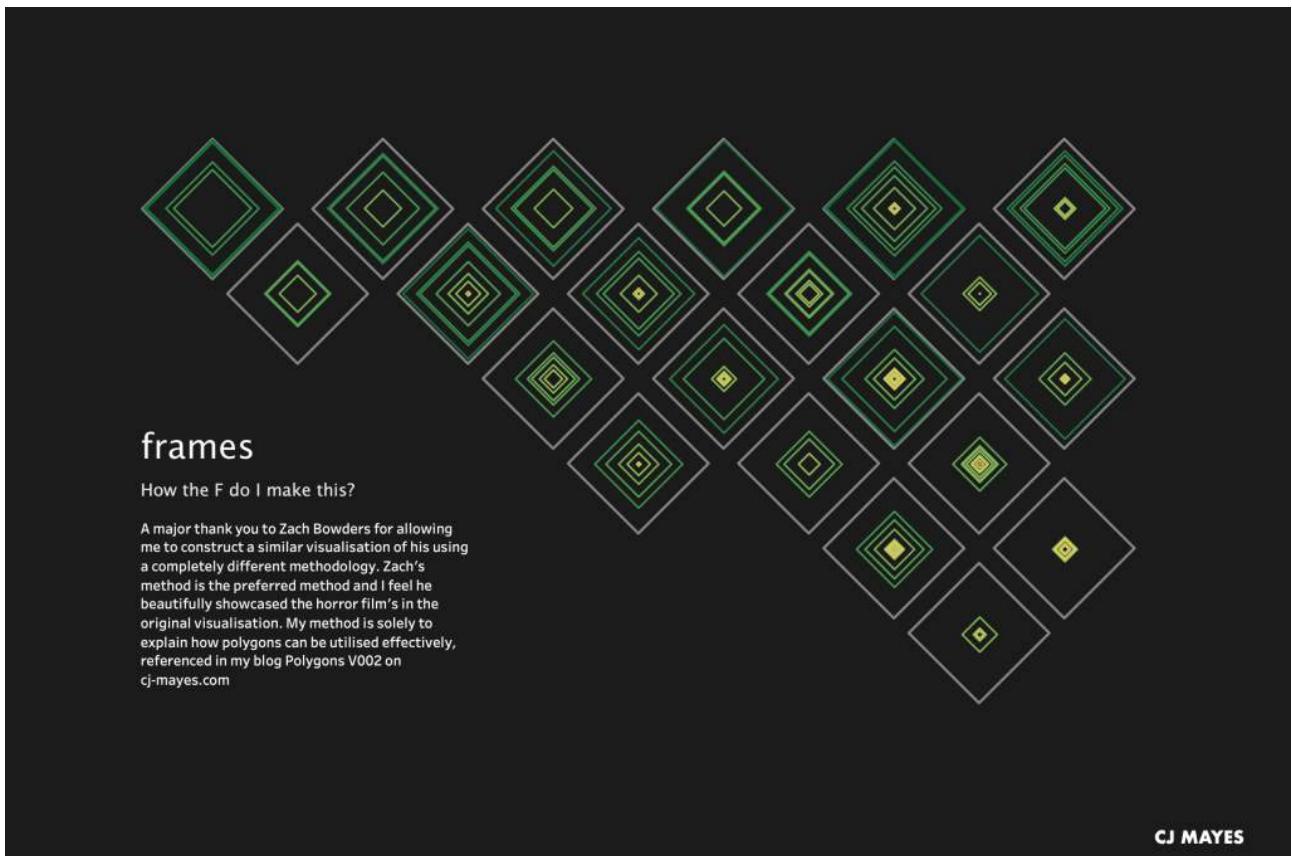
X	Y	Path
0	0.5	1
0.5	0	2
0	-0.5	3
-0.5	0	4
0	0.5	5

Here is an example of those 5 path points joined as a line within our dataset. Note how we have the X and Y on detail as we separate each diamond out based on these points.



To finish my awful cloning of Zach's style and achieve the inner shapes, I would further amend multiple of these diamonds based on a proportional sizing to the maximum. The easiest thing to do is to have a column between 0 and 1 that you multiply by. 1 is the maximum size, everything else acting as a percentage (portion) of that. As the original data is a score of 100 we can just divide it by 100.

Here's my final stab at it.



The visual output differs slightly to Zach's where I have proportionally sized all the squares relative to one another. I have also removed all the zero records. You'll see a major downfall of my version is that anything with a score less than 20 becomes practically impossible to read. You'll also notice how my version has zero as zero. If you use the shape method, obviously the shape itself accounts for something, that's why Zach's spread in lower numbers looks much nicer.

Round-up:

So again, I leave here a little preemptively, at a stage of '*CJ you've given me shape files and a few sizing tips but what now?*'

With the learnings I hope it spurs a moment of creativity – one where you can start applying it to your own work.

Things to remember:

- Yes, this isn't best practice charts. Yes, A little harder to understand compared to other charts. BUT, still make sure it is interpretable what you are trying to show. Weird, wacky and wonderful is great and I'm all for it, but be cautious how you use it.
- There are alternative methods that you can use to polygons such as shapes. Consider what is most appropriate. Think about data densification (size of data sheet), think about readability, think about trade offs in tooltips. Pretty much, weigh up some of the pros and cons of different techniques.

In summary, Probably best to just use the size mark like Zach. This was so unnecessary ha.

As always, Let me know your thoughts. I can be reached on Twitter, @_CJMayes.

The last of this small series Polygon V003 will look at multiple layers, dashed effects and line paths.

LOGGING OFF,
CJ

ILLUSTRATOR & TABLEAU WITH CHIMDI NWOSU

Welcome to the November edition of "*What's Good?*"

Hi all,

Can you believe we have reached the penultimate "What's Good?" blog. If you've read all 10 to this point, thank you. It means the absolute world. I have learnt so much from those that have shared their thoughts on this site, and appreciate how much effort they put in.

This month follows on from previous blogs on design but play on the idea of making data into art. This will be the first time too we cover off in greater detail a little more around adobe illustrator, where I've naturally had a steer towards Figma.

It's with great pleasure to have Chimdi Nwosu, 3 x VOTD, Tableau Public Ambassador, recent Top 10 IronViz entrant to share his insights. When Chimdi posts a new visualisation I just know I will like it. Before we start, I want to share some of my favourites.



Scientific Achievements and Inventions of Black Inventors



Inventors & Inventions

120

Currently Alive

37

Currently Deceased

78

Fields of Occupation

75

Areas of Achievement

6

Area of Achievement

Mathematics & Sciences	49
Innovation (Inventors)	33
Engineering	19
Medicine & Healthcare	15
Farming & Trades	3
Unavailable	3

This visual shows the timelines of black inventors that have impacted the world with their inventions and scientific achievement. Hover to learn more about each inventor and their contributions.

How to Read:

Length of Life = OO - Current Age or Age at Death

Year of Birth Year of Death

Unknown Birth or Death Dates

G. Bernadette Tyree



Kunle Olukunm

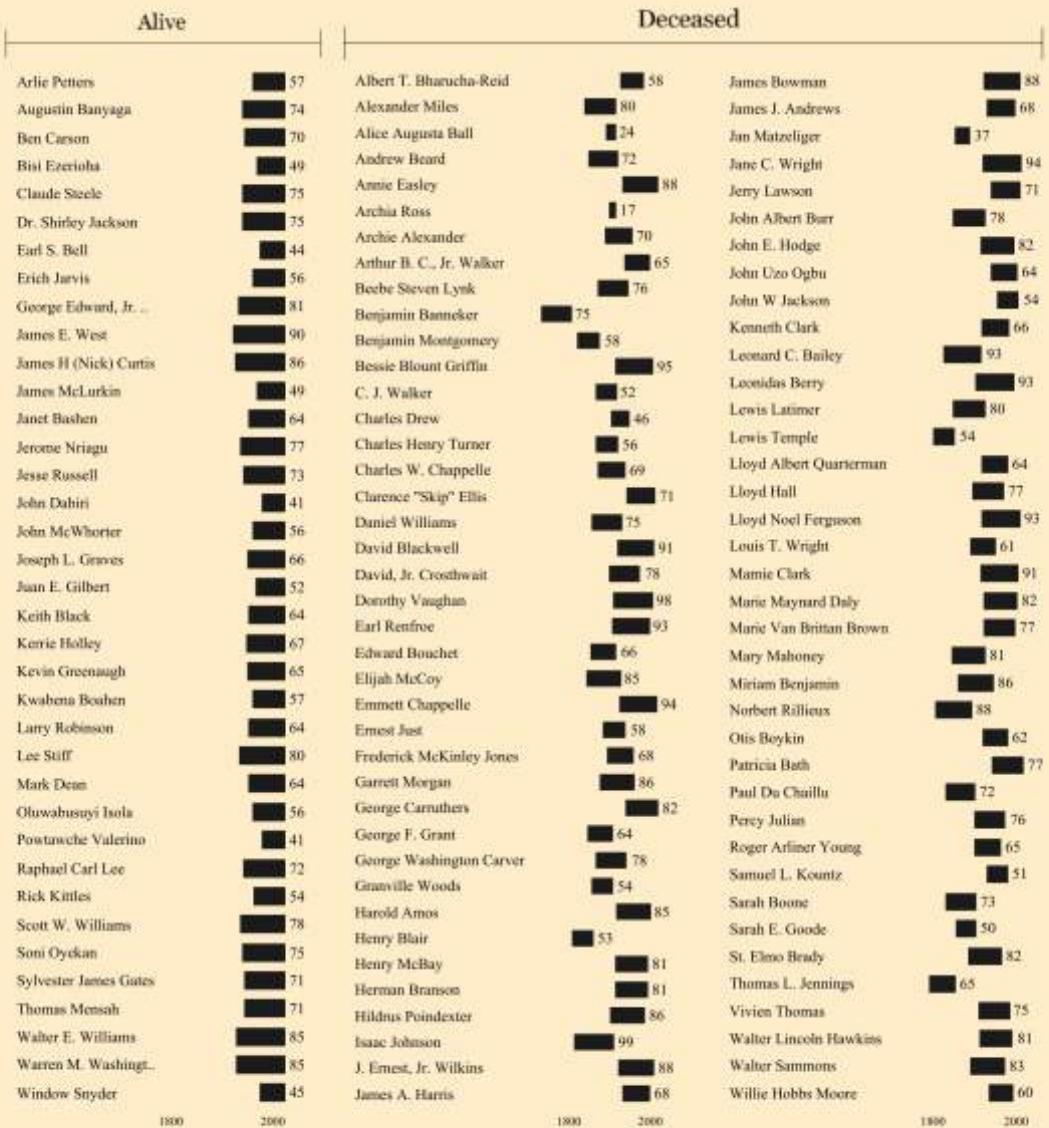


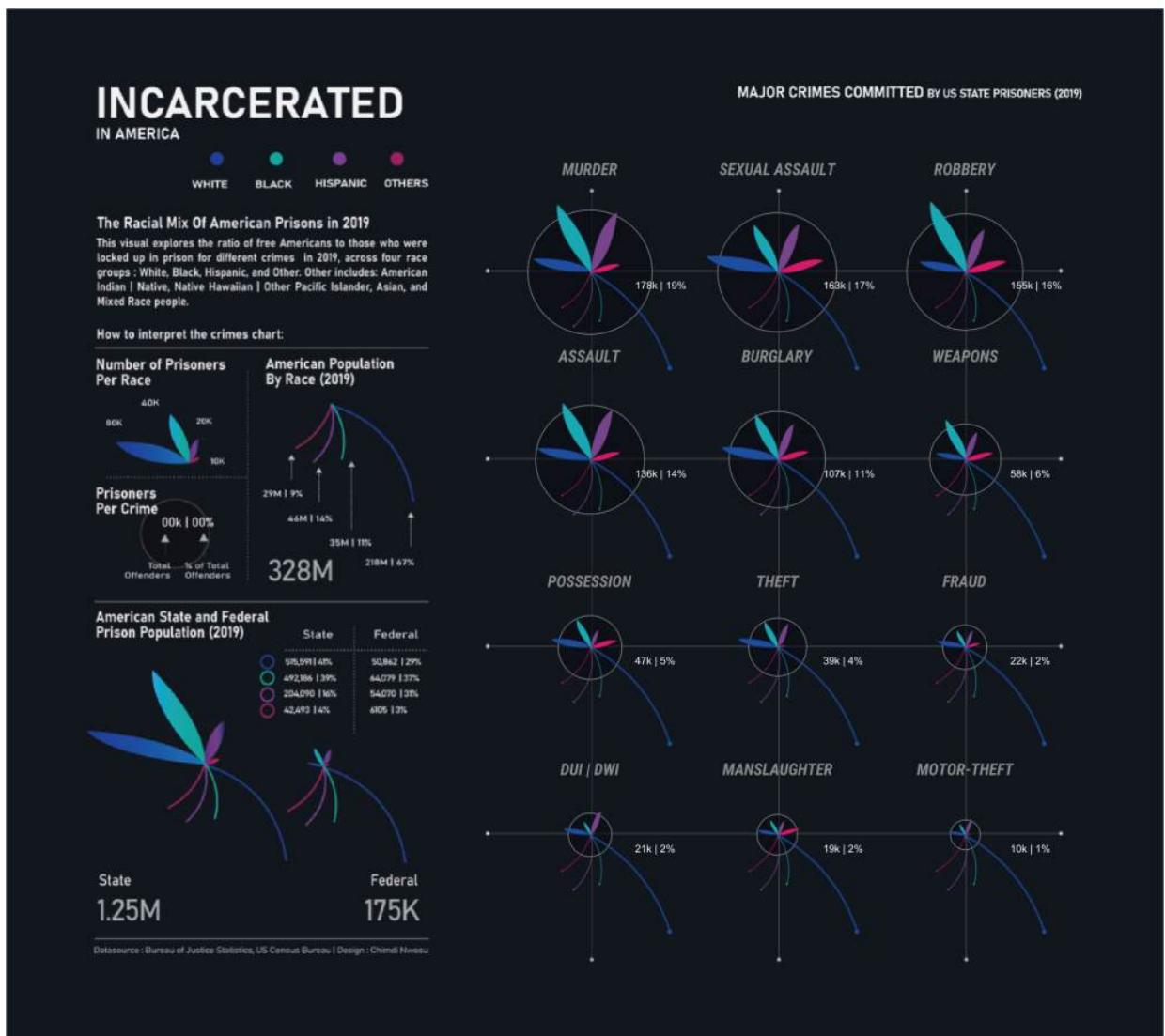
Lisa Green

Alice H. Parker



Charles Brooks





If you aren't already, please follow him on his socials. He can be found on [Twitter](#) and [Tableau](#).

CJ: This is my favourite starting question as I love to hear everyone's different story and where they take it.

Can you tell us a little about your background and how you got into data visualisation?

C: 2016 is when I got into producing data driven visuals and reports. Prior to tableau, it was simply producing reports for work and school using MS Excel and Access, and then I learned power Bi, dabbled in Qlik Sense, and eventually landed on tableau where I really got to tap into my creative side. Before tableau, I was around

many people who had learned to analyze data, so I felt producing reports that had pretty colors and nice clean formatting was a way to make my deliverables stand out. Over time in my career, I've mostly visualized operational support metrics and produced business type reports, so I guess you could say there was a lot of "priming" beforehand which made me ripe for tableau to utilize tableau how I currently do today.

CJ: Has design been something you've always been passionate for, or has it grown over time?

C: That's a bit tricky. As a kid, my parents nudged me towards music and art, so drawing and painting is something I am/was good at. If you count that as design related, then it's always been there. However, the intentional passion and interest grew after finding the #datafam and encountering the mind-blowing stuff being produced. As a matter of fact, The Flerlage twins, ([@FlerlageKev](#) and [@flerlagekr](#)), **JR Copreros** ([@jrcopreros](#)), and **Vinodh kumar V R** ([@VinodhDataArt](#)) were people that I'd found before the community, and in my quest to understand how exactly they made those vizs on their profiles, I inevitably found the global community of data rockstars known as #datafam. It's only grown from there, and casually

looking at my vizs you may notice a pattern of continual design experimentation.

Currently, I'm actually scouting out a good online design/graphic design class to take in my spare time at some point in the future. It would feel great to make things "official" on that front because I never thought of

myself as one until actually trying to do things in tableau and noticing what my tendencies were. Here's an example of something I did in illustrator. It has nothing to do with data but it was just as fun for me...so the appetite is there, even if it requires some exploring and fine tuning.



CJ: A huge congratulations on your top 10 IronViz entry! I love the opening text and how new jack music has personally helped you. Not to mention how this is beautifully reinforced throughout the vis. My favourite part is the use of circles in each section against more rigid charts. How do you go about planning and structuring a viz of this calibre? ([Link](#))

A screenshot of a visualization titled "NEW JACK SWING". The title is in large, bold, black capital letters. Below it, a subtitle "AKA NEW JACK OR SWINGBEAT" is in smaller black capital letters. To the right of the title, there are three circular elements: a red circle containing "MUSIC TO MAKE", a grey circle containing "YOU", and a teal circle containing "DANCE". The background is a dark blue space-themed design with colorful flowers and starburst shapes.

C: Thanks so much CJ.

The iron viz outcome is still so surreal to me, because the process was more about having and I literally submitted it on the last day with only a few minutes left on the submission clock . I do confess it was done in the reverse manner of how we're advised to create. The background was ~ 70% designed in figma and only then did I started thinking about what to show. IMO, because the viz was very "themed", it was convenient to pick out colors etc. before chart building.

The Spotify attributes idea was low hanging fruit which had been explored by many, so I was hesitant to get into that, until the pattern in the data started to emerge when looking at the different attributes across the songs in the genre which was explored. A bit of research around the impact of music on humans confirmed some of the suspicions I had, and that's how the story was born. Even though the research/impact side of things was presented at the end, it was indeed very foundational to how and why the overall design came to be.

In thinking about the New Jack Swing genre as sort of a blast from the past, ideas around time travel, spaceships etc. started to float around. Hopefully that makes it easy enough to see how the "Planet New Jack Swing" theme came about.

From that point, it became a bit easier to execute because the goal was simply to create non-standard visuals that looked like they would be from a different planet, while taking the viewer on a tour of the planet via the different sections like "Notables", "Battles", etc. This was an attempt at storytelling.

Overall, the process went :

1 – Design layout > 2 – Add charts to show analysis > 3 – Iterate and Add functionality over and over. Regarding #3, in my opinion, the viz technically tells a similar story even without the extra drill downs and added views, and it's because those were added after the fact.

Overall, I've been really eager to do more personal projects as a means to explore a few more styles.

However, life gets in the way, so I've settled for being inspired by all the personal projects/vizzes we constantly see coming out of the #datafam. Which reminds me...I truly hope tableau decides to develop

something similar to the previous “Activity” tab we had on TP because it’s gotten a lot harder to keep up like before, now that this stream of viz updates is gone, and especially for those of us who can’t really be on twitter every day to see the tweets on what people are putting out.

CJ: Tableau ambassador is a real milestone in your journey. What does it mean to you?

C: It's pretty significant and has forced me to think about doing more for the community than produce vizzes.

When I look at past and present Ambassadors, it's humbling to think that I've been invited into this space.

Being able to do things like speak out more and try to share some of what goes on behind the vizzes, has

been fairly fun and also nerve racking at times but there's a desire to do more things like that now.

The mental switch really happened when it started to become clearer that if we make it about us, then our fears and insecurity will always hold us back from giving more of ourselves and whatever we have to share...

but reframing the mind to try and understand that this is about the people on the other side, makes it easier to open up more and give. Dealing one on one with people who've had questions and reached out for help is also not sustainable so I see this as a platform to provide value to anyone who can benefit while also helping

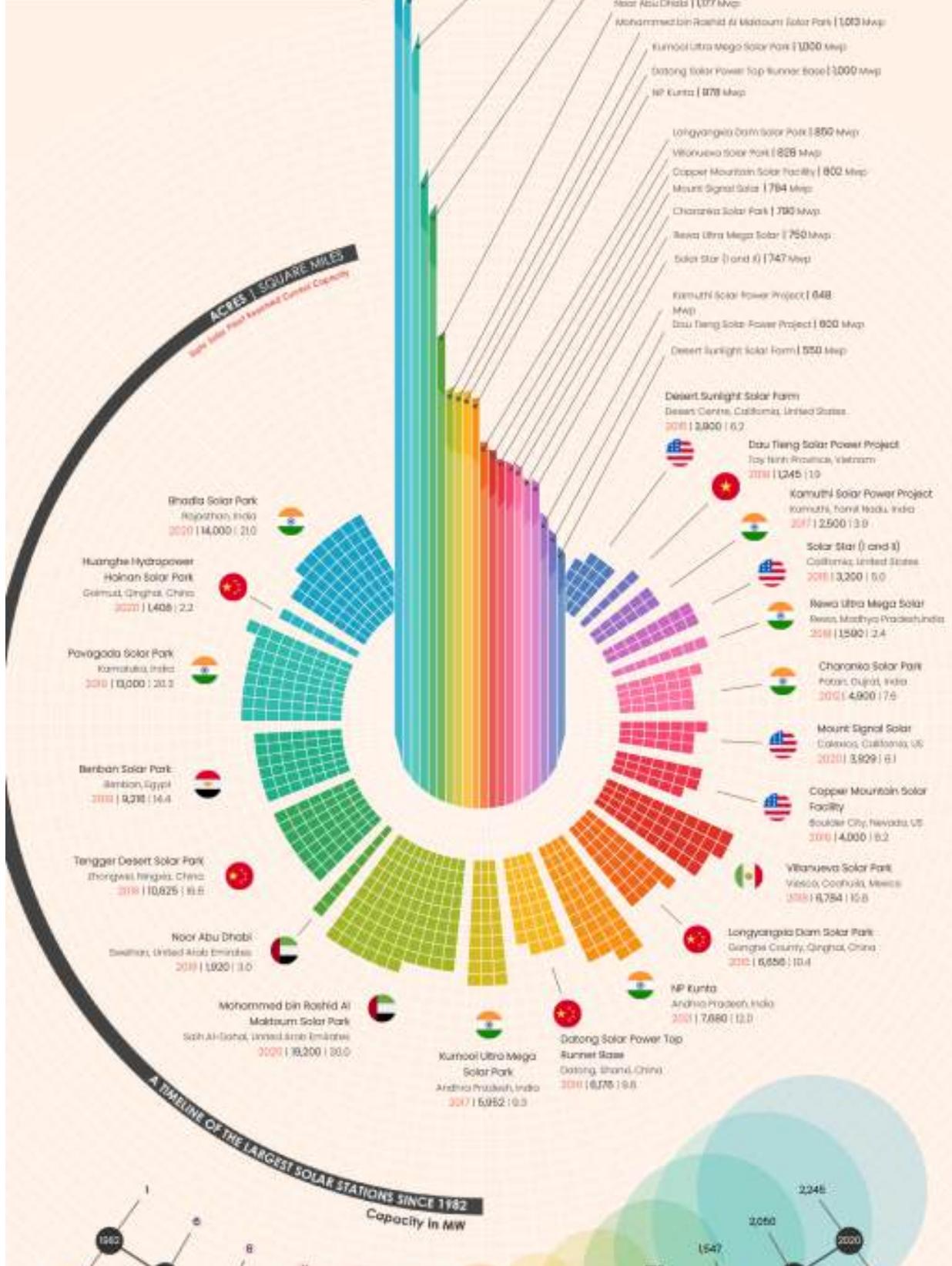
to promote and support a great company like Tableau that has brought so much into my life.

CJ: What visualisations have you liked recently from some of the newer members of the community and

why?

THE 20 LARGEST SOLAR POWER PLANTS IN THE WORLD

by Capacity



My State of Mind

A 4-day visual diary



World Mental Health Day

What is mental disorder?

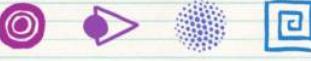
In conjunction with the World Mental Health Day, here's a slice of my experience living with bipolar disorder. In general, persons living with bipolar disorder experience extreme mood swings that include emotional highs and lows. Each of our experience and response to this is different. This visualisation aimed at capturing my own personal struggle with my state of mind.



[Click here to follow my daily journey](#)



Agitated Anxious Calm Depressed



Elated Focused Frustrated Numb



Overwhelmed

Fertility Rates

- The Decline -

1960 - 2009

- The Conception -

1960 - 2009

The world's fertility rates have been declining steadily since the mid-1950s. This decline has been driven by a shift from rural to urban living, increased access to education, and a general increase in economic development. While the U.S. saw a significant increase in birth rates between 1960 and 1970, the trend has since reversed, with birth rates declining significantly since the early 1980s.

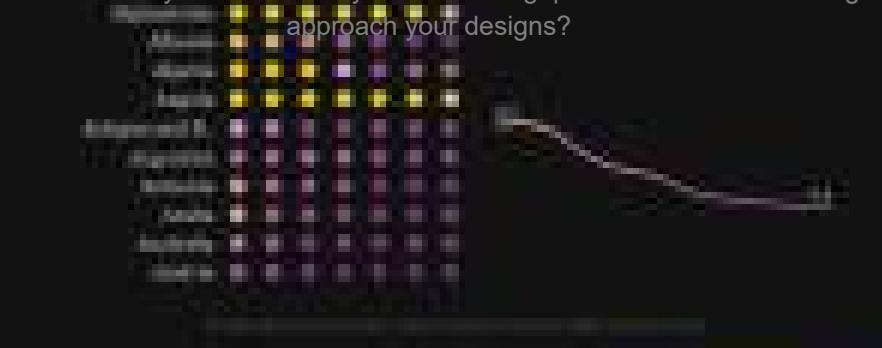


Source: United Nations, UN DESA, Department of Economic and Social Affairs, Population Division. Data are estimates.

C: I tend to like a variety of stuff but in terms of newer members, or at least new to me, 3 that recently stood out were :

- 1) **Fertility Rates – The Decline – 1960-2019** by **Luke Abraham** for its creativity, design, content progression, and everything about it was really well done. He really went crazy (in a good way) with this one.
- 2) **The 20 Largest Solar Power Plants in the World by Capacity** by **Arshad Ejaz** stood out because I'm a huge fan of trying to recreate stuff in tableau, and aside from the fact that it's good looking, detailed, and equally informative, the amount of effort it takes/took to create it is worthy of great respect and admiration. Hats off to him.
- 3) **My state of mind : a 4-day visual journey** by **Shazeera Ahmad Zawawi** stood out because 10/10 for her creativity and design. It's easy to follow along her story as I'm sure she intended, and more importantly, she/the viz really vulnerable, personal, and openly speaks about a subject which many are still afraid to talk about. Fantastic execution on her part, and the #VOTD was well deserved.

CJ: Two real show stoppers in terms of abstract art have been the Incarcerated in America and Organization Sunny Street Viz. You recently did a course by Federica Fragapane. How has this changed the way you approach your designs?



How many hours does it take to make a single tile in a visualization?

- 1 hour
- 2 hours
- 3 hours
- 4 hours
- 5 hours

- The Decline, pt 2 -

by [Luke Abraham](#)



Conversations

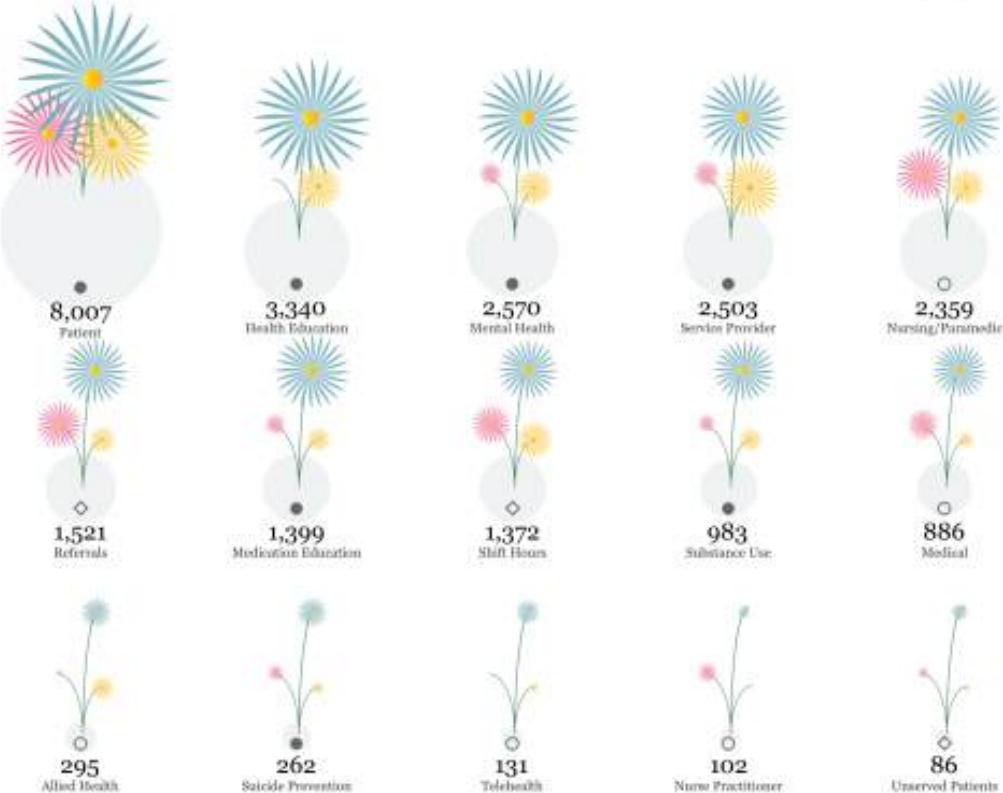
That Change Lives

Created in 2009 and designed specifically for the honest and vulnerable, Sunny Street increases access to healthcare in Australia through supportive conversations that help empower individuals to make informed choices about their health and well-being. They provide opportunities for people to talk with doctors and nurses regarding their experiences, health journeys, and other aspects that improve their ability to make decisions to positively impact their lives. This visual highlights Sunny Street's volunteer activity from August 2019 to April 2020. Hover for details and click on links at the bottom to get involved in Sunny Street's extraordinary work.

Note: This chart displays data from August 2019 to April 2020. Pink = 2019 values, Blue = 2020 values, Yellow = 2020 values.

Sunny Street Conversations, Consultations, and Metrics

Hover for Details



The Regional Areas



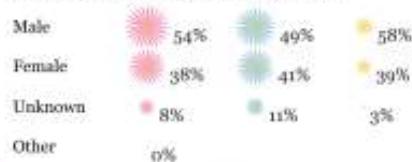
The Impact

837 Patients
1,054 Cities
Average Age of 42 Years
Diversity across 21 Ethnicities
Hover on the circle for Age Groups

Total Volunteer Activity

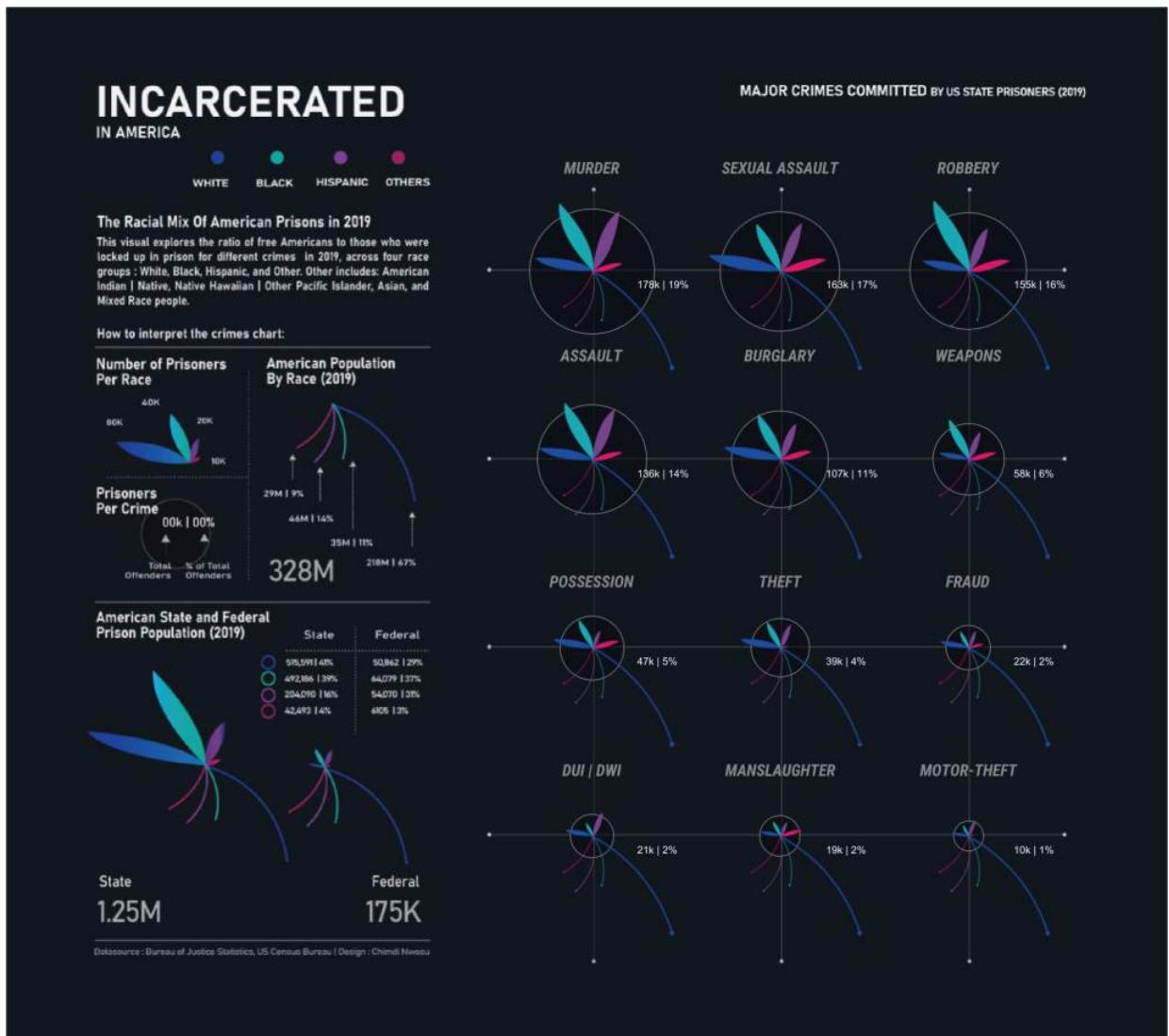


Gender Ratio of People Served Over Time



Get Involved





C: It's really a big change, and I've had to try and hold back from going too crazy with it. It really makes you understand that visualization has no limits. To keep it simple, I'd say – It showed me that as long as you can imagine a design or unique way you want to show something, you can certainly create it or something close to it.

Even if that means you need to look up tutorials and ask for help to bring your ideas to life.

Provided you don't leave the viewers behind in terms of adding context to what they're looking at, there's an opportunity to produce some nice-looking visuals that are not only artistic but have impactful messages embedded in them.

I recommend it to anyone who wants to explore a different side of visualization that's not confined to the availability of pre-defined chart types.

[Here's a link to the course again](#), for those who want to check it out.

CJ: Talk to me about the thought process of too little or too much? How do you know when you're overcrowding your dashboard?

C: I think it varies based on what type of visual we're creating. If it's a data display or business dashboard, then it's a bit subjective and depends more on what's being asked for by the stakeholder. We may advise on what we think, however if they want 20 charts, they want 20 charts.

In general, though, you need to have enough space around everything. This makes a world of difference for visual perception and being able to catch the main insights presented. We're normally much better off having too much negative space and few charts than too little space and many charts.

Taking cues from professional level visualizations in data driven journals and publications really shows that less is more, and I often try to emulate that.

1 or 2, charts per point or message, plus the added context needed to enhance understanding seems to be a common theme.

If it's a viz style dashboard, there's a little trick you can try – I actually touched on it in my TC '21 presentation called Minimal Designs for Maximal Communication (Shameless Plug! Ha-ha)

Identify any object on the dashboard that has meaningful info and fits with the overall theme of your message. Now remove it.

Continue this until you've identified everything that helps support the main message in the dashboard.

If you have done this and there are things left, then delete what's left and add back what you removed.

These are your core components. Keep them only. No unnecessary fluff.

This isn't a fixed science, but something that helps me, which others can try and see if it's valuable to/for you.

CJ: I like the way you use the natural Tableau formatting tools to frame some of your visualisations. How do you go about this process?

NBA FOUL CALLS

SEASON 2016-17 → SEASON 2019-20

Sean Wright

Use the filter to select a referee to highlight

Se

This visual ranks NBA referees against their peers, based on the total number of fouls called per season. If a referee didn't participate in a particular season, no data is shown on the chart for the season.

P = PLAYOFF SEASON

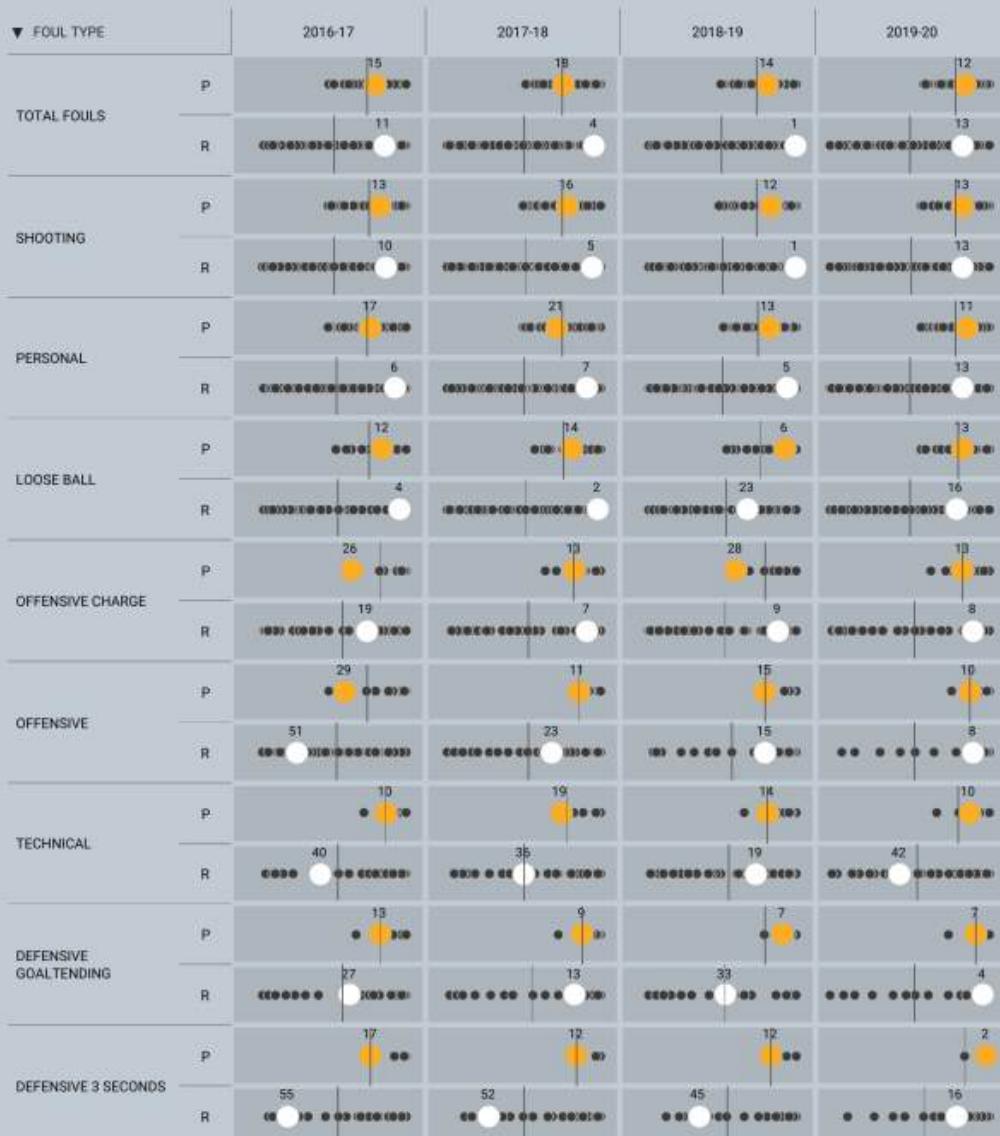
R = REGULAR SEASON

= MEDIAN RANK

Hover on circles for full details.

Each circle is a referee. ●, ● = Highlighted Referee in Playoff, Regular Seasons
Number "00" = Rank based on number of fouls called.

LESS FOULS LOWER RANKS MORE FOULS HIGHER RANKS



Data: The Unofficial NBA Ref Database | Design: Chiridu Nandu @mercuriusdata | Credit: @bewigglebox

C: Over time it's happened through experimenting and realizing that tableau has a LOT of formatting options available to us. I personally feel that with tools like figma and illustrator out there, people don't think of tableau as very design capable in comparison. I can agree with that. However, it can certainly help achieve some cool effects that help enhance the way we choose to show our work.

If I may use the "NBA Foul Calls" to illustrate...

The grey rectangles and border lines are just grey colored cells and borders set up in tableau. Doing this in figma or illustrator would be so hectic (I tried in figma) and then aligning in tableau would be another task in itself. So, I simply tried it out in tableau, and it worked great!

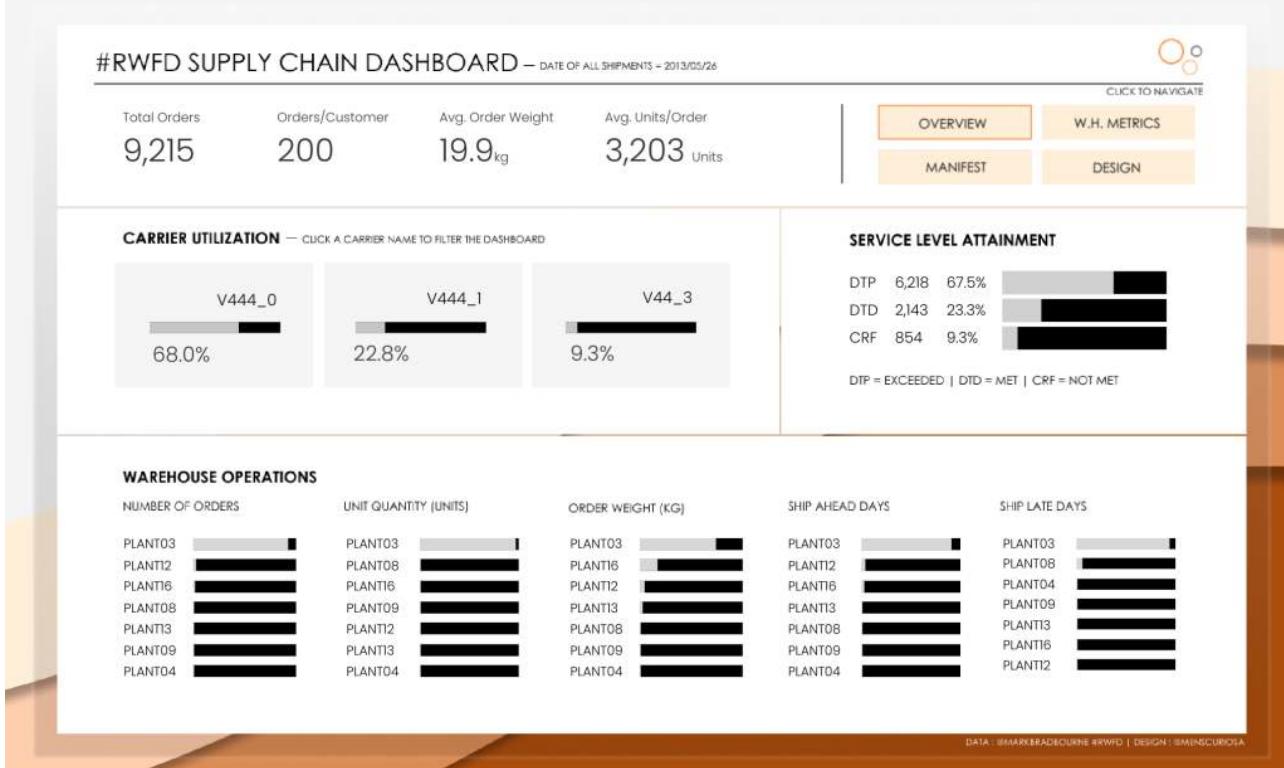
Overall, if we think of doing something in tableau, it helps to go with the mindset of “it can be done” and only after trying and seeing that it can’t be done should we start looking elsewhere. There will be certain things that are more easily done outside tableau so it’s great that tableau software can be combined with other tools. Going with whatever tool does it best and easiest, has worked well and seems like a logical strategy in this regard.

CJ: Your profile shows such breadth in chart types. Was this something that you focussed on or came naturally with each topic type from the Makeover Monday datasets?

C: It was definitely a focus, mainly because I think Makeover Monday lends itself as a sort of training ground where we can basically do whatever we want viz wise. It is tool agnostic so this also adds to the message that everyone can come out and play in any capacity they choose. I’ve always found satisfaction in being experimental, and it feels like creativity flows naturally in my designs so I can never be too grateful for that. In general, we must remember above all to be attentive, and listen to the feedback from viewers and fellow vizzers, to understand the strengths and weaknesses of using different chart types for different use cases. There are many standards out there which is great, and it never hurts to tweak these standard charts a bit in an attempt to add our own flare to things.

Once we get the basic idea of what needs to be noted, and how to use different charts, it seems logical to put a particular chart aside and try something else, rather than confining ourselves to a specific small set of charts that we feel comfortable with.

CJ: To temporarily diverge away from abstract art – It seems like you make even business dashboards so elegantly. Is there anyone else in the community you think does this particularly well?



C: Absolutely – I’ve always admired **Ellen Blackburn’s** business dashboards. There’s a chance I may have all of them favorited. She really stands out with her deep technical expertise, and functional designs. At the same time, her layouts and pastel colors keep things fresh and visually appealing.

Gandes Goldestan is also someone I recently discovered who does this so well. She covers a wide range of insights with very well thought out user experiences, and she’s got the design skills to balance it out too. All her #RWFD dashboards are lovely.

In this area, I'm really partial to the clean, modern UI look, with functionality built into it. So, people like **Ludovic Tavernier**, **Lindsay Betzendahl**, and **Samuel Parsons** are some others that come to mind in the moment.

CJ: You tend to flicker between light and dark backgrounds. How do you go about deciding what works best for your viz?

C: It's usually a decision around what looks better for the particular viz, and so trying out both to see what fits the bill helps make the decision. The dark backgrounds seem to work really well with the bright color palettes which I enjoy using to make vizes grab attention, and the light backgrounds often work great for a cleaner professional look.

It's worth mentioning that when going through my process, 9/10 times, it starts with a dark one until trying out a light one and seeing that it works better. A lot of times, if the dark background is a hit from the get-go, I won't bother trying anything else.

CJ: Most people naturally steer towards Tableau Public Profiles, Pinterest and Behance for visualisation inspiration. Is this the same for you?

C: Yes! TP is the #1 because a lot of the stuff is Tableau based and we can benefit from directly digging in to explore how people do things. A lot of times, we have access to the authors if we have questions, and it's also nice to be able to connect and simply let them know how much we admire them and their work.

Lately, Behance has been a big one. I've got the app on my phone and often get so lost in it, so I admit that recently my attention has been skewed towards it. Frederica is also on there and I follow her so nuff' said.

Overall, I pay a monthly subscription for Adobe and Behance is integrated into it so it's really convenient.

CJ: How come you have a preference for Adobe as opposed to other products? Is there anything in particular that makes it stand out in your eyes?

C: I think it's because my design aspiration transcends tableau and dashboards. Earlier I mentioned wanting to take a graphic design course, and it seems Adobe tools are commonly used in a lot of them. I'm huge on mastering as many tools as possible, and it was once a more challenging tool than figma but now comes much easier to me.

It's chart/ data functionality also seems superior to figma and so it's actually possible to seamlessly build a viz from A to Z in there. It's been difficult doing this in figma, though I'm sure it's probably doable with the right plugins.

Also, a tool like figma starts out simple and lets you add extra functionality by adding plugins as needed, while Adobe usually gives everything out of the box.

This is preferable to me, and it's based on my learning style – give me all the info upfront and let me figure out how to compartmentalise in memory. I can then extract what is needed based on each situation at hand.

CJ: What are some top tips for those just starting out with Adobe Illustrator?

C: I actually suggest following along with simple exercises and tutorials to get familiar first, and then venturing out to try your own designs. If you google "illustrator tutorials", a lot of them pop up. It's not so easy figuring it out on your own and learning by doing works well for this.

CJ: Is there a short tutorial you can personally outline for those wanting to start using adobe illustrator, reflecting on your work?

C: Yes – I think I'll go into a portion of my **Incarcerated in America** viz, because looking back, it may not be as obvious how it was done, even after someone may have gone through the work book to try and replicate it.

How to import shapes on an angle to use in a radial pattern in tableau.



The above picture are shapes in illustrator.



This second picture is the same but resized.

If we simply import the shapes as is, tableau places them on a central point like the third pic below and this is not what we desire.



The trick is to import the shapes with the proper orientation, i.e., on the correct angle.

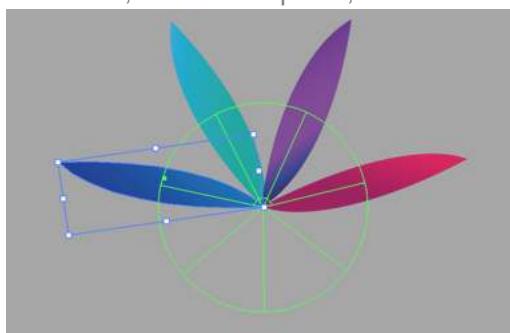
Here's how it was done using the radar chart tool in illustrator:

Technique + explanation.

Pic 1 is actually the same as this first pic below, but with the radar chart tool used to align the shapes. Afterwards, we then set it to 0% opacity. The idea is to import each shape together with the radar tool while it's set to 0% opacity, so that it stays on the angle because of the radar tool, but the radar tool is invisible. The result is that we only see the shape on an angle since the radar tool is invisible when it's brought in to the tableau repository.



This radar chart tool shown here, is set to 0% opacity when exporting each individual shape which will be used to represent each race. So, when we import it, tableau won't show the radar chart.



This is what it looks like when we select a shape together with the radar chart at 0% opacity. Notice that we only have the green outline of the chart, but we can't actually see the radar chart.

When importing this into tableau, the effect is that the shape remains on the angle because we're actually importing both shapes, but the radar chart is invisible. We're then left with the shape on the correct angle which we can then use in tableau.



The 1st picture above shows the setting (in the layers panel) that we used to make the radar chart invisible, the 2nd pic shows the invisible chart, and the 3rd shows how the shapes look when imported into tableau with proper orientation.

Hopefully this clears that up and helps someone out there.

I still hope to be able to start writing more about specific techniques once I find the discipline to fit that into the current chaotic schedule.

CJ: Awesome thank you! Finally, what's next?

Well, I just started a role as a Data Visualization Manager at one of Canada's largest media networks so it's pretty exciting. I also get to pick up two more visualization tools which are used with tableau over there, and I can't wait to see what we accomplish. The team so far is vey solid. There's also a lot more volunteer type stuff going on in the background with tableau and I Look forward to doing more of this kind of work.

Thanks a lot for having me, CJ. I really admire your work and blog posts – PS your **Geometric Pattern** viz still leaves me in awe. Keep up the great work, sir!

CJ Round-up:

I first messaged Chimdi back in December of 2020 when he was named a featured author. To have seen his growth within the community and the sheer quality of the visualisations he puts out really inspires me, and I'm sure many others, for their own content.

I loved the whole of this blog but if I was to pick out one special moment, it would be where Chimdi refers to what being an ambassador means to him. His take on reframing the mind and our fears holding us back really resonated.

Chimdi shares some fantastic tips on both adobe illustrator and design more generally for formatting. There are some absolute treasures in this write-up. Chimdi mentions wanting to find some new online design/graphic design courses... so if you have any suggestions drop them in the thread.

Thank you Chimdi, and hope the new role continues to be a success.

LOGGING OFF,

CJ

UNDERSTANDING POLYGONS 001

Hi All,

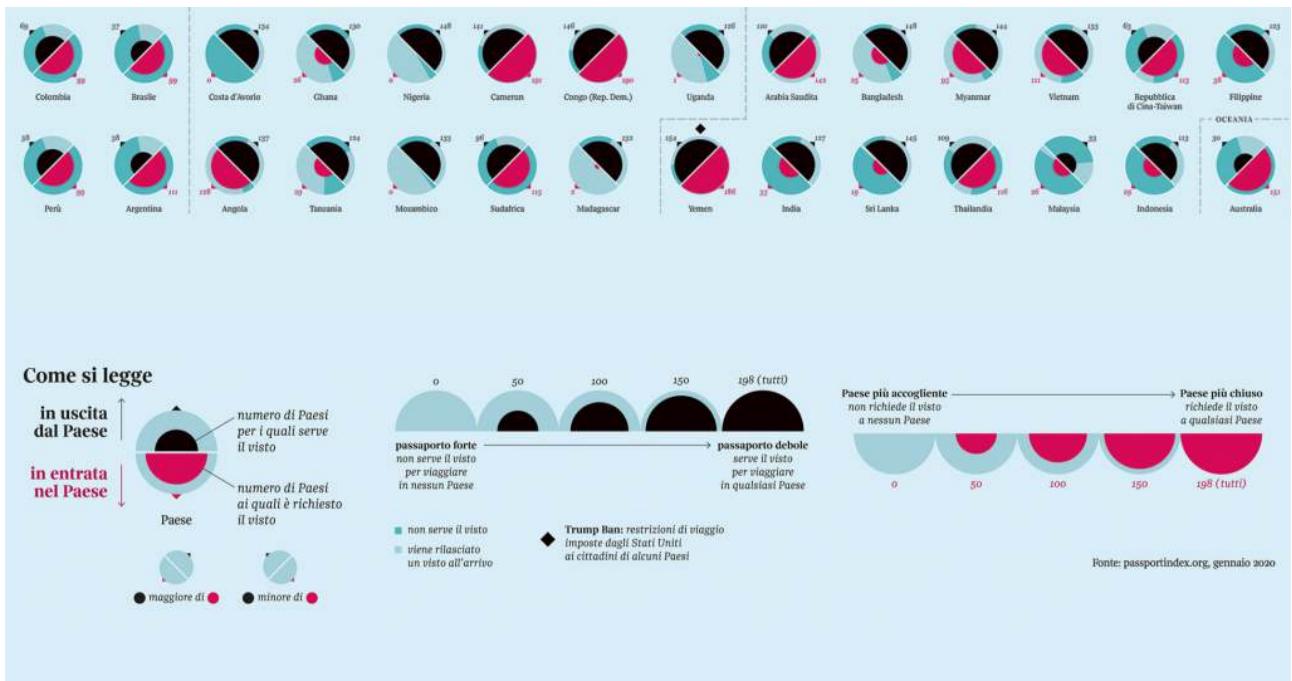
I am seeing more and more creative visualisations each day I sign into Tableau Public, and I LOVE it. I have huge admiration for anyone looking to push themselves in any area of their visualisation, but a small flame is ignited inside me when I see a design that could literally be hung in an art museum.

This will be the first of a series of blog posts that are released to help understand using polygons.

Polygon V001: How to build, transform and rotate a shape.

Each blog, I will link some interesting artwork from the data visualisation community and showcase a small snippet of how a similar effect can be done within Tableau. None of the visualisations I produce will be considered fully complete, just *half-baked ideas*, that I hope help others think differently about design.

This weeks inspiration is **Michela Lazzaroni** – who I came across on Behance.



You can view Michela's work, [here](#).

Before we start I want to say a massive thank you to **Soha Eleghany**, **Kizley Benedict** and **Mo Wootten** who all generously gave up time to review and go through the polygon series that will be released over the course of November. What a lovely gesture from them – and the feedback was more than valuable.

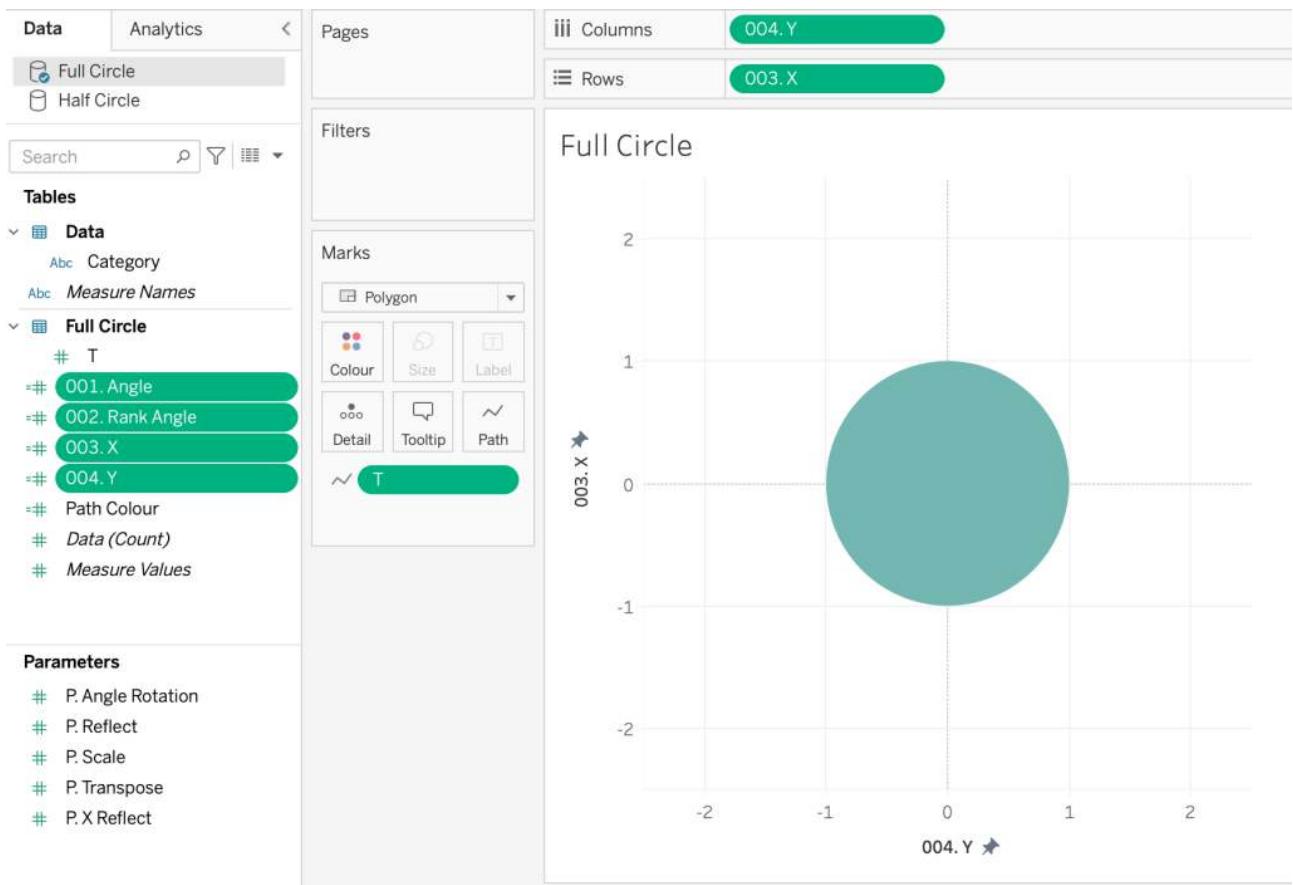
For this tutorial you can download the workbook and dataset from the top of the page.

MAKING A CIRCLE

I make all my circles using the same methodology – I have included it in the workbook for a reference point.

Once you are comfortable with the 4 calculations in the workbook lets move on, (the calculations are commented so should be easy to understand).

In short, we create an angle between each point, order them and space them equally, and then use trigonometry to find the x and y point to plot in a radial pattern.



SEMI CIRCLE

Join the Data to the half circle tab using a custom join of 1 to 1. In its simplest terms we have just made 180 points for what was a one row dataset holding just category A in it.

What this join is creating is for each ‘category’ , I.e each individual mark in our dataset – it is creating 180 points. Therefore if I had two categories in my dataset, A and B, I would have 360 points in my dataset. 180 for A, and 180 for B. For those that are unaware, what the join of 1 to 1 here is doing, is joining for each row in the first data tab to every row in the next data tab.

Data is made of 2 tables. ①

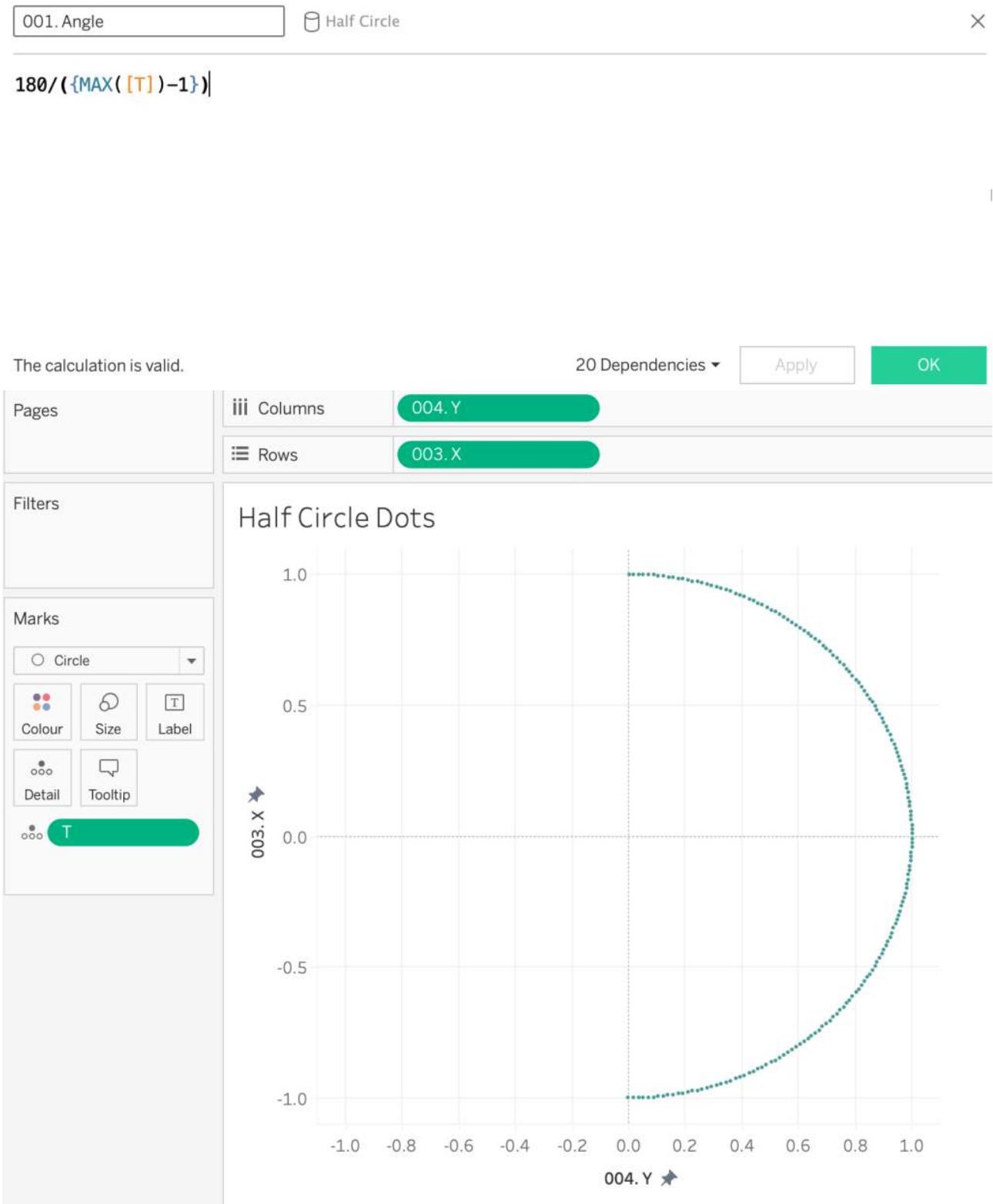
Data ——— **Half Circle**

Circles: Data

Data		2 fields 180 rows		100	rows	⋮
Name	Data	Abc	Half Circle			
Fields	Type	Field Name	Physical Table	Remote Field Name		
	Abc	Category	Data	Category		
	#	T	Half Circle	T		
	A	1				
	A	2				
	A	3				
	A	4				
	A	5				
	A	6				
	A	7				
	A	8				
	A	9				

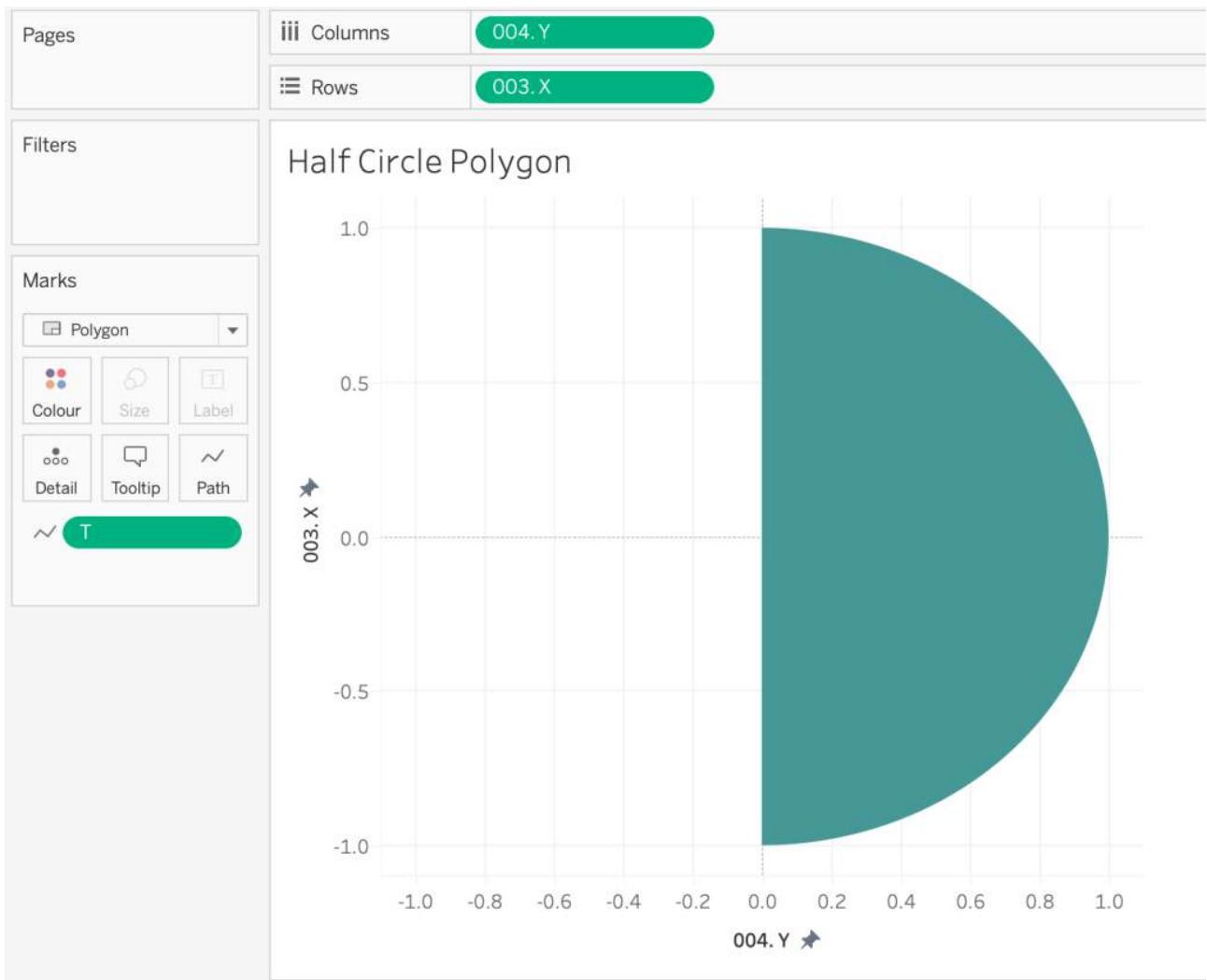
We can build our half circle with the exact same 4 starting calculations as previous. The only calculation that is now different is the Angle. Rather than have our circle as 360 degrees, 180 provides us with a semi-circle.

(You may see in the dataset I've reduced the T value, in effect this value can be any number I've just reduced the amount as for what we are creating we don't need it to have lots of points. Each point remains 1 degree apart)



Plotting X against Y gives us our points for a semi-circle.

If we then change the Mark to a polygon it will automatically join our first and last point together. We will want to put T onto the path as it is the order we want the points joined! (Note: A line path is slightly different)



ROTATE THE SHAPE

So how do we rotate our polygon? We must consider the polygon as a bunch of points we want to rotate.
(Think about those dots we plotted) Below are the new calculations for x and y.

005.X Rotated

Half Circle

X

```
//      x1 = x0cos(θ) - y0sin(θ)
([003.X]*cos(RADIANS([P. Angle Rotation]))) - ([004.Y]*sin(RADIANS([P. Angle Rotation])))
```

The calculation is valid.

5 Dependencies ▾

Apply

OK

006. Y Rotated Half Circle

```
//    y1 = x0sin(theta) + y0cos(theta)
([003. X]*sin(RADIANS([P. Angle Rotation]))) + ([004. Y]*cos(RADIANS([P. Angle Rotation])))
```

The calculation is valid.

5 Dependencies ▾ Apply OK

Have I lost you?

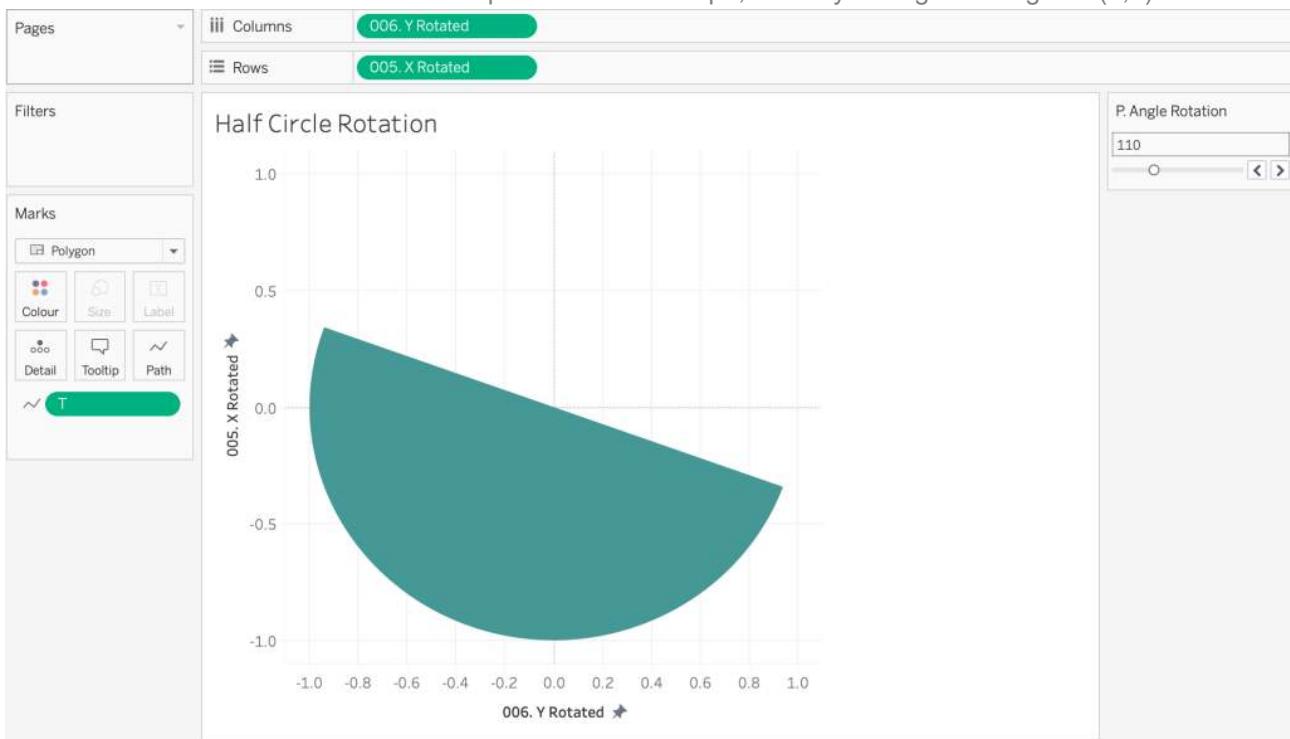
Yep. Confusing right. **This blog** perfectly explains what these calculations do. You will see they do not differ hugely from the X and Y calculations we previously had. We take those points, and we create two new X and Y co-ordinates that take into account theta (the angle we want to rotate through)

I have created a parameter P. Angle Rotation. This parameter is a number between 0 and 360. Therefore if the parameter is 0, we will have rotated the semi circle 0 degrees, 180 it has spun around and 360 it is back to its original rotation. The reason I have included a parameter here is so you can visualise how this works.

(example below shows the semi-circle rotated through 110 degrees)

(There is a way of re-writing this calculation to be neater, but for the sake of following the blog link I've left it like this.)

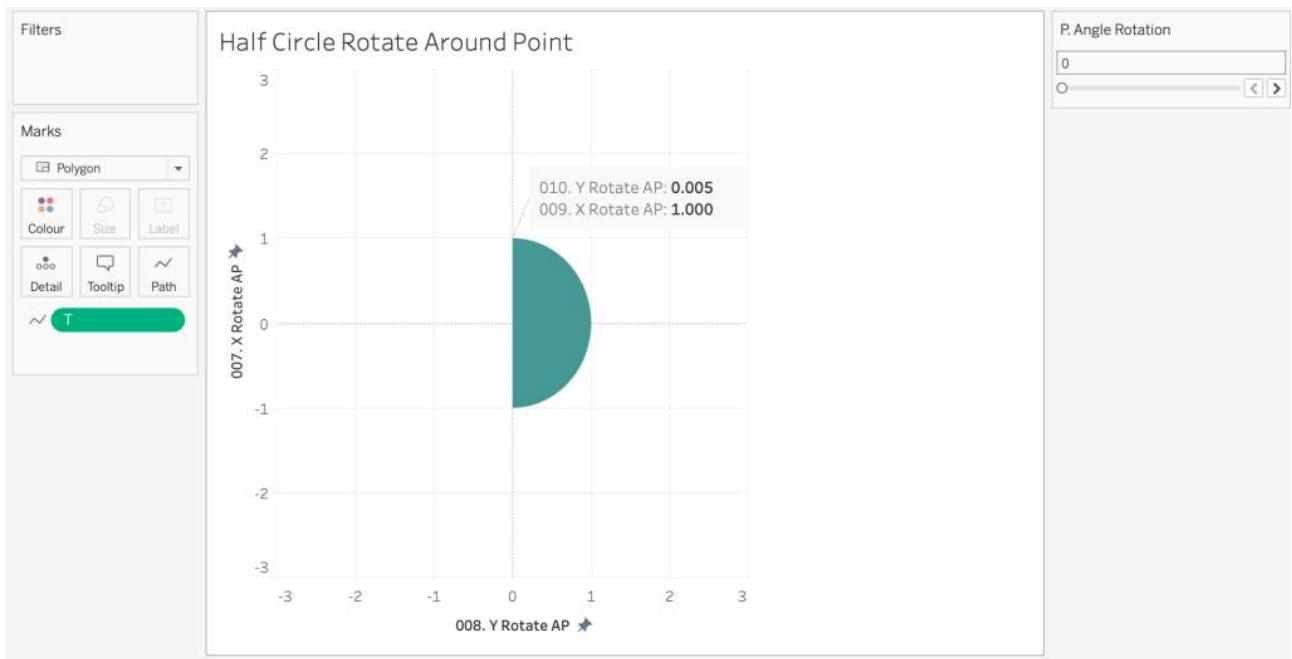
So these calculations can help us rotate the shape, but only through the origin of (0,0)



ROTATE THE SHAPE AROUND AN ARBITRARY POINT

So, as if that wasn't confusing enough, what if we wanted to rotate our points through a random co-ordinate?

For example, I have chosen the point (1,0) that I want to rotate all my points around.



Calculations 7 and 8 come from the previous blog too.

007. X Rotate AP

Half Circle

X

```
//      (x0 - xc)cos(θ) - (y0 - yc)sin(θ) + xc
//      Rotate around arbitrary point of (1,0)
(([003. X]-1)*cos(RADIANS([P. Angle Rotation]))) -
(([004. Y]-0)*sin(RADIANS(([P. Angle Rotation])))) + 1
```

The calculation is valid.

1 Dependency ▾

Apply

OK

008. Y Rotate AP

Half Circle

X

```
//      (x0 - xc)sin(θ) + (y0 - yc)cos(θ) + yc
//      Rotate around arbitrary point of (1,0)
(([003. X]-1)*sin(RADIANS([P. Angle Rotation]))) +
|(([004. Y]-0)*cos(RADIANS([P. Angle Rotation]))) + 0
```

The calculation is valid.

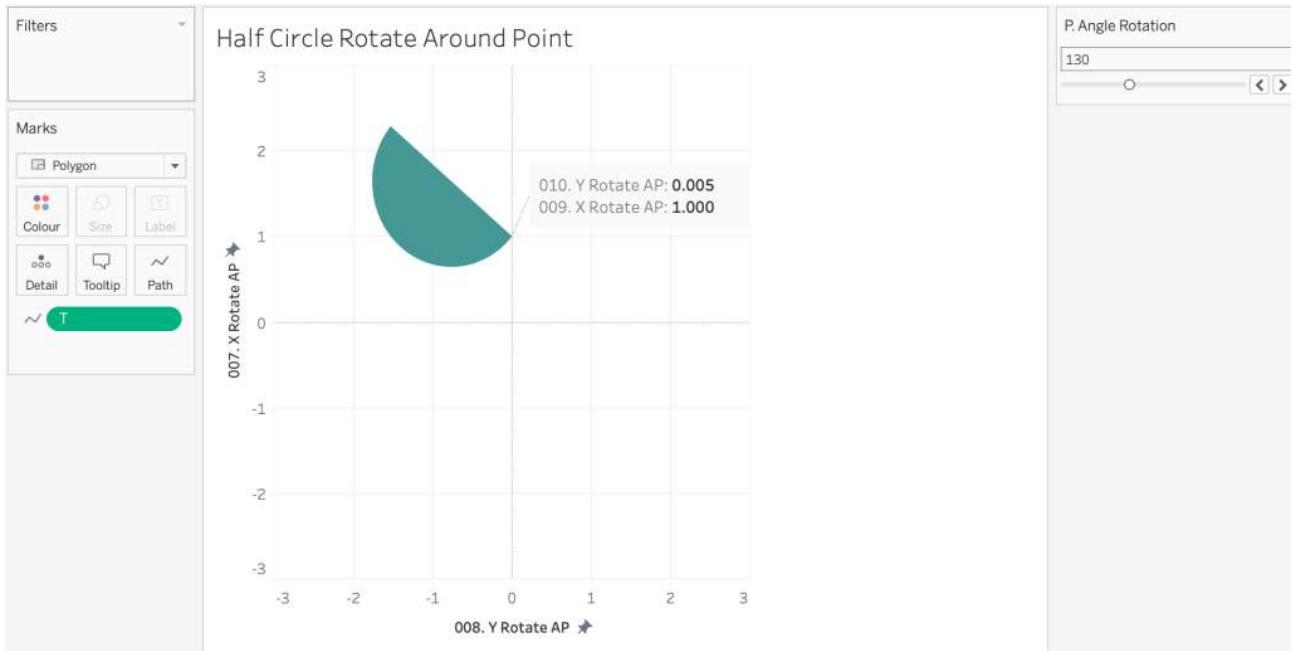
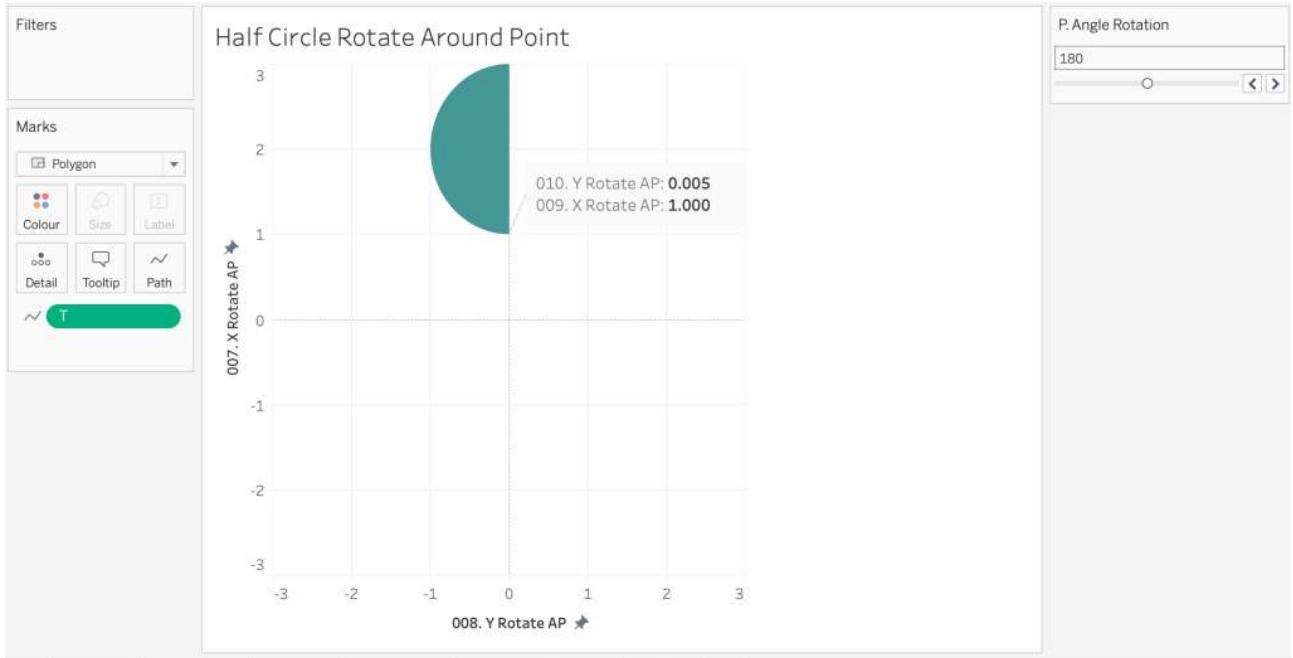
1 Dependency ▾

Apply

OK

Here we are accounting for the co-ordinates of the centre of rotation. Have a look in the workbook how changing the angle of rotation now impacts the movement of the shape around the point (1,0). Try changing the numbers of 1 and 0 to different co-ordinates of your choosing and see how that impacts the way it moves.

You will notice that if you make the values (0,0) it is in effect the same calculation as in 5 and 6!



SCALE THE SHAPE

Let's go back to our original X and Y calculations....

How do we make our semi-circle smaller or larger? We simply times our x and y values by a specific amount of equal value.

009.X Scaled Half Circle X

[003. X] * [P. Scale]



The calculation is valid.

1 Dependency ▾

010.Y Scaled Half Circle X

[004. Y] * [P. Scale]

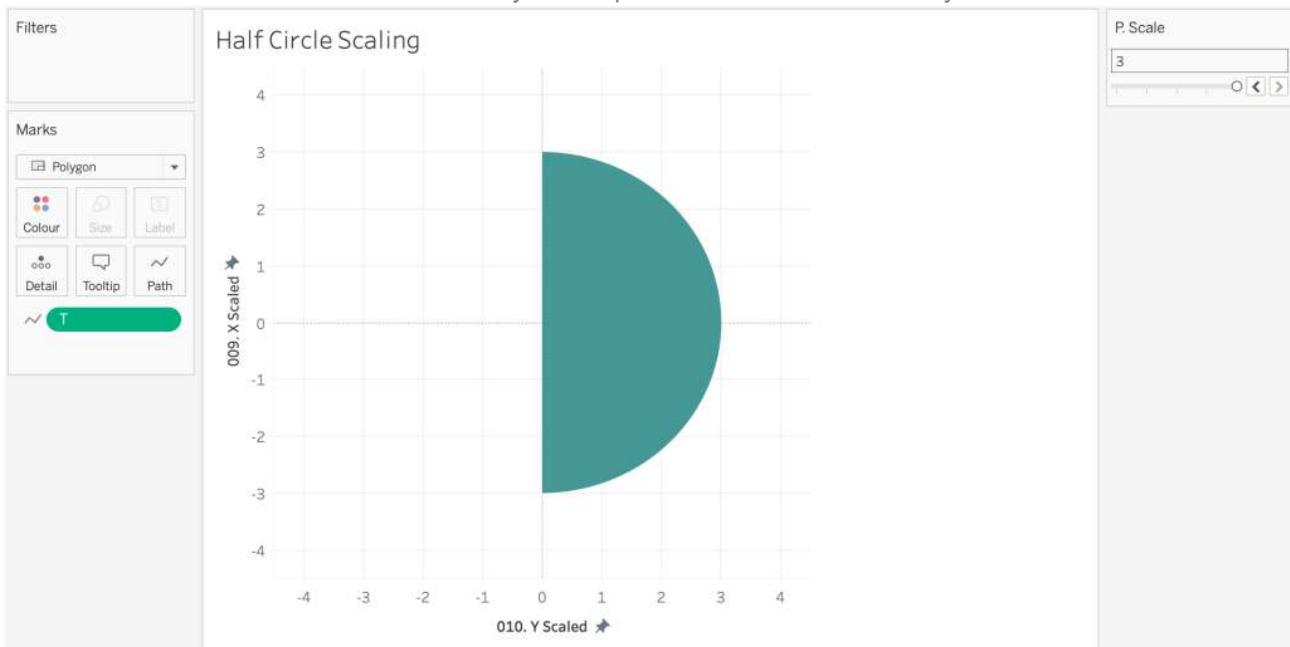


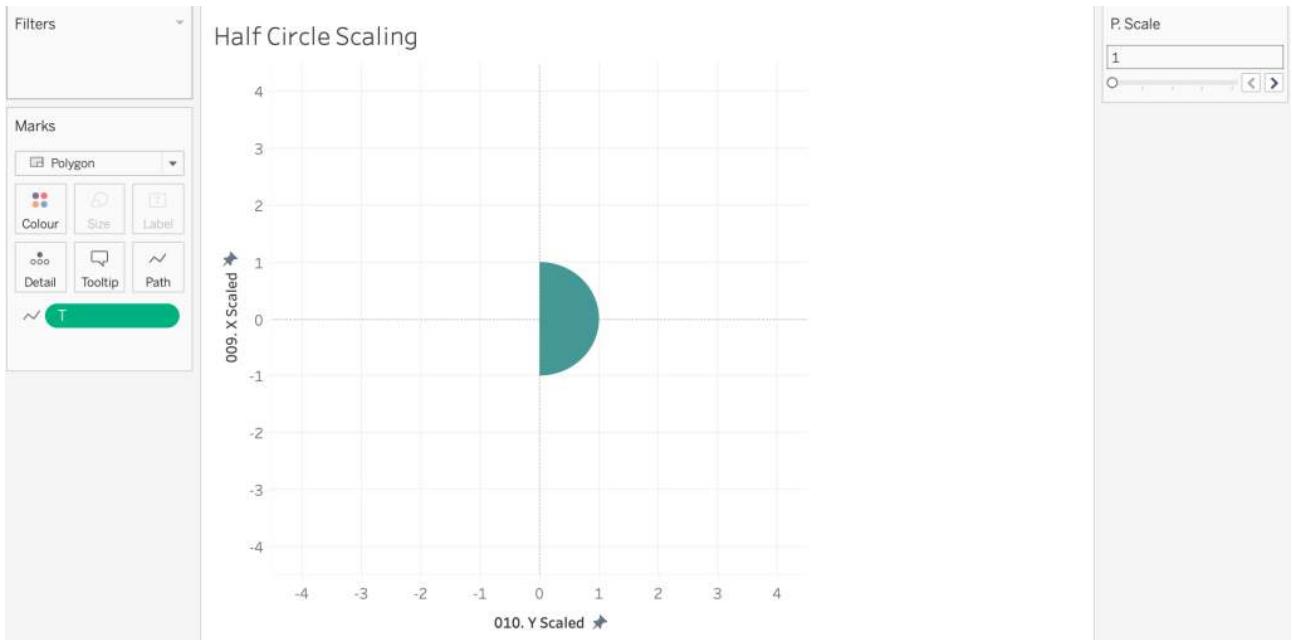
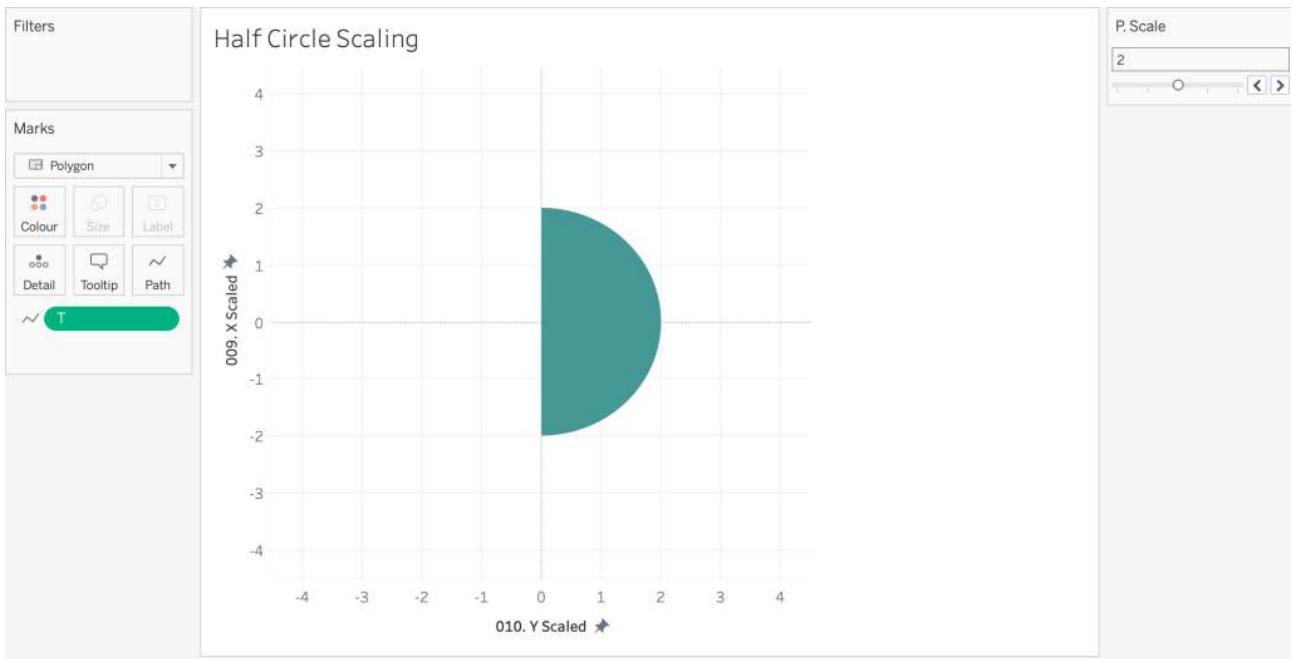
The calculation is valid.

1 Dependency ▾



To show how this works, I've created a parameter slider of values. Remember, if you do not multiply by the same constant your shape will be stretched unevenly!





TRANSPOSE THE SHAPE

Transposing the shape, i.e moving the points is by far the easiest to comprehend. We simply add a value to the X and Y co-ordinate to move the points along the axis.

011. X Transpose

Half Circle

X

[003. X] + [P. Transpose]

The calculation is valid.

1 Dependency ▾

Apply

OK

012.Y Transpose

Half Circle

X

[004. Y] + [P. Transpose]



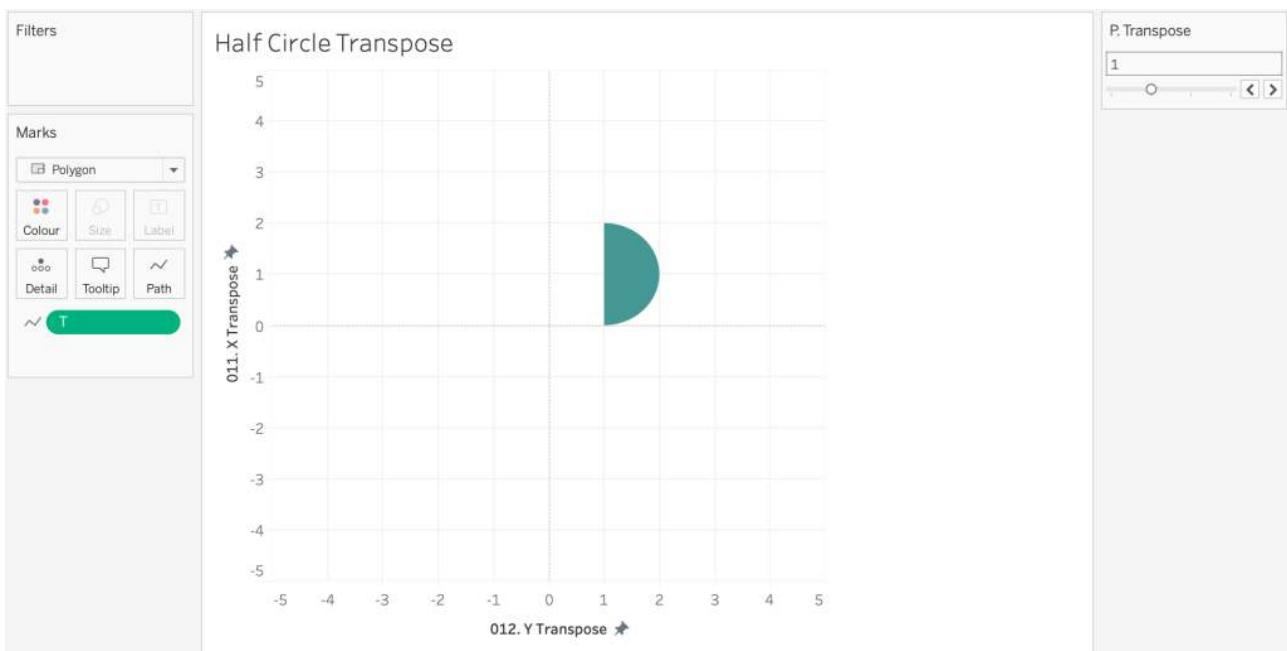
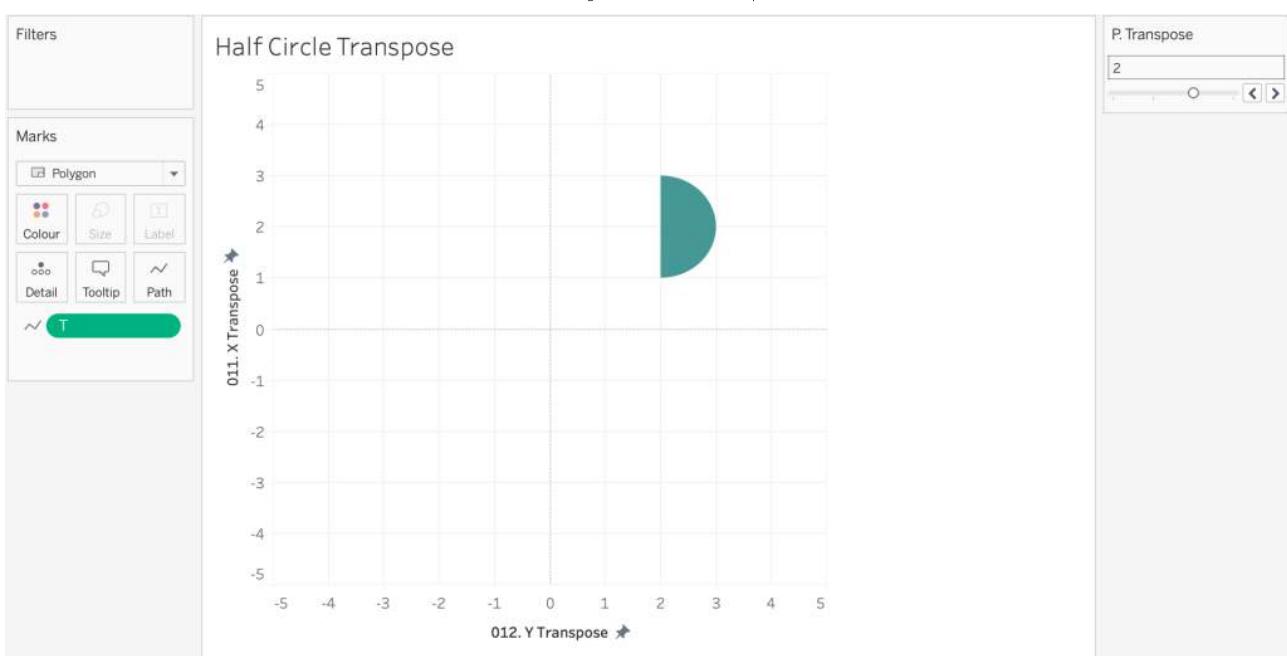
The calculation is valid.

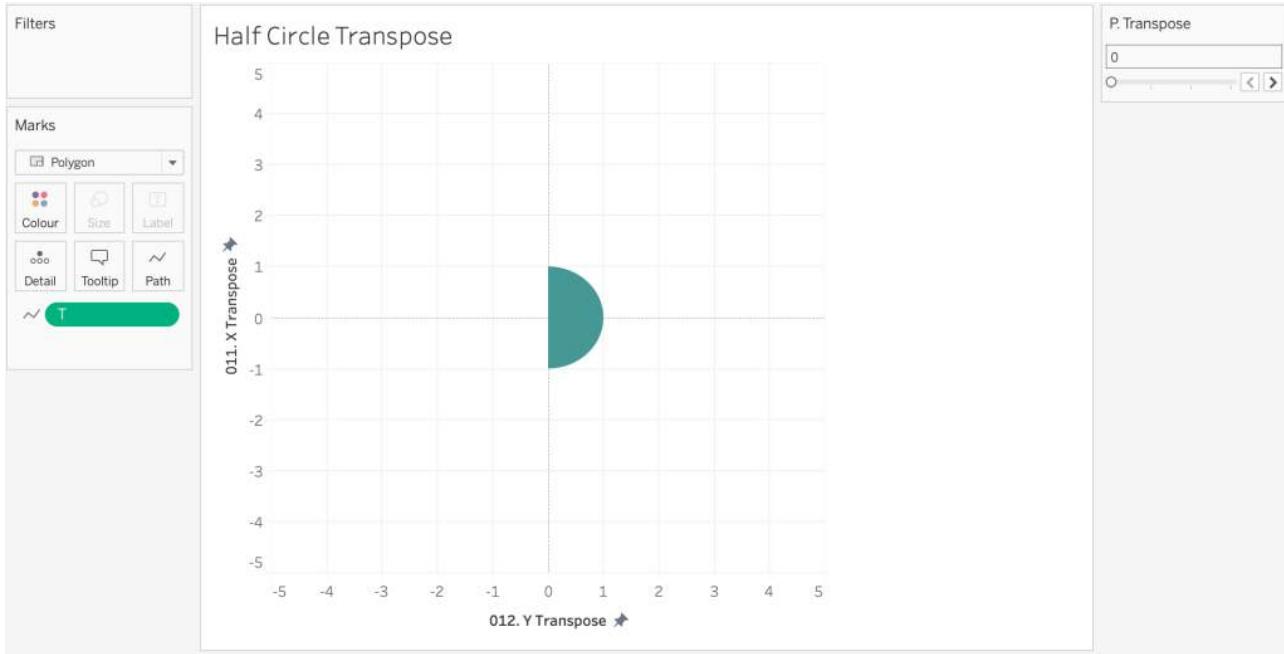
1 Dependency ▾

Apply

OK

Here we add a given number to both the axis points.

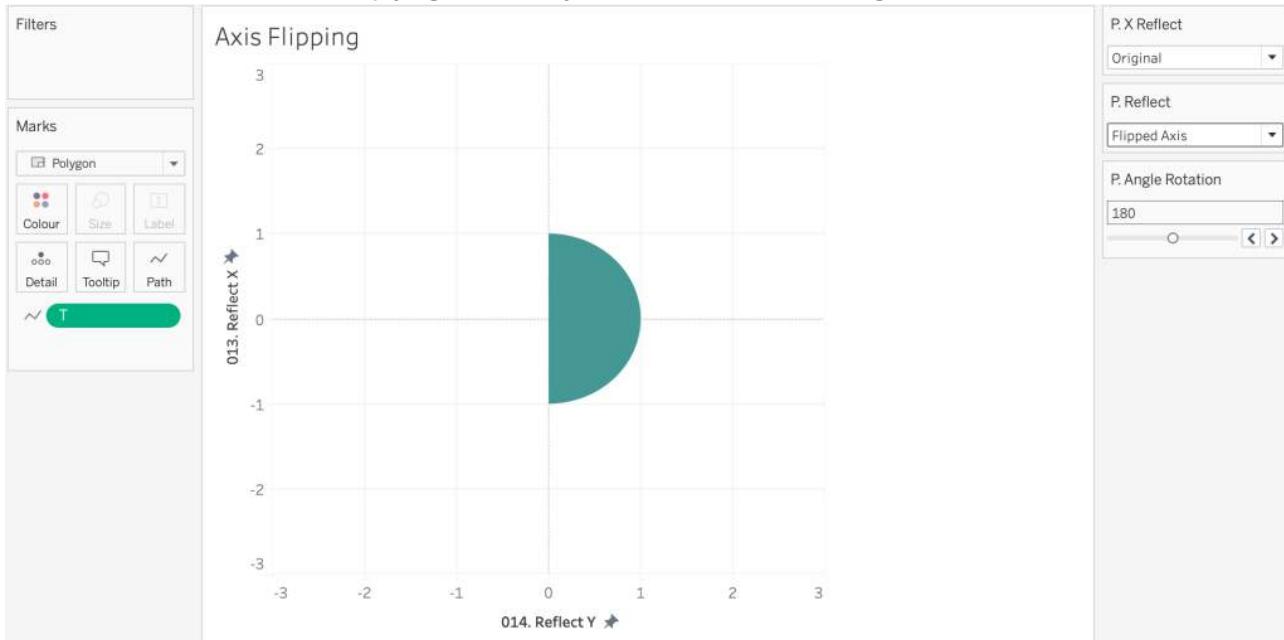


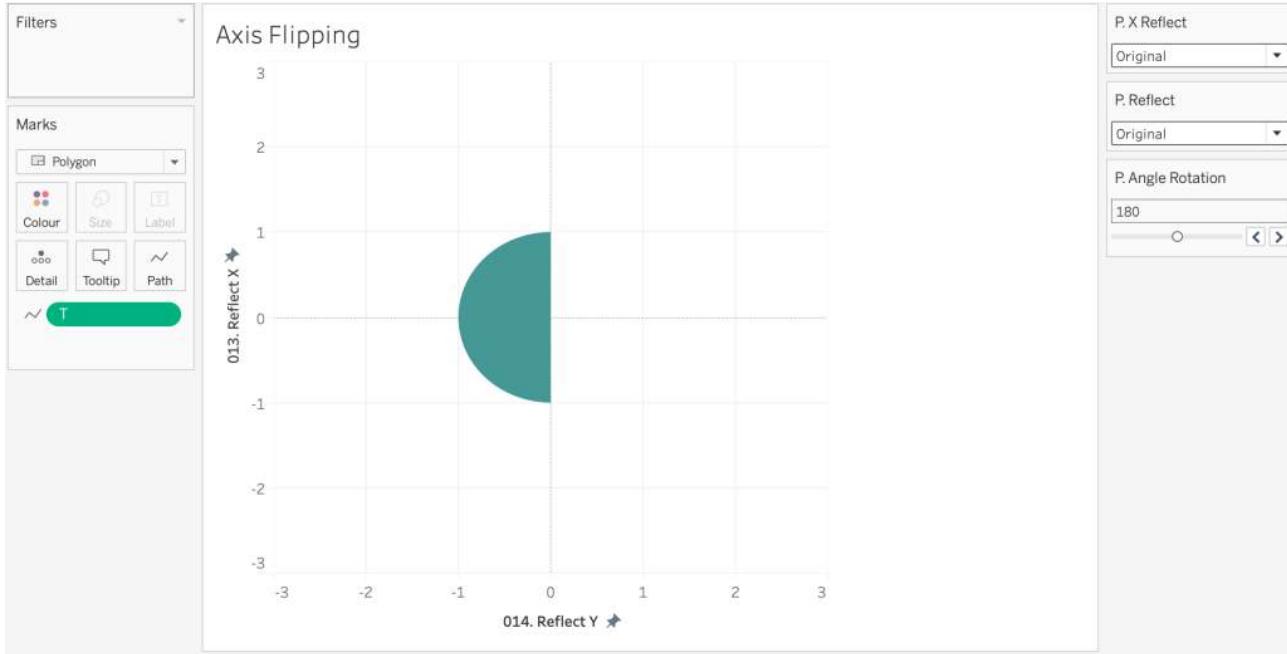


FLIP THE SHAPE ON ITS AXIS

The final thing I wanted to cover was how we flip the shape through its axis to simulate reversing the axis. You may consider clicking into the column or row and putting a minus sign in front of the header. This would work, or alternatively you can use a parameter.

I created a custom parameter integer list, once where the value is 1, and once where the value is -1. Multiplying the axis by minus 1 is in effect calling it -axis.





PUTTING IT INTO PRACTICE

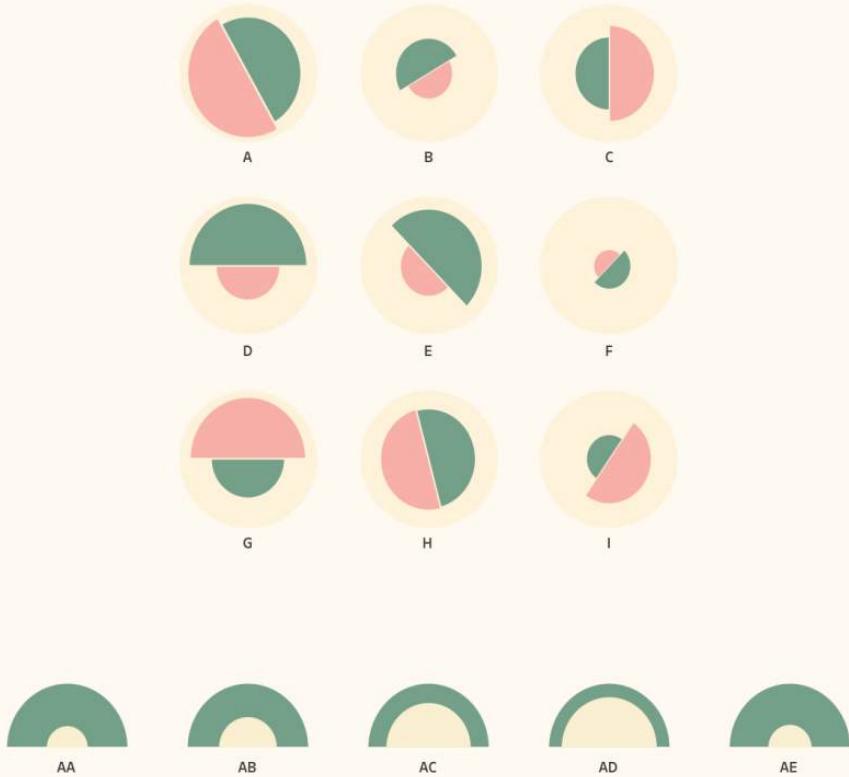
So now we have covered how to go crazy with one shape!

Below is an example where I've played around with multiple shapes and spins to emulate some of Michela's style, albeit my data is **dummy data**. (showcase data set) I wont go too into the crux of it, but in the dummy dataset you will see some 'origin' points creating the grid, and then the same methodology as above for creating the shapes.

You will also see a column called 'proportion of full' – this is a hardcoded value I've used in order to size some of the semi-circles into random smaller values. The final viz uses the calculation of rotation around the origin (0,0), not an arbitrary point.

UNDERSTANDING POLYGONS V001

- Transform, Rotate, Translate, Scale



Other resources and inspiration:

If you are familiar with Path bins I would consider [this tutorial](#) by Toan Hoang. The reason I have made my run-through not using path bins is because next blog we will be following a similar methodology to today but applying it to new shapes!

When finishing up this blog, I remembered the perfect example of how this style is emulated.

None other than **Neil Richards**. Neil is one of the most creative, talented members of the community. I'd recommend anyone to go dig into this workbook to see the true technical knowledge on show. To revisit my art museum intro – Neil's work is a prime example.



Round-up:

So you may have reached this point and thought, *CJ you've just made random semi-circles on a page.* Strictly speaking, you're correct. But the two main takeaways are firstly and predominantly the technical takeaway of how to manipulate a polygon shape.

More widely, the takeaway is: how can we change our mindset in the way we interact with visualisations that are non-conform? Think about some cool user cases where you could apply this. Could you use the rotation as showing a shift or skew – I like to think of the idea of tipping the balance one way or another of a scoreline. Can you use the relative sizing in an effective manner? Does the shape you choose help reinforce your story?

In the next Polygon blog we will look to build on what we have learnt here in terms of scaling, with a focus on scaling relative to a fixed maximum. We will also cover off how to include more than just one polygon shape.

As always, Let me know how this was to follow. I can be reached on Twitter, @_CJMayes.

LOGGING OFF,

CJ

CREATE A SOCCER EVENT TIMELINE! A COLLABORATION WITH ANMOL DURGAPAL

Hi All,

Welcome to another split blog looking at both web-scraping as well as Tableau.

I constantly meet people in the community of such great and diverse skillsets. **Anmol** is no exception. If you're from the soccer community you may recognise this **pizza chart creator** he put together, as well as

some of the awesome tutorials found [here](#). These are some seriously good tutorials to get stuck into regardless of coding knowledge. I want to thank Anmol for collaborating with me on this blog – he really

pulled through on prepping the python code exactly for how I wanted it to export to csv.

I personally really enjoy writing these end to end blogs as it allows individuals to have the choice to complete either segment or all of it!

You can find **Anmol Durgapal** on twitter, and I would recommend following his **GIT repository**, [here](#).

The screenshot shows Anmol Durgapal's GitHub profile. At the top, there's a large circular profile picture of a sloth. Below it, the name "Anmol Durgapal" and the handle "Slothfulwave612" are displayed. A "Follow" button is present. Underneath, it says "Data Science Practitioner". It shows "49 followers" and "17 following". Below that, social links for India, email (slothfulwave10@gmail.com), LinkedIn (https://www.linkedin.com/in/anmol-du...), and Twitter (@slothfulwave612) are listed, along with "Block or Report" options. The main area is titled "Pinned" and contains six repository cards:

- soccerplots**: A Python package for data visualization for football analytics. Public. Python. Stars: 48, Forks: 12.
- My-Data-Visualization-Work**: This repository contains all my recent data visualization work. Public.
- xG-Model**: xG Model predicts the probability of scoring goals from different points on the pitch. Public. Jupyter Notebook. Stars: 2, Forks: 1.
- Football-Analytics-With-Python**: A repository for football analytics. Public. Python. Stars: 10, Forks: 5.
- Footy-Events**: A Python program that scrapes football fixtures from a website and adds these events to your google calendar. Public. Python. Stars: 1.
- Soccermatics-With-Python**: Mathematical modelling of football using Python. Public. Jupyter Notebook. Stars: 1.

Below the pinned repos, there's a heatmap titled "449 contributions in the last year" showing contributions by month and year. The heatmap shows a high density of contributions in the last year, with most activity in the months of October, November, and December. A legend indicates contribution counts: Less, Few, More. To the right of the heatmap, a timeline shows activity from 2017 to 2021, with a blue bar indicating the current year (2021). At the bottom left, there's an "Activity overview" section with a link to "@mapwithib".

Like most python tutorials this will be split into two parts. If you want to only complete the code or skip to the Tableau by all means – we have included the example dataset at the top of the page.

TOPIC

We will be looking to recreate the **Understat website** user interface for a specific match. Here is the **Understat website version**. Below is what we will look to create within Tableau. You can find the workbook in the link at the top of the page.

BRENTFORD 3-3 LIVERPOOL

Understat Mock-Up

Ethan Pinnock



26

Diogo Jota



30

Ethan Pinnock



42

Frank Onyeka



43

Mohamed Salah



53

Vitaly Janelt



62

Curtis Jones



66

Andrew Robertson



69

Curtis Jones



71

Frank Onyeka



71

Yoane Wissa



81

Christian Nargaard



81

PART 1 – PYTHON

The code you can find on Github.

```
from bs4 import BeautifulSoup
import pandas as pd
import requests

class MakeEventDataset:

    def __init__(self, link):
        self.link = link

    def get_event_info(self, timeline, minutes, side):
        """
        Function to scrape the event timeline.

        Arguments
        -----
        timeline : bs4.element.ResultSet
            The HTML code inside a list for events
        minutes : bs4.element.ResultSet
            The HTML code inside a list for minutes
        side : str
            Either H or A

        Returns
        -----
        list : containing all the events as dictionary
        """

        # init an empty list
        dataframe_list = []

        for events, time in zip(timeline, minutes):
            for event in events.find_all("div", {"class": "timeline-row"}):
                # fetch player names
                player_names = event.find_all("a", {"class": "player-name"})

                # fetch shape detail
                shape_detail = event.i["title"]

                # if there are more than one player name then it's a substitution
                if len(player_names) > 1:
                    player_name = player_names[0].get_text()
                    event_detail = player_names[1].get_text()
                else:
                    player_name = player_names[0].get_text()

                if event.span is None:
                    event_detail = ''
                else:
                    event_detail = event.span.get_text()

                # fetch minute
                minute = int(time.span.get_text()[:-1])

                # add to the list
                dataframe_list.append({
                    "Name": player_name,
                    "Shape Detail": shape_detail,
                    "Event Detail": event_detail,
                    "Minute": minute,
                    "H_A": side,
                })

        return dataframe_list

    def get_event_df(self):
        # scrape HTML from the given link
        page_tree = requests.get(self.link)
```

```

page_soup = BeautifulSoup(page_tree.content, "html.parser")
EXPLAINING THE CODE

# Below we have put together some of the key components of the code.
# timeline_home = page_soup.find_all("div", {"class": "timeline-block block-home"})
What is Beautiful Soup?

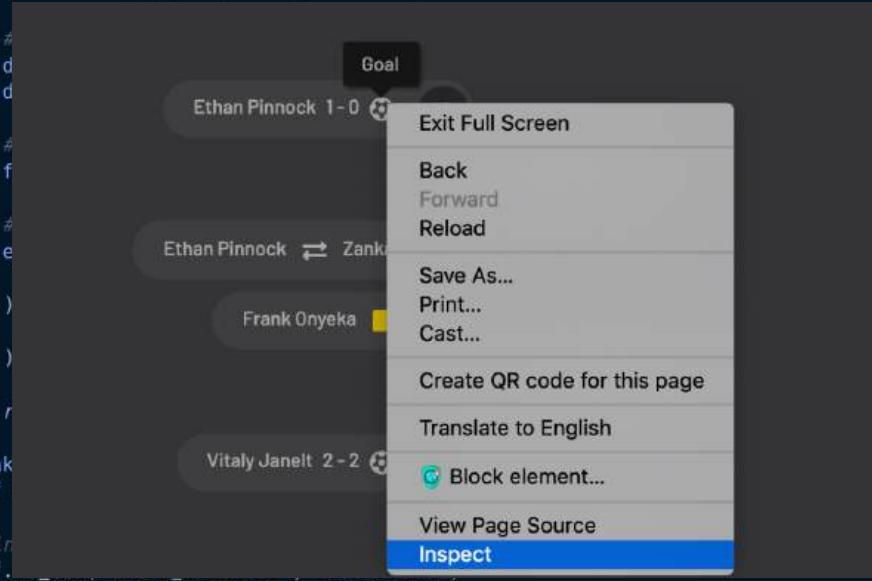
```

Beautiful Soup is a Python library for pulling data out of HTML and XML files. It is a way of navigating, searching and modifying the parse tree. We can use it in relation to the website by inspecting the website page and finding the components we want to construct our dataset.

```

# fetch time
minutes = page_soup.find_all("div", {"class": "timeline-block block-time"})[0].text
How does the fetching of specific pages work?

```



By inspecting the page we can see the underlying HTML of how the site is built. Using beautifulsoup we can find each part of the class that we will need eventually export to our csv file.

A screenshot of a browser's developer tools showing the HTML structure of the match timeline. The left panel shows the DOM tree with nodes like 'div.timeline-container', 'div.block', 'div.timeline-block', etc. The right panel shows the detailed HTML code for one of the timeline blocks, including player names, match scores, and event details. The code includes classes like 'player-name', 'match-score', and 'fa fa-futbol'.

Anmol manages to fetch details of the player name, minute, match score, and match events of cards and substitutions. The below screenshot details an example of how we search for the 'a class' within the HTML and withdraw the name under 'player-name'.

The screenshot shows a football match timeline from Understat.com. The left side displays the match events in a card-based format, while the right side shows the corresponding HTML DOM structure for those events.

Events:

- Ethan Pinnock 1-0 26'
- Diogo Jota 1-1 30'
- Ethan Pinnock → Zanka 42'
- Frank Onyeka 43'
- Mohamed Salah 1-2 53'
- Vitaly Janelt 2-2 62'
- Curtis Jones 2-3 66'
- Andrew Robertson 69'
- Frank Onyeka → Shandon Baptiste 71'
- Curtis Jones → Roberto Firmino 71'
- Yoane Wissa 3-3 81'
- Christian Nørgaard → Yoane Wissa 81'

DOM Structure:

```

    <div class="block">
      <div class="timeline-block">
        ...
        <div class="timeline-container" style="background-color: #e0f2e0; border: 1px solid #d0e0d0; padding: 5px; margin-bottom: 10px;">
          ...
        </div>
        ...
      </div>
      ...
    </div>
    ...
  
```

Where can I put in a match of my own choosing?

You can replace your match url with the one you want within the code.

```
obj = MakeEventDataset("https://understat.com/match/16438")
```

What will my data look like?

The export once run will look like the below.

Name	Shape Detail	Event Detail	Minute	H_A
Ethan Pinnock	Goal	1 - 0	26	H
Diogo Jota	Goal	1-1	30	A
Ethan Pinnock	Substitution	Zanka	42	H
Frank Onyeka	Yellow card		43	H
Mohamed Salah	Goal	1-2	53	A
Vitaly Janelt	Goal	2-2	62	H
Curtis Jones	Goal	2-3	66	A
Andrew Robertson	Yellow card		69	A
Frank Onyeka	Substitution	Shandon Baptiste	71	H
Curtis Jones	Substitution	Roberto Firmino	71	A
Yoane Wissa	Goal	3-3	81	H
Christian Nørgaard	Substitution	Yoane Wissa	81	H

What should I be cautious of?

The player name sometimes will need tidying up if it has special characters in.

The Event detail if it has the goal scoreline in, you will want to make sure it doesn't revert to showing a date format. (I.e 1-1 accidentally showing as 1st Jan)

We have tested the code on various matches, but do reach out if you have any questions or spot any areas for review.

RUNNING THE CODE

This code is built so that all you need to do is replace the url with the match you would like and click run.

Do note, for this to run, you will need to pip install the following packages in your terminal:

```
pip install BeautifulSoup
pip install pandas
```

Before we move onto the build, once again, I'd like to thank **Anmol** for pulling together the code. He did an exceptional job.

PART 2 – TABLEAU

You can access the example data for the tutorial on Github

How shall I prep my data after we get the export? How does the rank and path work?

Before we start we will need to make a few final amendments to our dataset.

1b. Base

```
// Base
if [Path] = 1 then
  ( IF [H A] = 'H'
  then -(1a. Length Full Base)
  ELSEIF [H A] = 'A'
  then 1a. Length Full Base)
END
)
ELSEIF [Path] = 2
then 0
END
```

The calculation is valid.

3 Dependencies

Explanation: So by duplicating our dataset we can create two points of reference. Taking the first goal for example. We will create a point on the x axis at zero (path = 2) and also a point leftwards of this mark that equals the length of our previous calculation. (path = 1)

In simpler terms, Home events span leftwards of x-axis being zero by the length of the players name, and Away events span right of x-axis (zero) by the length of the players name.

1c. MP Base

```
MAKEPOINT([Rank], [1b. Base])
// we use makepoint as we will want to make more layers
```

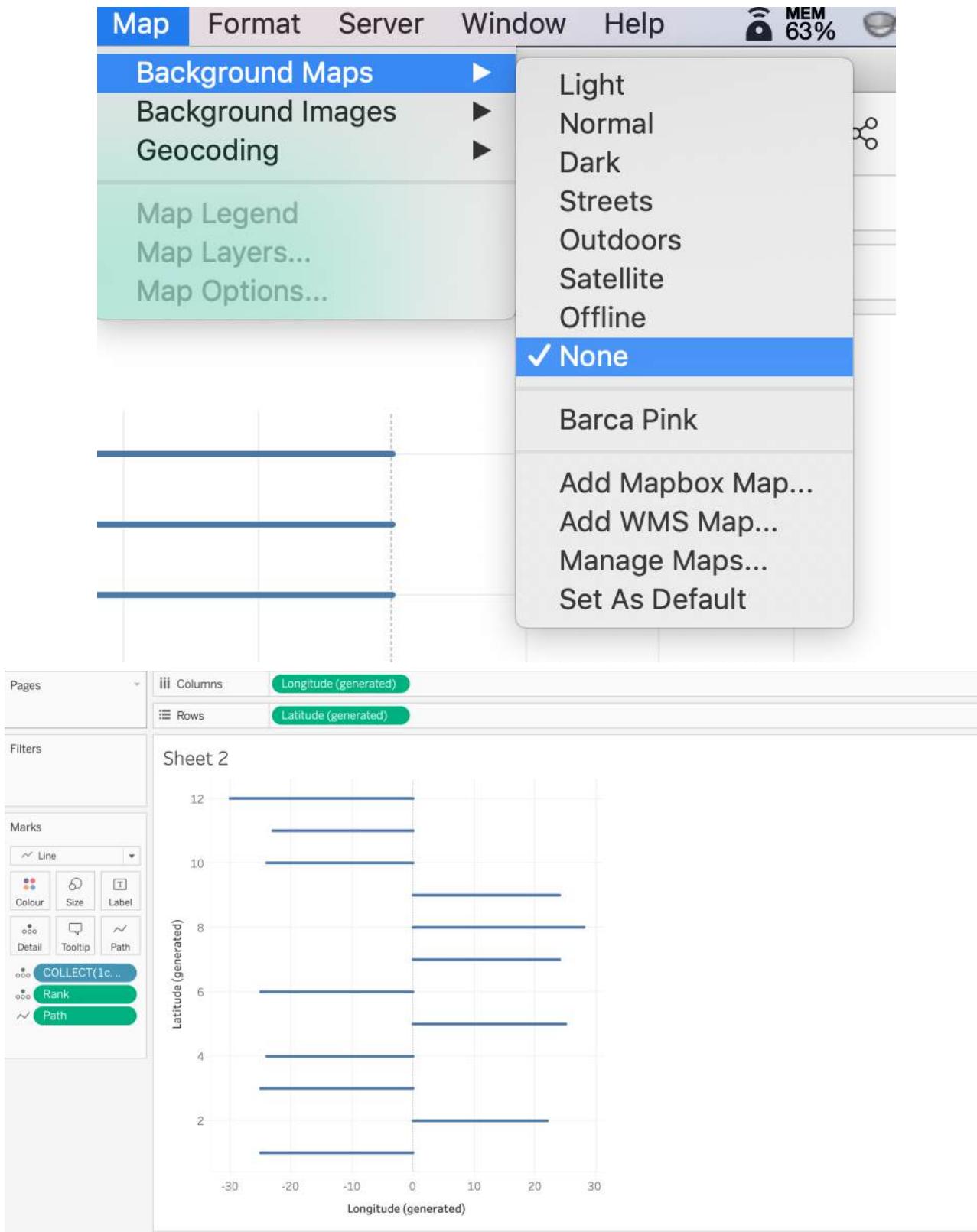
The calculation is valid.

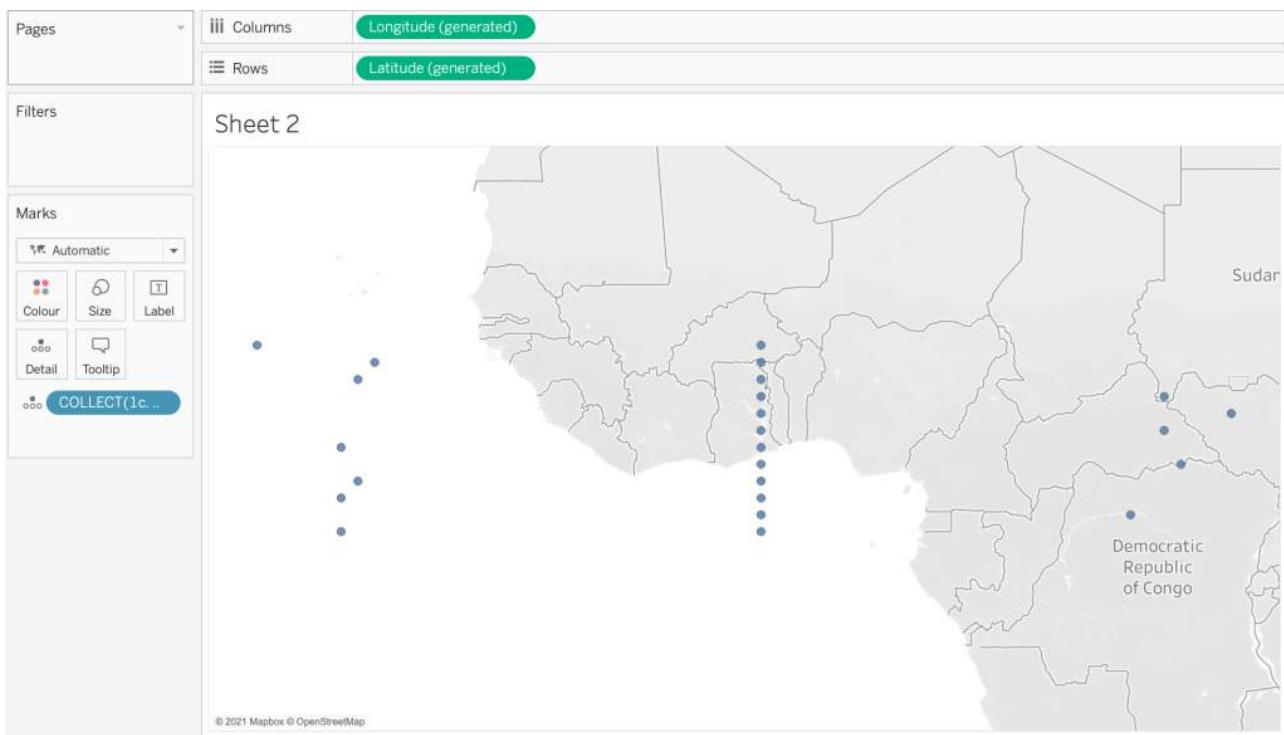
2 Dependencies

Explanation: This is a means of plotting our y and x points. We use the makepoint function because we will want to plot further layers on top. Lets do that now! In this regard our Y axis will be our Rank (remember we ranked our minutes in the dataset)

- Double click the 1c. MP Base calculation to add it to the sheet.
- Go to Map – Background Maps – None
- Change the Marks to a line, drag rank and path onto detail making sure they are dimension.

Here are some screenshots of that:





Lets now prep the minutes icon.

1d. MP. Minute

X

MAKEPOINT([Rank],0)

// the Y axis will be the rank we hardcoded
// We keep the X as 0 to stay centrally

The calculation is valid.

2 Dependencies ▾

Apply

OK

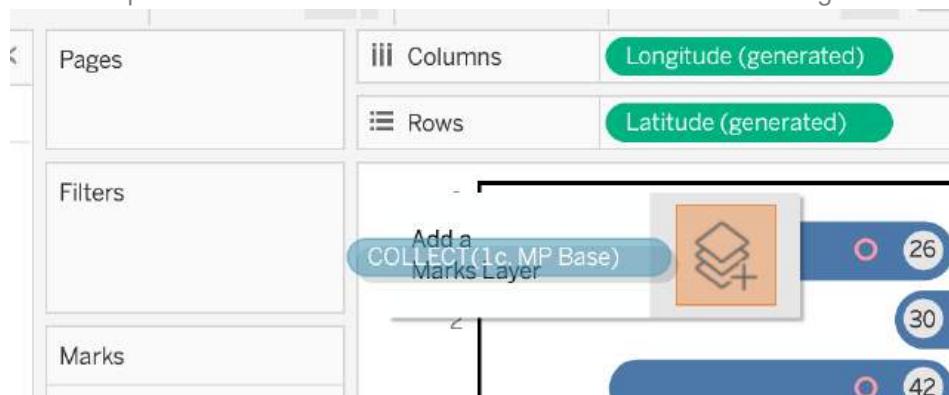
Explanation:

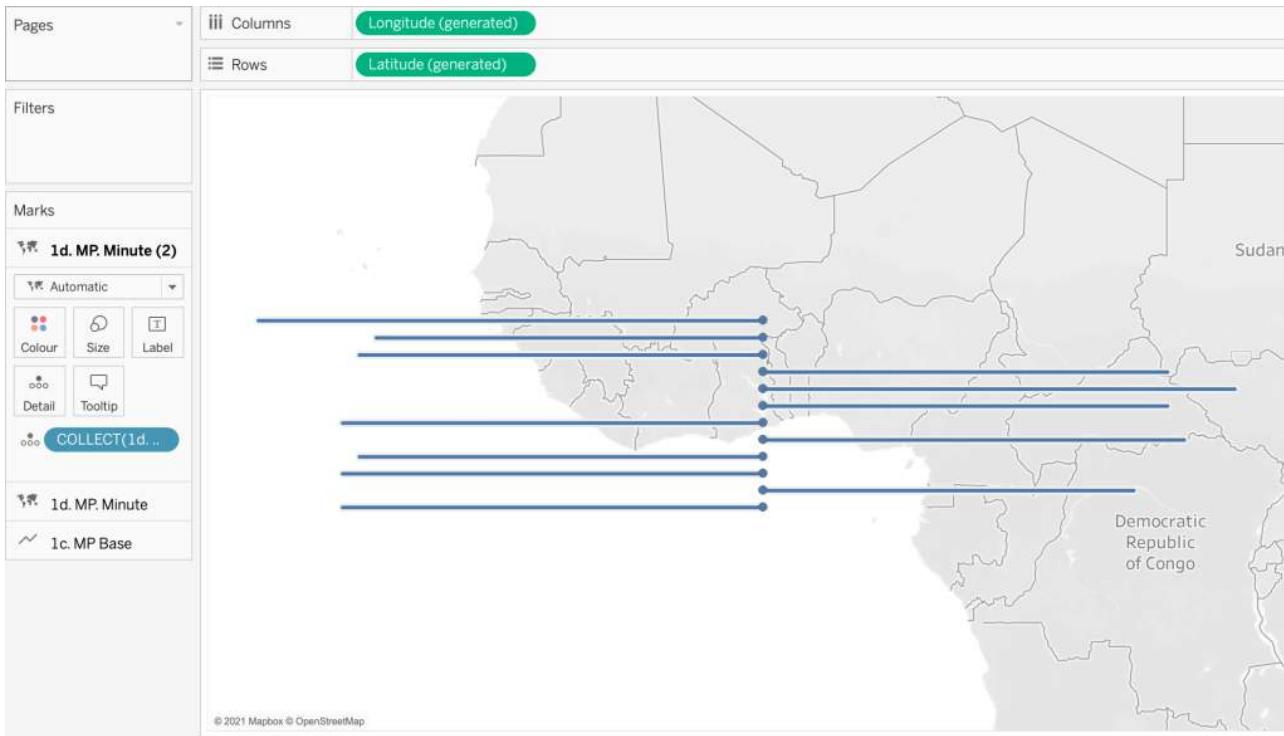
The minutes are based centrally so we can make the x axis 0. For the Y axis we will plot the Rank value from our dataset.

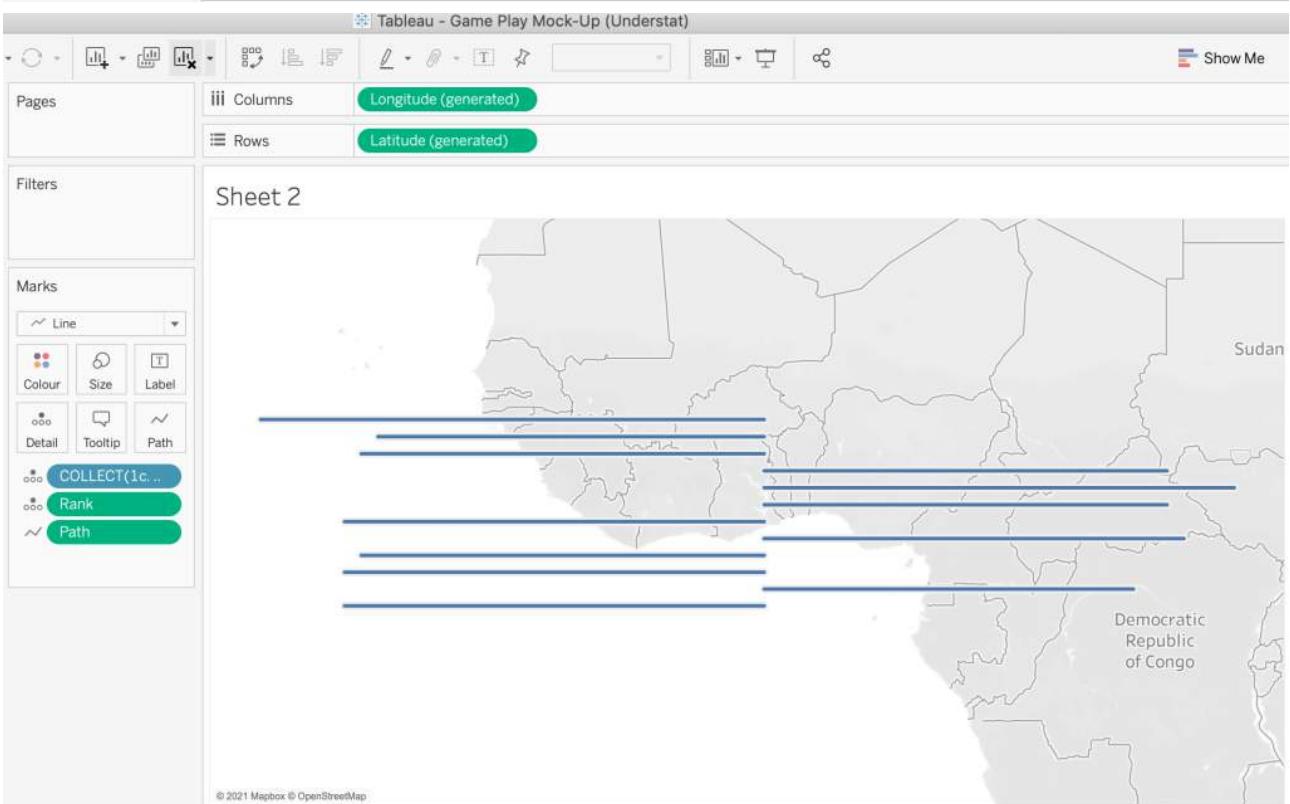
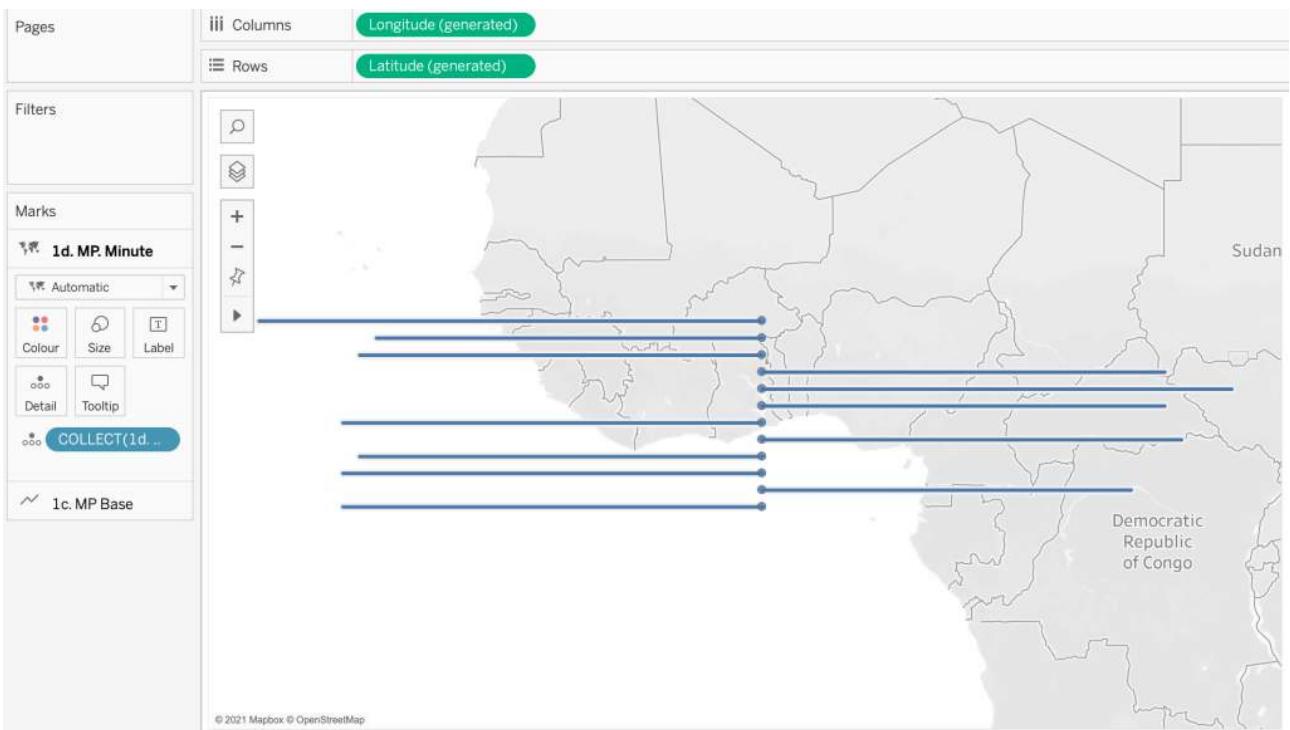
Lets go to Map and turn our map back on for the time being.

I drag the 1d. MP Minute TWICE onto the card. Once because I'll be creating a nice circular effect to sit behind the minute number. Then again for the actual minute label.

Note: If you are new to Tableau, when I say drag onto the card for layering functionality you have to hover it in the top left hand corner of the sheet. This can be a little confusing to start.







For the second MP. Minute layer (the one on top) You will want to change the marks to text, drag Path and rank onto the marks card as dimensions.

Drag Minute onto the label and make a dimension. You will notice that our minutes are ranked in the wrong order. Right click the latitude generated y axis and click reverse.

Edit Axis [Latitude (generated)]

X

General

Tick Marks

Range

- Automatic
- Uniform axis range for all rows or columns
- Independent axis ranges for each row or column
- Fixed

Automatic

Automatic

0.025474278

12.974525778

Scale

- Reversed
- Logarithmic
- Positive
- Symmetric

Axis Titles

Title

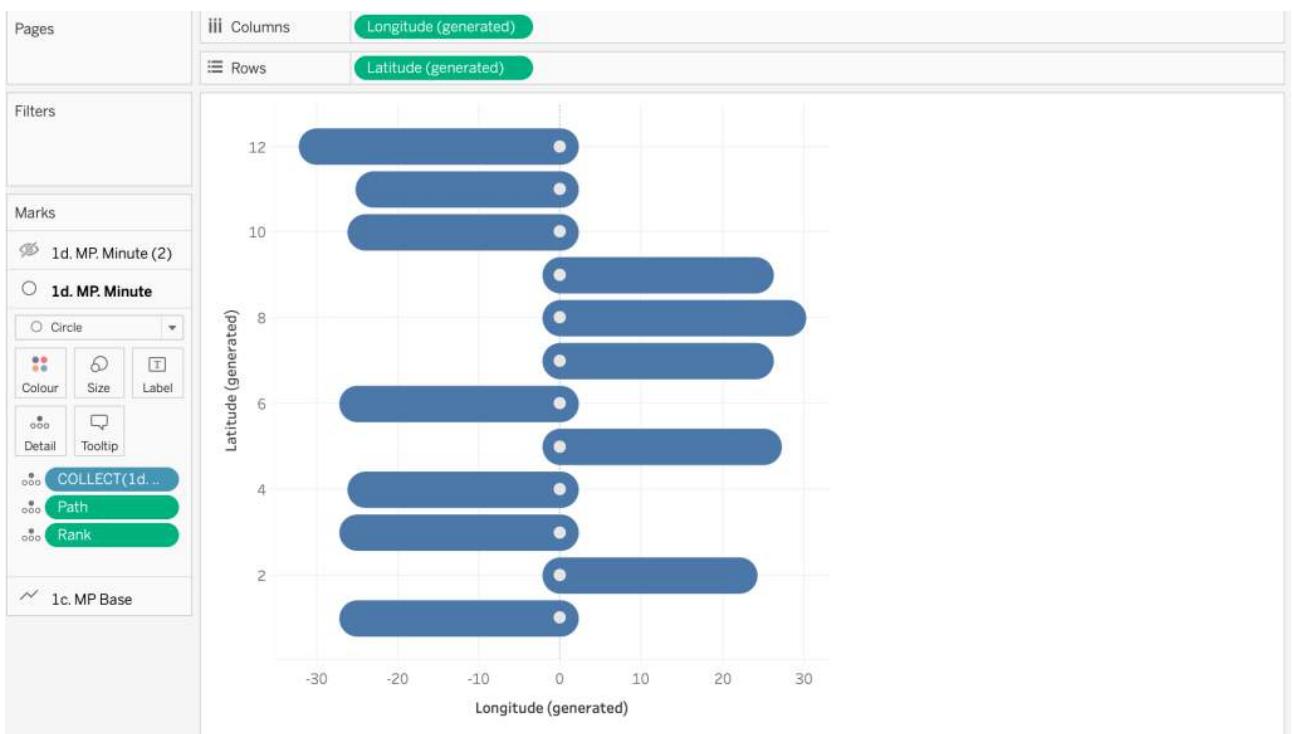
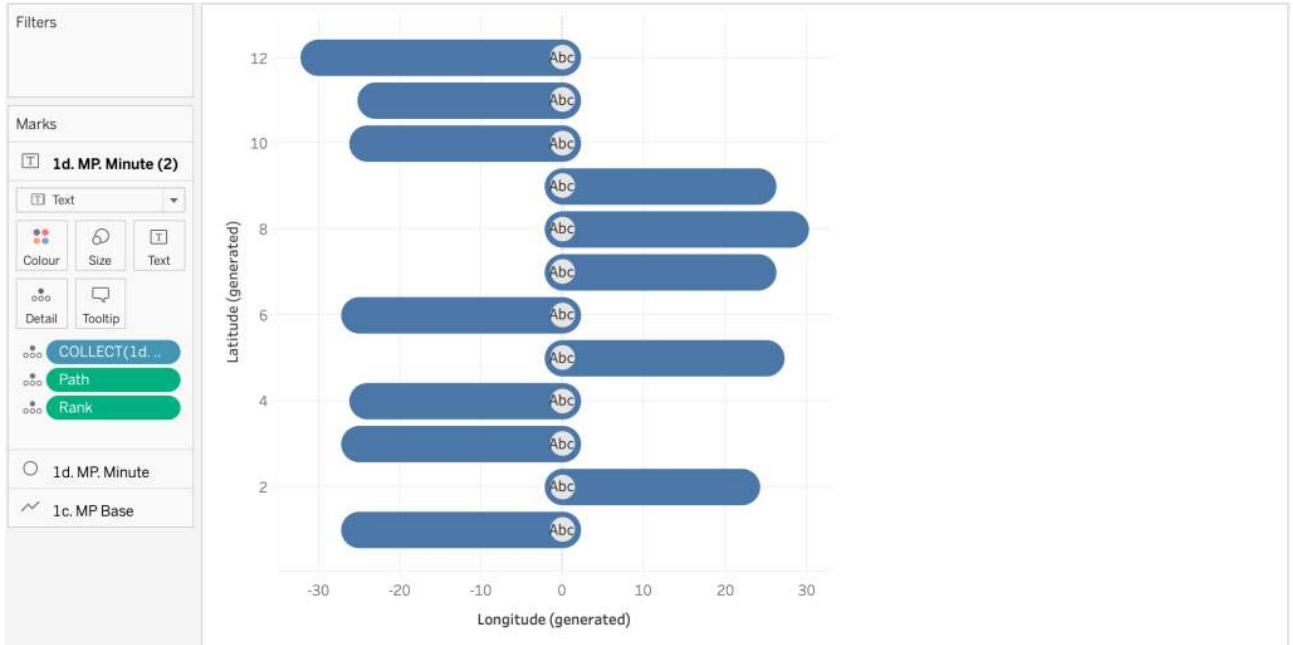
Latitude (generated)

Subtitle

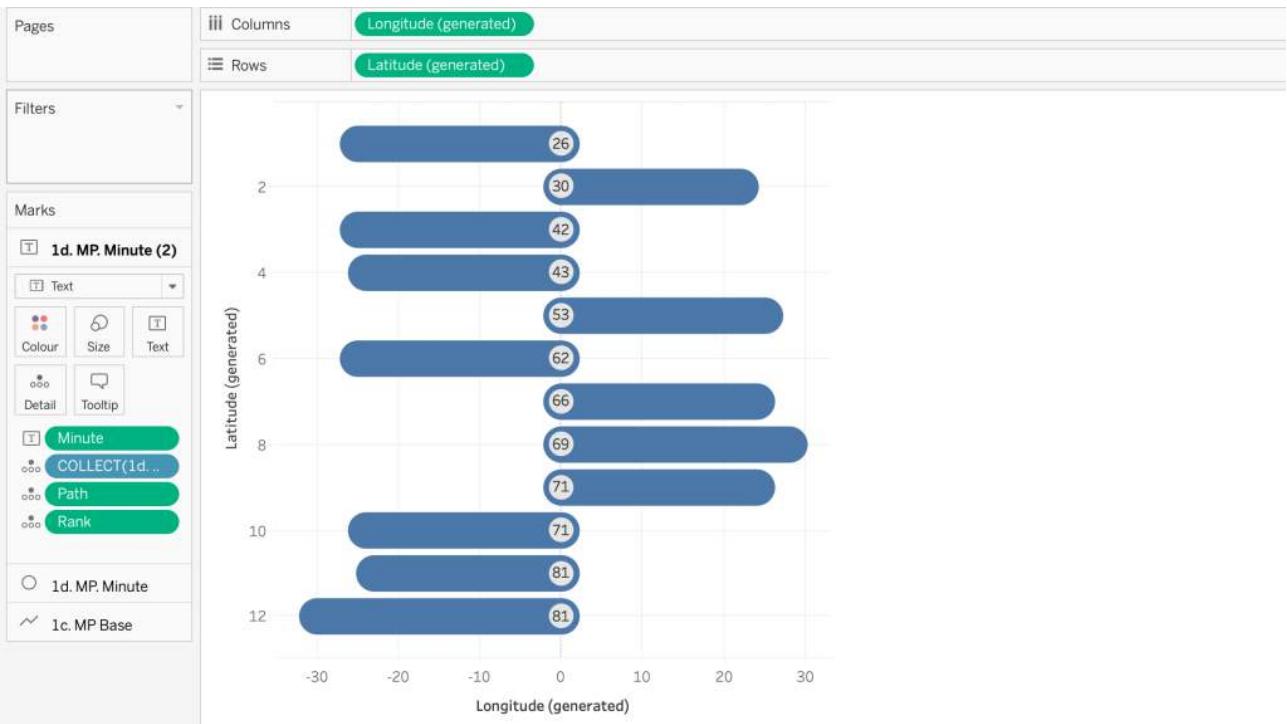
Subtitle

Automatic

 Reset



At this point, this is where we should be at:



Not the most stylish, but once we get our shapes and text fields on there for the name we can make it more visually appealing. This is a good time to set your chart a fixed axis. I personally find this easier for sizing reasons. I've chosen 0-13 on the y axis, and -39 to 39 on the x axis.

2a. Shape Positioning

```
IF [Path] = 1
then
(
IF [H A] = 'H'
then
-5
ELSE 5
END
)
END

// We offset the shape to the left and right of the minute
```

The calculation is valid.

3 Dependencies ▾

Apply

OK

Explanation: For this we only look at the points of path =1. The reason being is theoretically in our dataset we have every event twice (from having manually unioned the data). This is just a way of narrowing it down to say let's look at our (original) dataset just once.

Within that, is an if statement. We want to create a shape for the event (substitution, goal etc) but we will want to offset it slightly from the middle as our minutes already take up that space. So we shift all the home shapes slightly to the left, and all the away shapes slightly to the right!

2b. MP Shape Positioning

X

```
MAKEPOINT([Rank], [2a. Shape Positioning])
// Make them makepoints as we want to add the layer|
```

The calculation is valid.

2 Dependencies ▾

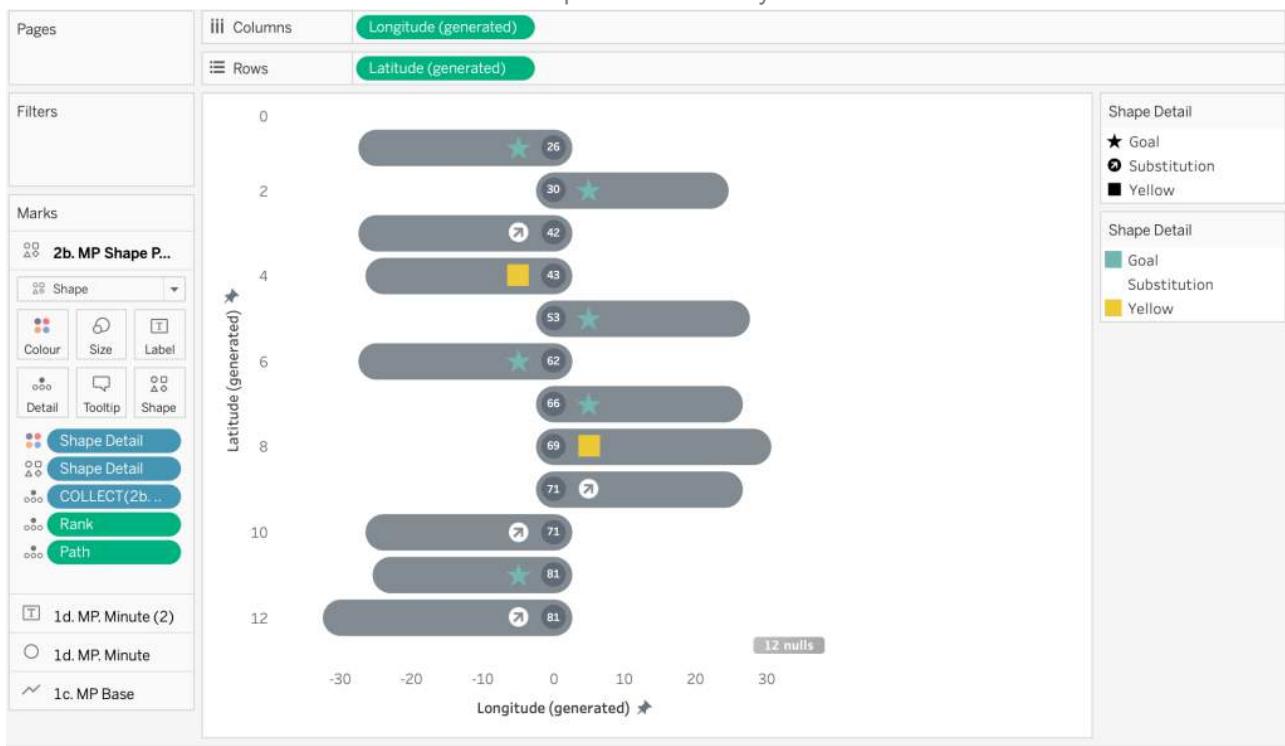
Apply

OK

Explanation: Lets create this now as an extra layer! Our Y axis like normal ranks our minutes, and our new shape positioning for the x axis will be either 5 or -5 based on if the game is home or away!

Add the layer onto the sheet.

Make the mark a shape, Drag Rank and Path onto the marks card and make them dimensions. You may at this point want create custom shapes based on the event. Drag Shape Detail onto the shape as well as colour. Here is an example using the Tableau built in colour and shapes. Feel free to use your own shapes as necessary.



All we have left is to add the name labels.

2c. Calc Player Positioning

X

```

IF [Path] = 1
then
(
IF [H A] = 'H'
then
-( [1a. Length Full Base]/2) - 4
ELSE ([1a. Length Full Base]/2) + 4
END
)
END

/* Take one example of the dataset (path =1)
Find the midpoint of the bar len/2
shift by 4 because of the padding of the shapes and minute
*/
```

The calculation is valid.

3 Dependencies ▾

Explanation: We take one set of the data i.e where path is 1. We then find the midpoint (len / 2) of the very first calculation we created. But of course we have to remember we have stuck in a whole bunch of shapes (events) and numbers (minutes) within our bar already. So we reshuffle them slightly to the left and right depending if its a home or away game.

2d. MP Player Positioning

X

MAKEPOINT([Rank], [2c. Calc Player Positioning])

```
// Add the final layer of the player names
```

The calculation is valid.

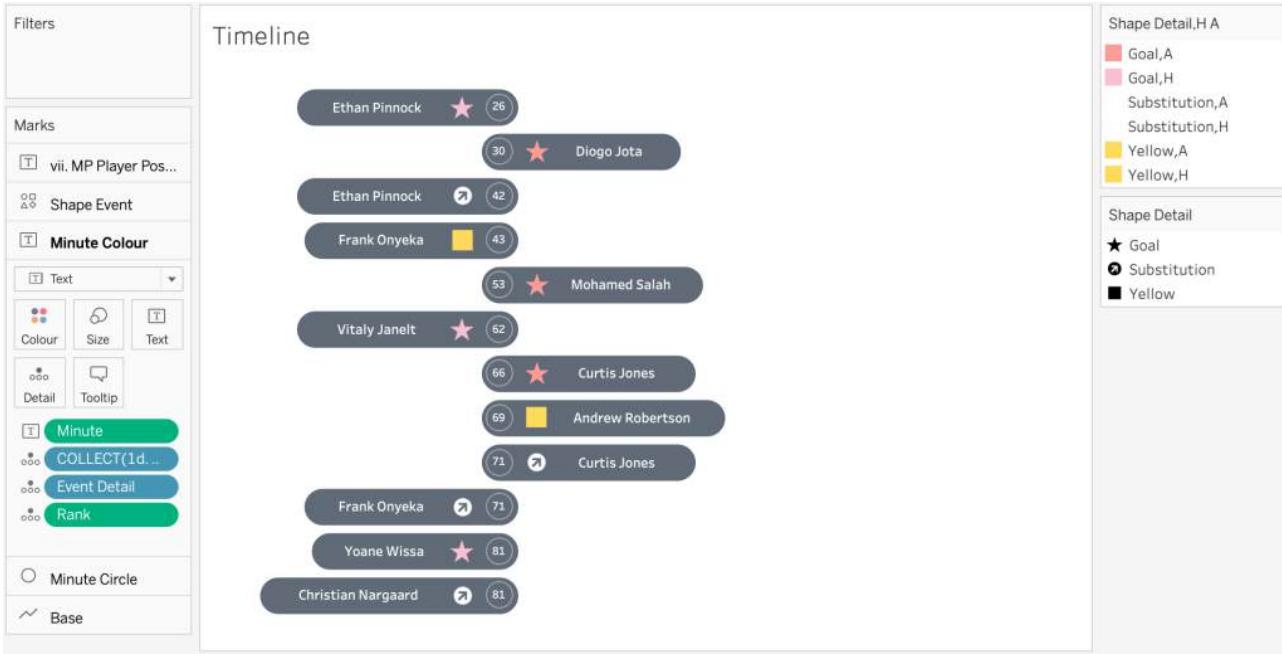
2 Dependencies ▾

Explanation: We create our Y and X co-ordinates for our final layer. Rank being the Y, Player positioning being the X.

Lets add this as a final layer.

Drag Rank and Path onto detail like usual, make them dimensions.

Change the marks to Text, and drag name onto the Text mark.





Finally, It's a case of cosmetics and a little formatting and we're done!



What were some of the challenges faced when creating this visualisation?

It would have been great to have been able to make this into a template, however with so many elements having sizing requirements it became more troublesome. Fortunately, I think the build along approach can help others understand the components a lot more.

GOING FURTHER

⋮

– Python:

Try running the code for your [own match](#).

Try creating the path, union and rank columns within your python code!

Try writing a [loop function](#) to get all the match events for a whole season.

– Tableau:

Try designing a different style of events, or using your own [custom shapes and colours](#).

Try [building a dashboard](#) that has the match events, as well as shot details from a previous [Understat tutorial](#) written to highlight the whole game!

Try applying the [user case](#) to something outside of soccer, e.g a message board / texting UI.

As always, Let me know how you get on with this one. I can be reached on Twitter, [@_CJMayes](#), as can

Anmol at [@slothfulwave612](#).

LOGGING OFF,

CJ

BLENDING FIGMA & TABLEAU WITH LINDSAY BETZENDAHL

Welcome to the October edition of “*What’s Good?*”.

Hi all,

This month really is quite special! Lindsay Betzendahl, 2 x Tableau Zen, Public Ambassador and all round superstar, joins us to talk about the blend between Figma and Tableau. The beauty of design is there are so many different components.

Lindsay has paved the way by doing youtube tutorials to help individuals bridge the gap between the two tools. I really resonate with the idea of building out supplementary skills beyond the ‘bread and butter’ of Tableau.

If you’d like to follow, Lindsay on [Twitter](#) and her [blog](#).

CJ: Lindsay, thanks for joining. Before we jump in. Tell us a little bit about your background in data.

L: Hey CJ! Thank you for having me on your blog. It’s an honor to be here and share some (hopefully!) interesting information. I always love this particular question because the answers people give are so incredibly varied. I don’t have any formal background in data and ended up working in this field through various career decisions along with some natural curiosity and a passion towards visual mediums. My formal undergraduate educational background is in psychology and English (specifically behavioral health and poetry), and I have a Master’s degree in Marriage and Family Therapy. My Master’s degree launched me into direct clinical care where I worked for 10 years as a mental health therapist. Despite loving the work I did, it was emotionally draining and there was a point I needed a job change that had some more stable hours.

I began working in an Accountable Care Organization in 2010 that managed behavioral health services for all of Connecticut. While I started as a case manager, I was always highly organized, excellent at math, and interested in collecting and visualizing data. My curiosity and questions about our data led me to working more directly with data at that company.

When I was tasked with presenting data to hospital leadership, I found that our reports failed at a number of visual best practices, were difficult to interpret, couldn’t answer more than one or two questions, and lacked insights. Being the curious person I am, I knew there was a better way to visualize the information and I sought out ways to do just that. After discovering Tableau in 2014, I went on a mission to learn how to use the software on my own (at home each night!) until I could begin to show its value through some proof-of-concept presentations to providers and internal stakeholders. The result was phenomenal. People were amazed that I could answer not just one or two questions, but 5 or 6 questions on the fly. Part of this was being prepared and understanding the possible questions, but it was also about moving from static to interactive reports.

Using some natural design skills (my mom is an artist), I was able to quickly build visualizations and dashboards that truly worked for people and were also beautiful. It was through a lot of hard work, drive, curiosity, and trial and error that I came out on top and made data visualization my new career. I believe that if you want to have a career in data viz, then be curious – ask questions, find the answers, challenge your own skills, and practice! I didn’t come into the data viz space by taking classes or reading books – I did most of it by practicing and honing in on my skills. This doesn’t mean I didn’t look to others, because I did, but I did a lot of informal learning simply by muddling around and finding my own path. I think it worked pretty well. I’m thankful to be a two time Tableau Zen Master and Public Ambassador. I’ve learned so much over the past 7 years using Tableau, so now I love giving back to the community that helped me grow so many years ago.

CJ: #projecthealthviz & #momswioviz are both projects you founded. Why are these important subject matters to you?

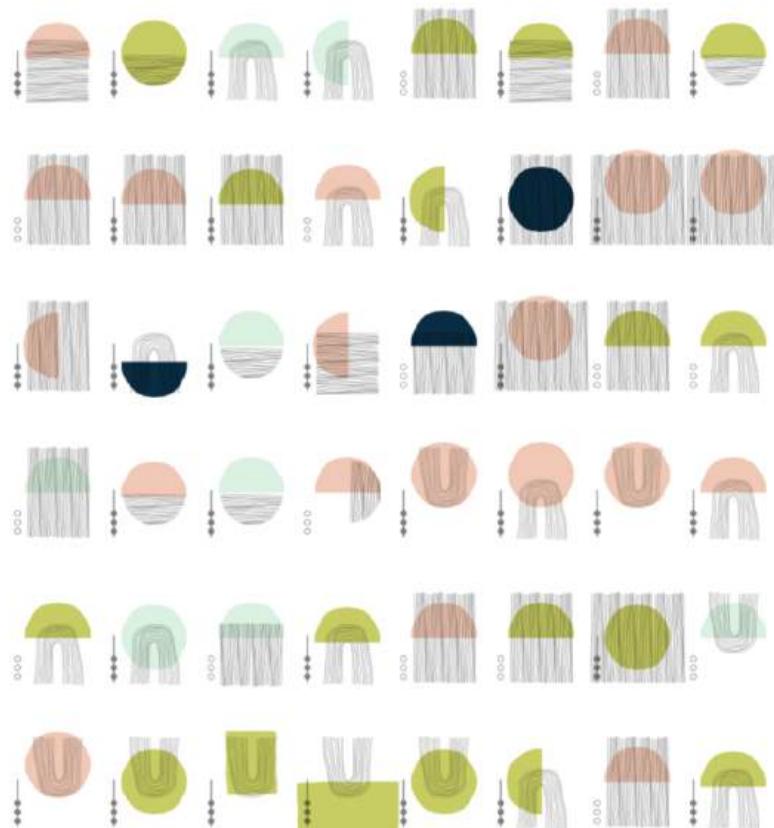
L: Back in 2018 I was participating quite regularly in Makeover Monday, and was relatively new to the data viz community. I guess it was with those fresh eyes that I saw a gap in the data sets available for newbies to practice skills on. So many visualizations I saw had similar topics: sports, movies, politics, animals. As someone who had been working in healthcare for many years, I wanted to visualize data that resonated with me. I felt passionate about visualizing healthcare data because I knew that the act of acknowledging and visualizing something brings about awareness and can reduce stigma. It was in May 2018 that I launched #ProjectHealthViz (as well as a website) to bring monthly datasets to the data viz community to visualize. At the time, I wanted to also give back to the community by providing feedback and to help others grow as I had by the act of regularly practicing. I’ve run the monthly project for the past 3 years. While I took a break this summer, I expect to start again in the fall, though the project is evolving and may look a little different.

Regardless, the goal is still the same: to tell the stories of our health.

As far as #MomsWhoViz, this idea arose upon returning to work after my maternity leave for the birth of my second son. I realized while scrolling my Twitter feed in the fall of 2019 that there were fewer women than men posting regular personal vizzes, sharing blog posts, giving presentations, and commenting on data-viz-related tweets. I, personally, felt like I couldn't keep up because I simply didn't have the time between work and family, and I certainly couldn't stay up late working on a viz as I was exhausted 24/7. I realized that it was unlikely I was alone and wanted to connect with other mothers in this field, so I started collecting names of mothers who worked in data viz. I slowly connected to a group of other mothers and held a Braintdate at TC19 called #MomsWhoViz. It was after that that as a group we worked to launch a Slack channel and started to support one another. I'll admit, we had high hopes of doing so many things, but as expected – we are mothers and we are very busy. We didn't accomplish everything on our list, but we created a safe space for mothers to get support, feedback, and sometimes just chat.

CJ: Your visualisation 'My House My Art' , without a doubt, has been one of my favourites from this year.

How did you come up with the abstract art legend behind the idea? ([Link](#))



(Dashboard snippet)

L: First of all, thank you! I'm so glad it resonated with you and that you enjoyed it! It was a fun personal project. So while the idea of visualizing the art around my house was my own, the design was drawn from two sources: images on Shutterstock and a PowerPoint template. Let me explain.

If you've ever read the book *Steal Like an Artist*, then you will know that nothing is truly original. In fact, I used the phrase "fake it till you make it" quite often early in my career – usually to encourage myself and others to be confident even during the process of learning. There are so many good quotes in the book, but one from Yohji Yamamoto relates to this particular viz and how I got inspired. He says, "Start copying what you love. Copy copy copy copy. At the end of the copy you will find your self." I think this is pretty true of what I do. I usually try to draw initial inspiration from outside of the data viz community. When I use ideas (often colors and layouts) from other mediums or other communities, it helps me still feel like I'm not entirely copying – I'm learning and identifying a style and working to hone in on that style more naturally with each viz I create.

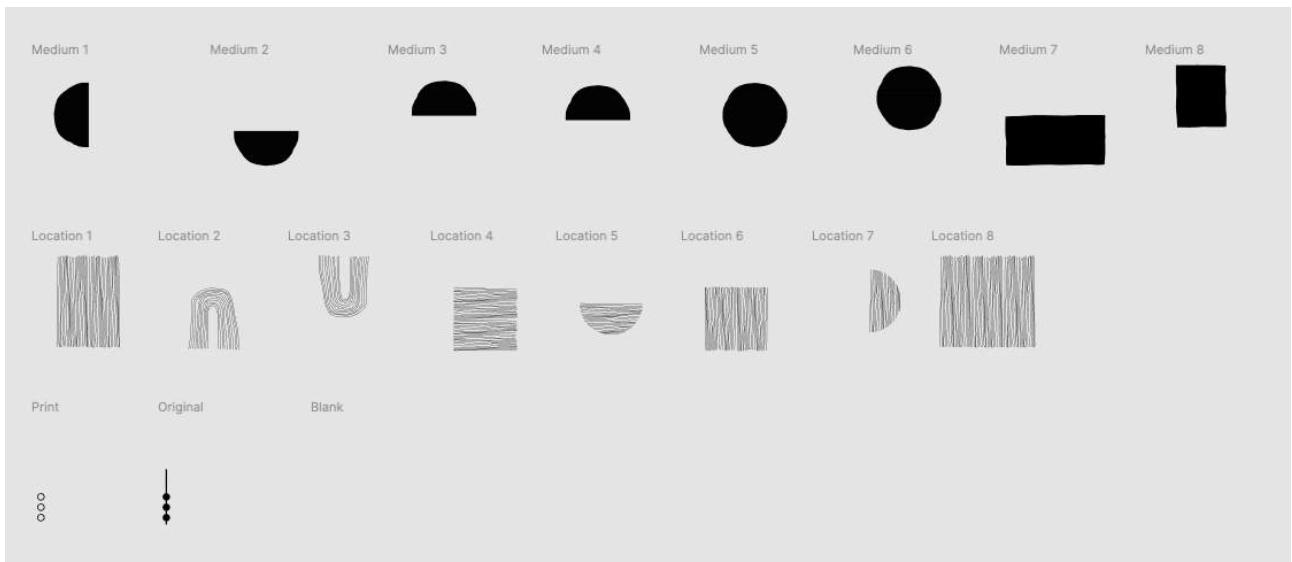
I usually search around sites such as Dribbble, Pinterest, Shutterstock, or straight up Google, to get my creative juices flowing. In this particular case, I was browsing Dribbble and found a PowerPoint template on

Etsy and then some images of abstract art on Shutterstock (see images below). For this viz, I loved the minimalist design of the template – the use of just one accent color and then gray and white really stood out to me because I wanted the viz to feel like a piece of art, or even like an art gallery would where the walls are white and the rooms are stark in order to allow the art to take center stage.



As far as the shapes go, I knew I wanted to use map layers (I got the idea from your amazing **Federer** viz and your **post** about this exact topic) to create an abstract “gallery wall” of my data, I didn’t know what shapes I was going to use until I saw these images on Shutterstock. In Figma I started playing around with shapes and possible layer ideas.

Here are the final shapes – all created in Figma using shapes and the Pencil tool to get the sort of natural squiggly lines. It was a fun viz to create and I’m honored it received Viz of the Day on Tableau Public!



CJ: Do you have a background in design? What made you take the leap to start using Figma, and in your opinion is Figma here to stay?

L: I have no formal educational background in design, however, I do have some genetic predisposition to be artistic. Both my grandmother's could paint and my mother was a professional artist throughout her career (she majored in art in college). So while I am not a very good artist in the sense of painting or drawing on paper, I do have some natural abilities to understand simple things like color, aesthetics, how objects go together or clash, etc. In fact, I did the design in my house and people always question if I hired someone.

Basically, I know how to make things look good together.

This is all to say, I appear to do much better in the digital medium where I can draw and play around more easily than pen to paper. Figma has opened up a lot of design possibilities for me. Originally, I had used PowerPoint for some simple designs, but really it was to make simple shapes or text. Obviously, PowerPoint is a presentation tool, not a design tool, so it has many limitations and I found it clunky to use. Thankfully Figma changed all that.

Figma is a design tool as well as a prototyping and collaborating tool. Figma feels more like Illustrator or Adobe XD with the amount of flexibility it has to create and design, but way easier to learn if you aren't familiar with the Adobe suite! It's certainly a win-win for me. I'm in Tableau and Figma daily because I use Figma as a dashboard prototype tool for clients. I'll create entire dashboards in Figma (no data needed!) and I find it much easier to think creatively about a dashboard design. Then I can rebuild it in Tableau with less iterations in Tableau, which can be more tedious. So yes, Figma is here to stay!!

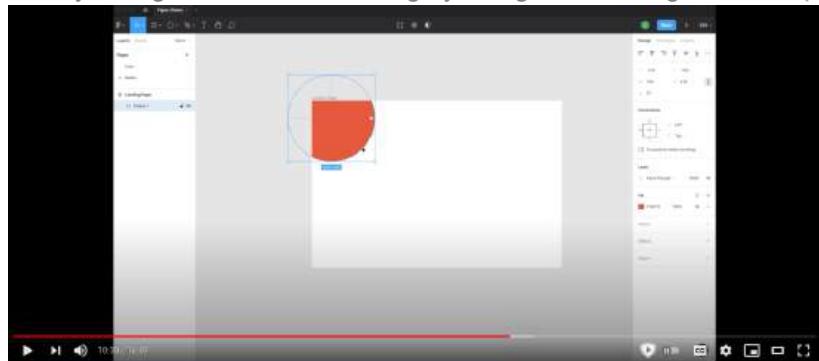
CJ: I love that you went down the route of Youtube videos and tutorials. How come you chose this medium as opposed to traditional blogging and write-ups? ([Youtube Link](#)) ([Blog Link](#))

L: Honestly, probably because I'm a bit lazy. I started a blog back in 2018 and while I still write, the frequency of my posts ebbs and flows. I'm just not consistent (not that one has to be on a regular schedule for a blog or anything). Writing takes me a bit of time and I tend to be wordy simply because I often write how I would speak, but that doesn't always translate well to a post. Videos help me to be done faster as I can simply

show people what I'm doing or how to do something and I can be a bit more fluid in my approach and what I say. I also find I can do them on the fly a bit more and I don't worry about editing or adjusting my videos.

I find that doing a nice mix of videos and writing is helpful for people. Some learn better through video tutorials where you can really see everything someone is doing and others learn better by reading. Plus, I think the tutorials I've chosen to record enter more into the design side of data visualization and therefore, are better suited for the video medium. It's a lot harder to tell someone "and then I take the rectangle tool from the top left menu, use this eyedropper in the right-hand pane to change the color, add a linear gradient, and then move these little squares around to change where the gradient is on the rectangle, and then add this drop shadow..." It's just easier to see all this happen. I tend to read blogs about Tableau and watch videos about anything design or drawing-related, such as Figma or Procreate, or even "plain old" pen and ink.

CJ: I enjoyed watching your Figma + Tableau – How to Use Frames video. Around the 7 minute mark you talk about frames vs grouping of objects. I must admit, I was grouping previously, so I loved the learning opportunity. Is Figma a case of learning by doing, or watching, or both? ([Link](#))



L: For me, learning is always about doing first and foremost. I need to really dive into a tool and explore while making mistakes in order to learn. I, too, used grouping first in Figma. I'd create a large white rectangle then add in shapes and group them. I often even had to "cut" shapes so that they would fit how I wanted within the white background. I think many people will do things until they realize there is a better or more effective way to do something. This is what happened for me. I stumbled on Frames while tinkering around in Figma and had a huge moment of clarity on how to really be more effective in the tool. That first video was an effort to teach people about Frames because I didn't use them for many months and it changed my approach to designing in Figma. So, you could watch videos first and learn some of these techniques, but honestly, I learned so much more by doing it the hard way than the simpler way because I didn't just learn one skill, I learned probably 5 skills along the way.

CJ: What is your preference on fonts when it comes to choosing Tableau or Figma? Is there a trade-off between font design and readability/accessibility? ([Link](#))

L: Ugh the dreaded font debate. This is a case of "it depends." I tend to use Figma's fonts in business dashboards for clients only as headers or on a landing page when I know the image won't need to change over time. This way I can use their brand font, perhaps, and it can stand out on its own. However, there is really no sense to then try to use other fonts as images throughout a client's dashboard, plus it's not dynamic, so I stick with Tableau's own Tableau Book font typically. Now, for personal vizs, I'll use Figma fonts only if I'm creating one large background image and the text in my image will match well with the text I'll inevitably use in Tableau. Bottom line, it's really a matter of the complexity of the text you need on your dashboard. If it's not going to be dynamic, you aren't labeling charts, maybe axes labels are also minimal, then perhaps it's okay to go all in with Figma fonts in an image. However, if you need to label charts, or have dynamic interactivity where labels change or titles need to represent what is displayed, then just stick with the fonts in Tableau. Keep the creative fonts to just the main title as a nice focal point. I don't think people need to go overboard with fonts. Always remember that the data needs to stand out in the art of data visualization.

CJ: Has there been any Figma Plugins you're a fan of that has helped develop new dashboards? Does the Figma Community Page act as a source of inspiration for you?

L: Interestingly enough, I haven't used any Figma Plugins. Can you believe it!?!? Probably because there is just so much to explore, learn, and improve upon in the tool itself that I haven't gotten that far. Maybe someday I will, but Plugins (in general) have never been my expertise.

CJ side note: If anyone feels they can chip in with some – do let me know what value they have brought!

CJ: Your slogan 'balance, art, insights' is really corroborated by your content on your youtube, site, and Tableau Public. You give 10 tips on how to intensify your business dashboards. Do you have a favourite?

([Link](#))



LET'S GET FIRED UP!

This dashboard will be made public after this session and you can download it from my Tableau Public page if you want to look into these techniques further.

Any fire icon will have a link to a resource for more information about the tip or an example dashboard that uses it.

The tips I will cover in this presentation:

1. Landing page images
2. Blank character navigation
3. Containers
4. Custom formatting with characters
5. Indicator bars
6. Floating bar charts
7. Swap sheet button
8. Header Image
9. Fancy tables
10. Return to page (from where you came)

L: Thanks CJ! It's funny because I'm a bit ADHD, which means I can be "all over the place" and struggle at times to nail down my objectives or desires, but I'm also a bit OCD so I love structure, organization, and consistency. It's a weird balance! But I think that is why I like the idea of balancing out the various interests I have (also ever-changing) and those of the community between concepts around art and insights. Art, for me, encompasses some of the squishier aspects of data viz – those things that maybe don't come naturally to everyone – but are vital. Things such as the psychology on how we see, preattentive attributes, Gestalt principles, utilizing white space, typography, color theory, etc. Insight-driven information is more about the "how tos" and aspects of data viz that are going to enhance the application of creating charts and dashboards – more of the technical skills. Since I didn't have a data, or data viz, background, it was crucial that I balanced my knowledge in both art and insights. I wanted to be good at both so I could excel in my job as a data visualization consultant.

As far as my favorite trick from the presentation you mentioned, I really love the last one, which is the "return to where you came from" navigation approach. This is useful when you have two dashboards that need to drill down to the same report and it's important for the user to return to the report they came from. The trick came out of a real business need for actually two different clients. What I love about it is how I was able to use parameter actions to support the functionality. I am a big parameter action fan!

CJ: Have you seen anything in the Tableau community that has caught your eye? Or in the wider community for design?

L: There are so many amazing Tableau Public authors out there right now that it's difficult to keep up with all the great content! However, regarding design, there are a few people that stand out. **Chimdi Nwosu** doesn't have a single dashboard that isn't crazy good. I love his use of white space, color, layout, and chart types. He definitely is someone to watch closely because his designs are simply flawless. I've always loved

dashboard designs by **David Borczuk** and **Ellen Blackburn**. David tends to have **designs** that are long form and focus a lot on layout, colors, and story flow, whereas I look to Ellen for beautiful **business dashboards**. **Josh Huges**, **Wendy Shijia**, and **yourself (CJ)** are also huge influencers in data visualization design.

David Borczuk
Boston, Massachusetts, United States

Tableau Public Ambassador | Tableau Featured Author | #VOTD x 6 | All views are my own

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Vizzes 44 Favourites 10 Following 128 Followers 1643

Featured

A Taste of 2020: A Restaurant Analysis (David Borczuk) - 88 ⚡ 1,013

A Brief History of Cryptocurrency (David Borczuk) - 108 ⚡ 8,284

Women CEOs have been increasing... (David Borczuk) - 16 ⚡ 339

Glassmorphism (David Borczuk) - 43 ⚡ 468

Ellen Blackburn
The Information Lab | United Kingdom

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Featured

Eligibility for free school meals and educational attainment (Ellen Blackburn) - 223 ⚡ 10,007

In progress

Info Lab Template (Ellen Blackburn) - 11 ⚡ 597

Demo manufacturing dashboards (Ellen Blackburn) - 42 ⚡ 398



Josh Hughes

Southampton, Hampshire, United Kingdom



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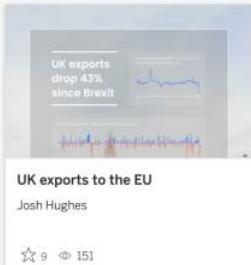
Followers 634



The Cost of Data

Josh Hughes

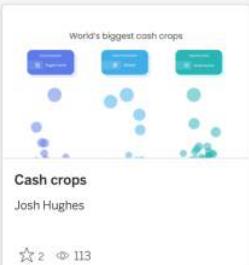
☆ 27 ⚡ 173



UK exports to the EU

Josh Hughes

☆ 9 ⚡ 151



Cash crops

Josh Hughes

☆ 2 ⚡ 113



Poland's abortion ban

Josh Hughes

☆ 5 ⚡ 87



Wendy Shijia

Shanghai, China



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50 Years of China's Space Journey

Wendy Shijia

☆ 269 ⚡ 12,841



NZ location of interests

Wendy Shijia

☆ 0 ⚡ 199



My TMB hiking in 2017 #ironQuest

Wendy Shijia

☆ 6 ⚡ 138



Trips in the Middle Earth

Wendy Shijia

☆ 111 ⚡ 7,152



Chimdi Nwosu

Fraser Health Authority | British Columbia, Canada



Health Informatics Lead | Data Enthusiast | Tableau Public Featured Author 2020 | 3X #VOTD | Top 10 Iron Viz 2021 Finalist...
[Read more](#)

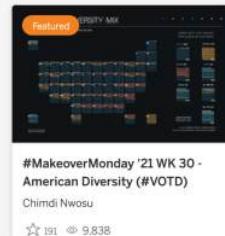
Follow

Vizzes 83

Favourites 359

Following 213

Followers 1040



#MakeoverMonday '21 WK 30 - American Diversity (#VOTD)

Chimdi Nwosu

☆ 191 ⚡ 9,838



#MakeoverMonday 2021 WK 35 - Male Circumcision Worldwide

Chimdi Nwosu

☆ 24 ⚡ 178



Incarcerated in America (2019) (#VOTD)

Chimdi Nwosu

☆ 117 ⚡ 6,007



#IronViz2021 - New Jack Swing (#6 Finalist)

Chimdi Nwosu

☆ 35 ⚡ 729

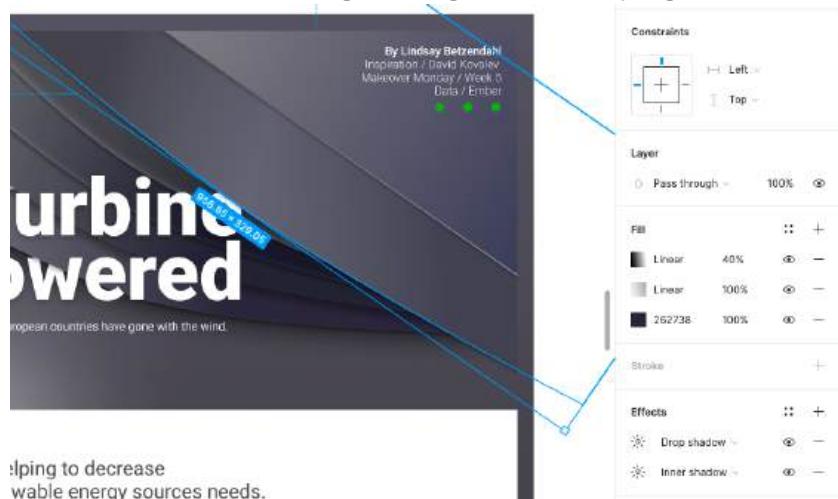
CJ: Could you give us a run-through something new you've come across using Figma recently?

L: Recently I was working on an old Makeover Monday data set and found a cool image on **Dribbble** that I wanted to recreate in Figma to use as a background image in Tableau. You can check out my viz [here](#). What I learned was how to use various layered linear gradients and layered shadow effects to get the shapes at the top of the image. Then I used some additional techniques to layer the words above and below these shapes.

Below you can see how I used multiple shapes that extend outside of the frame to create the header shape.



Each of these shapes has a different layering of colors and gradients of various opacity. You can see in the image below that one shape has 3 fills and 2 drop shadows. It was fun playing around with layered gradients and opacity to achieve the same look as the original image I was attempting to recreate.



Making the title appear to be behind and in front of different layers took a bit of effort since in Figma every object is layered above or below another layer – it cannot be split, at least not as one object. So in order to get the same look, I had to “break” my letters and words. The “T” in Turbine is a separate text box so that I could layer that letter behind the shape while the rest of the word was in front. It was the “W” that I actually had to “break” in order to layer part of the letter behind and part in front of the gray shape. What you can see in the image below is that I wrote “Pow” in one text box and layered that behind the gray shape, then I took a “w” text box and added a rectangle to subtract out the left side so I could match it up with the rest of the letter and layer it on top of the gray shape. Lastly, I added another text box with the rest of the word.



Ultimately, this exercise taught me a ton about how to really leverage colors and shadows to enhance a “drawing” of sorts in Figma and how to really play around with typography and layers.

CJ: Thank you for that! Lastly, do you have any more exciting projects coming up?

L: I don't have anything “big” coming up in the Tableau Public space. Part of that reason is because I teach a data visualization course at Temple University twice a year and that is starting in October, so my days/nights get pretty swamped with work, leaving little time for other projects. However, I continue to plan more Figma videos that integrate how to use Figma designs into Tableau. It's all a matter of finding the extra time to do it.

Ha!

I also am working on revamping ProjectHealthViz to change the project a bit in order to support the needs of the Tableau community. No updates at this point in time, but it's something that I have on the horizon.

CJ Round-Up:

Lindsay completed her Tableau Professional exam in July, so I want to firstly finish off by congratulating her on this – what a fantastic achievement. You can read her blog on how it went [here](#).

At the start of the blog Lindsay mentions finding her own path in the data world. I just want to reiterate her point as I found her words so valuable. It's important for us to soak in the knowledge and expertise of the community, but never let that detract from discovering where your own interests lie, what your personal strengths are and the ways you find easiest to develop. I especially loved hearing Lindsay's journey of coming from a healthcare background and how her love for design led her to this point.

In relation to the Figma details, what can I say? I am over the moon Lindsay has shared her thoughts with us this month. Personally, I'm still a newbie to the Figma world, but Lindsay helps make that transition much easier. I'm sure I'm not the only one who wants to thank her for her efforts putting the videos together. It really has redefined what is possible for making our dashboards more appealing.

LOGGING OFF,
CJ

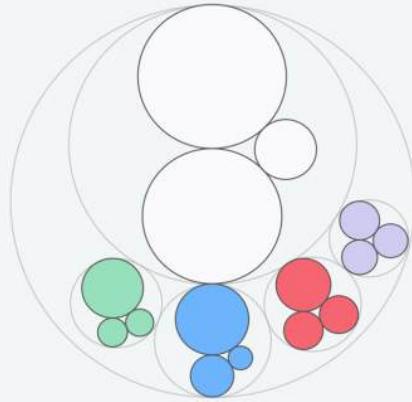
DON'T BURST MY BUBBLE

Hi All,

Got a random fun one today. How to create circular packing in Tableau! This run-through won't be as heavily detailed on the python side of things today. If you're new to python, I'd recommend just running the code as it is and trying the Tableau aspect first before you feel comfortable to go back and edit the data input. Shoot me a message if you get stuck.

CIRCULAR PACKING TUTORIAL

CREATED USING PYTHON AND EXPORTING CO-ORDINATES
TABLEAU: USING MAP LAYERS, LINE, POLYGON TOOLS



CIRCULAR PACKING OR CIRCULAR TREEMAP ALLOWS THE INDIVIDUAL TO VISUALISE A HIERARCHIC ORGANIZATION. IT IS AN EQUIVILANT OF A TREEMAP OR A DENDROGRAM, WHERE EACH NODE OF THE TREE IS REPRESENTED AS A CIRCLE AND ITS SUB-NODES ARE REPRESENTED AS CIRCLES INSIDE OF IT

PLEASE NOTE THE USE OF EXAMPLE DATA - THE DATA DOES NOT REPRESENT TRUE VALUES IN RELATION TO A COUNTRY METRICS OR REPRESENT ALL COUNTRIES

What is circular packing?

You may be sitting there thinking this looks oddly similar to the packed bubble on the show me tab in Tableau. You'd be correct! The packed bubbles is a non-hierarchical version of this.

Circular packing is also an alternative to tree-maps. It allows the individual to visualise a hierarchical organisation. Each tree is represented as a circle and its sub-nodes are represented as circles.

In the case of what we will run through today you will see the overall chart visualises at level 1 – The world.

At level 2, The chart shows continents (within the world). Within this circle for each continent are circles representing countries, level 3. Hence, you can see how the circles become packed within their parent level.

It is important to note that the area of the circles are proportional to the values passed in at the same hierarchical level. For instance, countries are not sized against continents, but they are sized against one another within a continent.

Where did the inspiration come from?

The idea initially came from seeing this method of [visualising a code repository](#) by Amelia Wattenberger. I advise clicking the link and scrolling through the example it is well worth the time!



Visualizing a codebase

How can we "fingerprint" a codebase to see its structure at a glance?
Let's explore ways to automatically visualize a GitHub repo, and how that could be useful.

WHAT'S IT FOR?

"Fingerprint" the structure of a GitHub repo

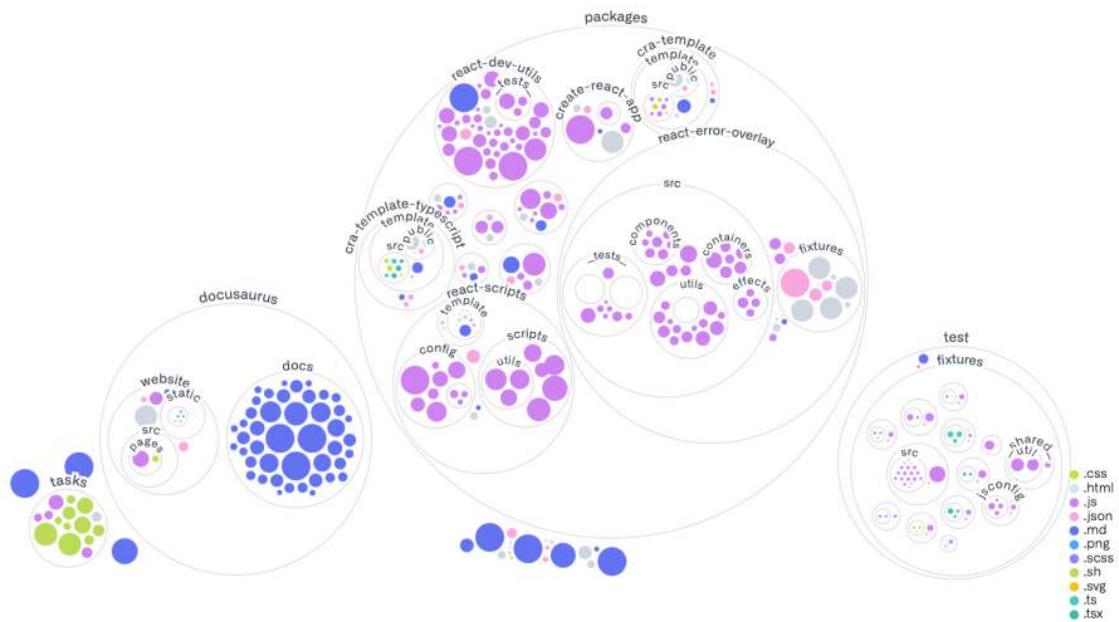
WHO MADE IT?

 Amelia Wattenberger

SHARE

I think it is a stunning way of easily translating what is quite a lot of heavy code, into a structure of folder, types of code format. Once you're familiar with the visual language, it becomes much easier to see similarities, differences, and patterns across codebases.



Anyway, back to the run-through...

Code Explanation

You can download my amended code from the github link at the top of the blog.

```

# Compute circle positions thanks to the circlify() function
# The maximum radius is set to 1.
circles = circlify.circlify(
    data,
    show_enclosure=False,
    target_enclosure=circlify.Circle(x=0, y=0, r=1)
)

# To ensure in Tableau the sizing works the fig size is the same x*y.
fig, ax = plt.subplots(figsize=(10,10))

# Add axes.
ax.axis('on')

# Find axis boundaries, lim will be 1.0 with current settings
lim = max(
    max(
        abs(circle.x) + circle.r,
        abs(circle.y) + circle.r,
    )
    for circle in circles
)
plt.xlim(-lim, lim)
plt.ylim(-lim, lim)

# Amend Radius zone, Make sure Inner pad always > than Outer pad
padding_outer = 1
padding_inner = 1

header = ['ID', 'X-co-ord', 'Y-coord', 'Radius', 'Rank']
rank = 1

with open('countries.csv', 'w') as f:
    writer = csv.writer(f)
    writer.writerow(header)

    # World Level
    for circle in circles:
        if circle.level != 1:
            continue
        x, y, r = circle
        label = circle.ex['id']
        print(label,x,y,r)
        printdata = [label, x, y, r, rank]
        rank = rank + 1
        writer.writerow(printdata)

        # Not needed for Tableau
        ax.add_patch(plt.Circle((x, y), r*padding_outer, alpha=0.5, linewidth=2, color='lightblue'))

    # Continent Level
    for circle in circles:
        if circle.level != 2:
            continue
        x, y, r = circle
        label = circle.ex['loc']
        print(label,x,y,r)
        printdata = [label, x, y, r, rank]
        rank = rank + 1
        writer.writerow(printdata)

        # Not needed for Tableau
        ax.add_patch(plt.Circle((x, y), r*padding_outer, alpha=0.5, linewidth=2,
                               color='lightblue'))

    # Country Level
    for circle in circles:
        if circle.level != 3:
            continue
        x, y, r = circle
        label = circle.ex['ctry']
        print(label,x,y,r)
        printdata = [label, x, y, r, rank]
        rank = rank + 1
        writer.writerow(printdata)

    # Not needed for Tableau
    ax.add_patch(plt.Circle((x, y), r*padding_inner, alpha=0.5, linewidth=2, color="#69b3a2"))
    plt.annotate(label, (x,y), ha='center', color='white')

```

The original python code that has been amended for Tableau purposes can be found [here](#). I would highly recommend looking at this original code to understand the process.

If you'd like to create your own circular packing here are a few pointers:

1. You can hover over the package details to see how the data gets inputted. You will see the data naming conventions want the data to be prepped having an "ID", and "Datanum" as default. Alternatively search for [circlify documentation online](#).
2. I've tried to organise the [GIT code](#) to be easily digestible in terms of how the data needs to be passed in. It can be a little challenging getting the brackets correct and understanding how the different levels work.
3. One main change to the code is the addition of exporting our data to a csv. I've added a field name of rank. We use the rank to be able to position the circles as well as sort them for colouring purposes when it comes to the Tableau build. You will also notice we want to export centre point of each circle as well as the radius. This is important for sizing in Tableau!
4. I amended the figure size for convenience of keeping things proportional when we want to use the value exports in Tableau.
5. I've left in the parts of the python code that create the graph using Matplotlib, I felt like this was useful so you would know if 1) your code runs, 2) what the graph in Tableau should look like!

```

circlify
def circlify(data: __iter__),
    target_enclosure: Any = None,
    show_enclosure: bool = False,
    datum_field: str = "datum",
    id_field: str = "id",
    children_field: str = "children") -> List[Circle]

Pack and enclose circles.

Params: data – sorted (descending) array of values.
target_enclosure – target circlify.Circle where circles
should fit in. Defaults to unit circle centered on (0, 0).
show_enclosure – insert the target enclosure to the output
if True.
datum_field – field name that contains the float value when
the element is a dict.
id_field – field name that contains the id when the element
is a dict.
children_field – field name that contains the children list
when the element is a dict.

Returns: list of circlify.Circle whose *area* is proportional to the
# < Python 3.9 (CirclePacking) >

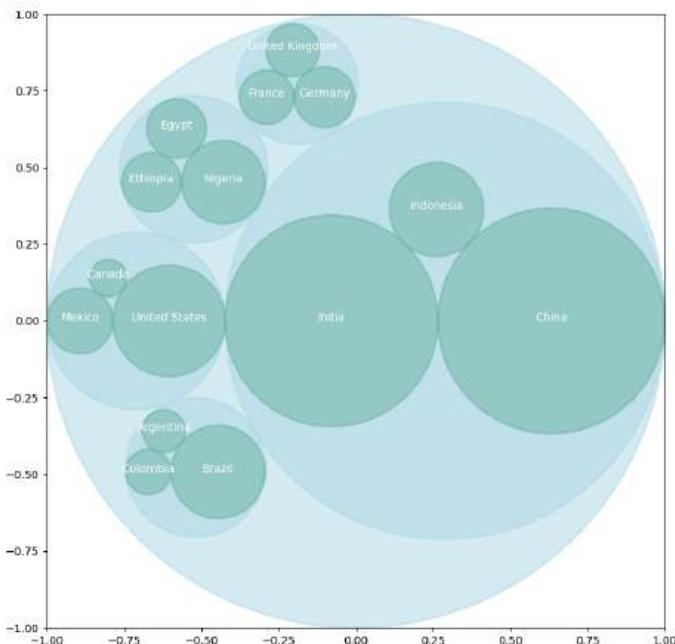
```

Tableau

You can download the dashboard at the top of the page.

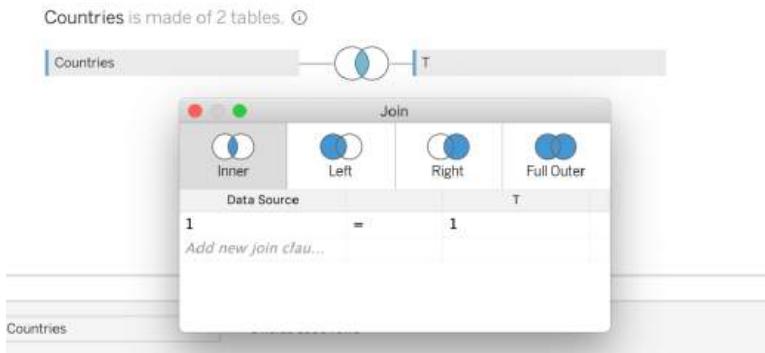
If you'd like to give the Tableau part a go only download the data from the Github repository.

This is the python output we are trying to replicate:



Once we have run our code we will get the csv export countries, that we will want to add in another sheet of T values between 1 and 100. You can find a copy of what that looks like in the repo.

We will want to join the sheets with a custom calculation of $1 = 1$. This duplicates our dataset with 100 rows for each country as we will use these points to create circles.



Next we create 6 calculations.

1a.Angle

```
(360/(100-1))
// closes angle gap by 1 (to make a full circle)

// The value is 50 because that is the number
// we have in the T sheet
```

The calculation is valid. 11 Dependencies Apply OK

Angle – We will want to plot 100 points in a circle. This calculation finds what the angle between each point will be. You will see I minus 1 in order for the lines to overlap allowing for me to use a polygon and line tool effectively.

*The T value is 100 not 50 as shown in the comment as I wanted the circle to be a bit more rounded.

1b.Rank Angle

```
([T]) * ([1a.Angle])
// Multiply the number of points in our circle by the angle
```

The calculation is valid. 10 Dependencies Apply OK

Rank Angle – Find the angle for each point. If you've followed my blogs you will see I tend to build most my radial vizs using the same logic.

2a.X

```
COS(RADIANS([1b.Rank Angle])) * [Radius]
// We can find the size of each circle plotted
// based on the radius, next we need to offset them
```

The calculation is valid. 7 Dependencies Apply OK

X – Now we use trigonometry to make our circle.... a circle. We multiply by the radius as otherwise without this all our radius' would be equal to 1. This allows for the circles to be the correct proportion.

2b.Y

```
SIN(RADIANS([1b. Rank Angle])) * [Radius]
// We can find the size of each circle plotted
// based on the radius, next we need to offset them
```

The calculation is valid. 7 Dependencies

Y – Same as above but wrapped in a sin function.

3a.X

```
[2a. X] + [X co-ord]
//Aligning X to the position in the chart
```

The calculation is valid. 6 Dependencies

3a X – So what are we doing here? As you can imagine we have created our sizes circles but at the moment they all sit on top of one another. We add the X co ordinate from the original data in order to shift it to where the centre point of the specific country should be. (I.e Transpose)

3b.Y

```
[2b. Y ] + [Y-cord]
//Aligning Y to the position in the chart
```

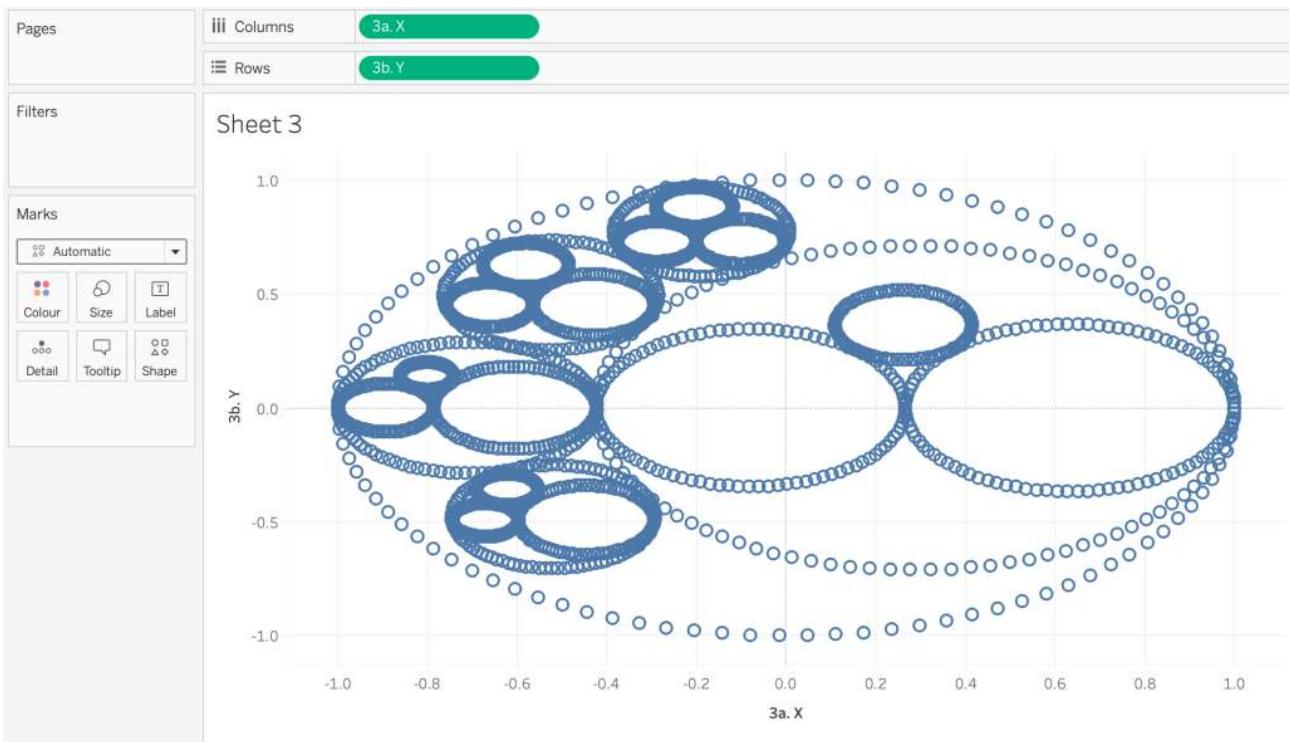
The calculation is valid. 6 Dependencies

Same for 3b Y, we transpose the circle adding on the centre point to the calculation to move the circle upwards by Y cord.

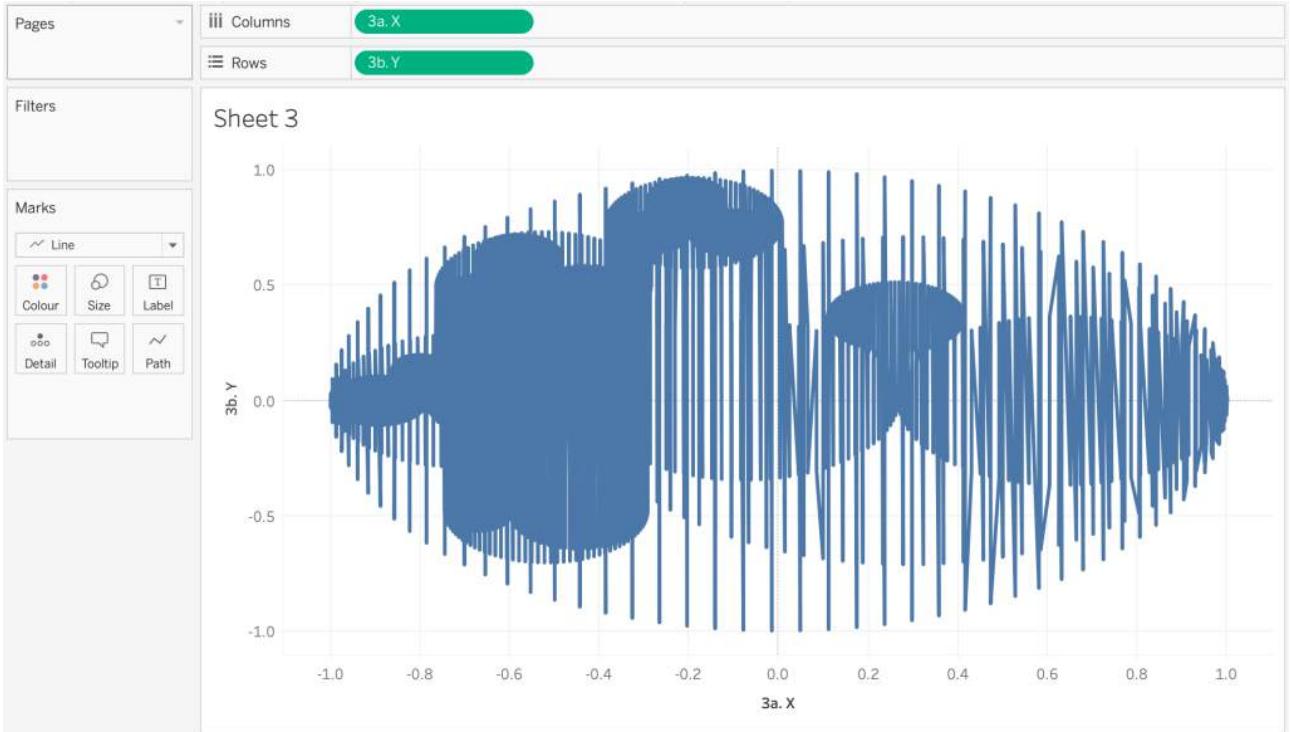
Now you can plot your 3a. X against your 3b. Y

(Side note: I apologise for the naming conventions the use of numbers and lettering is so that you can see in which order the calculations are made)

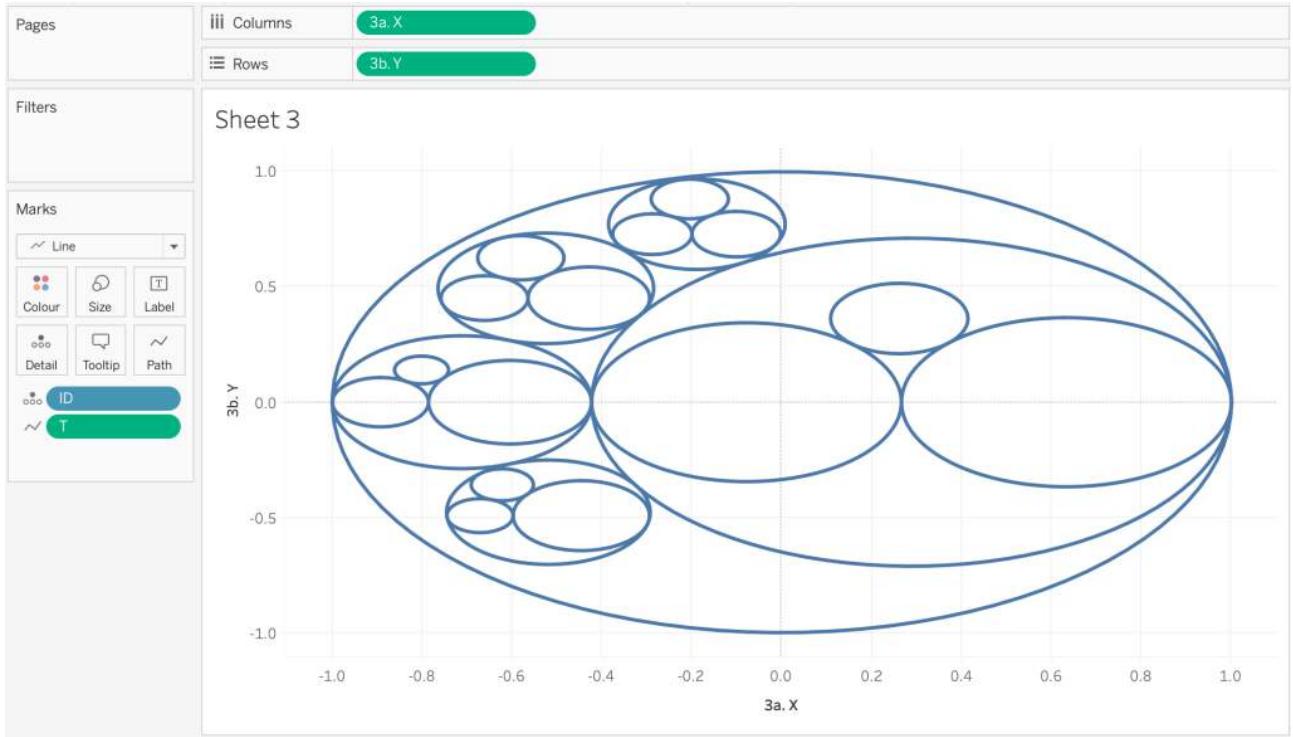
Make both X and Y dimensions.



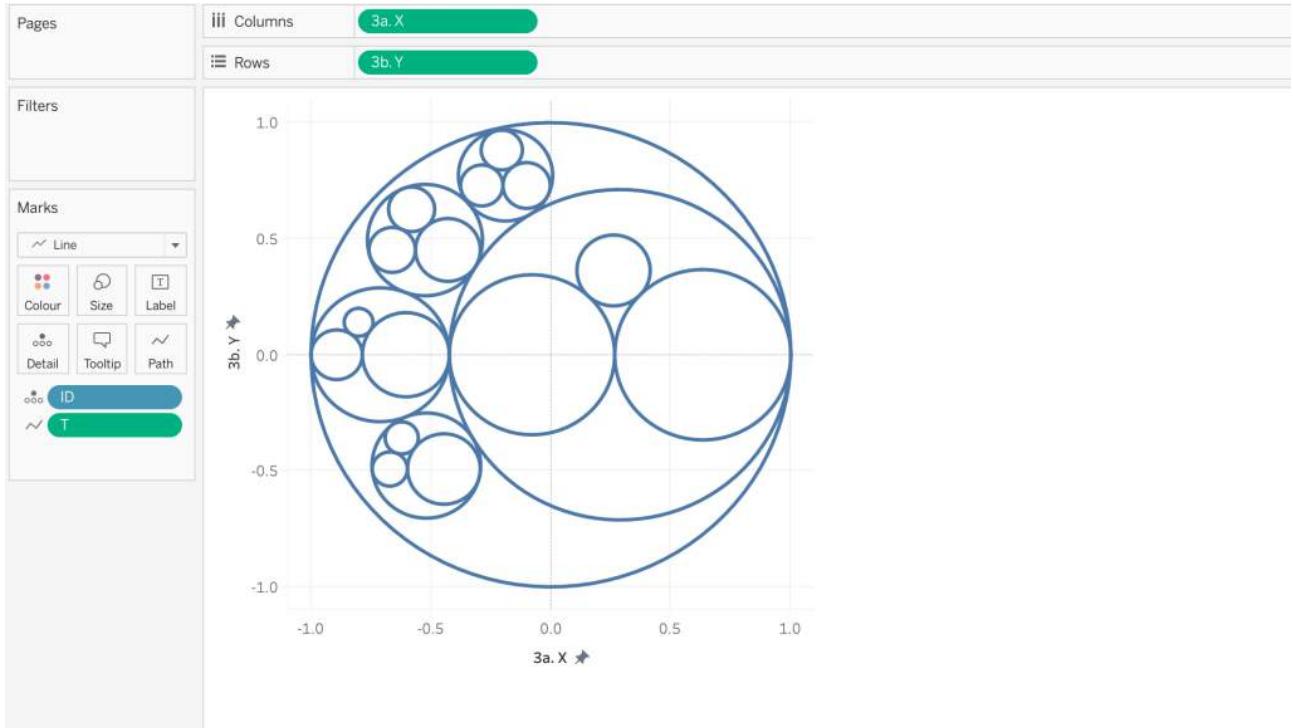
Add ID to detail and change Marks to Line.



Drag T to Path.

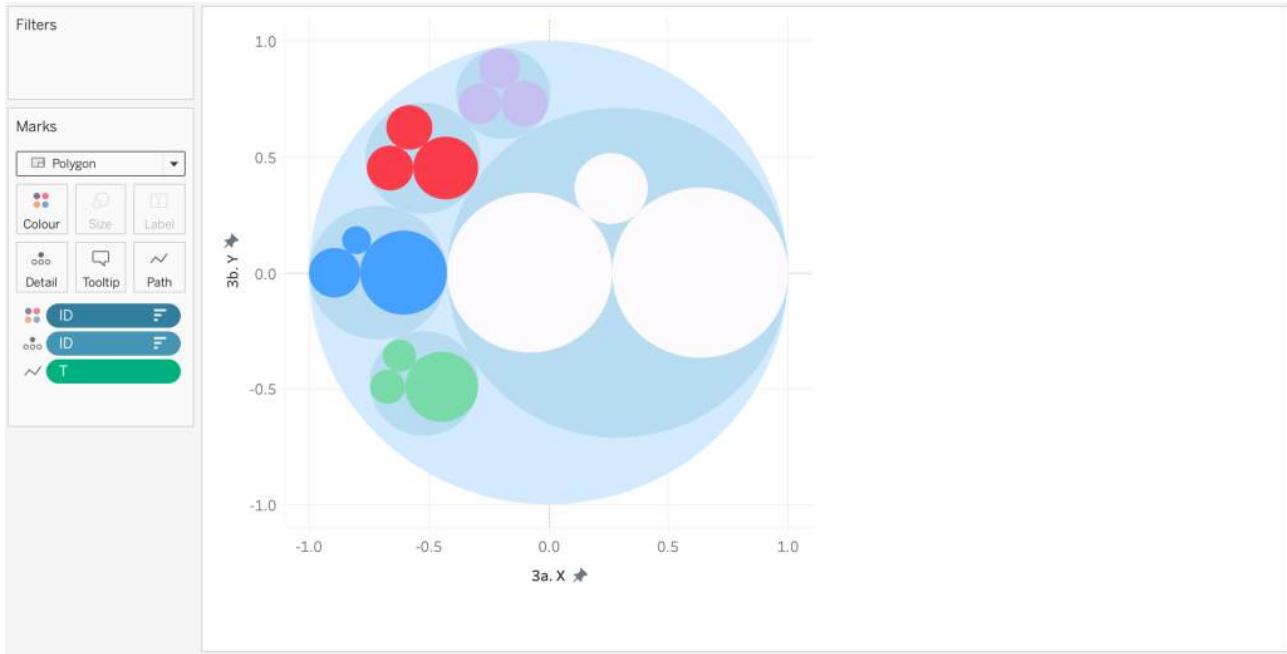


Fix the axis between -1.1 and 1.1, remember our python code made the circles max size 1.



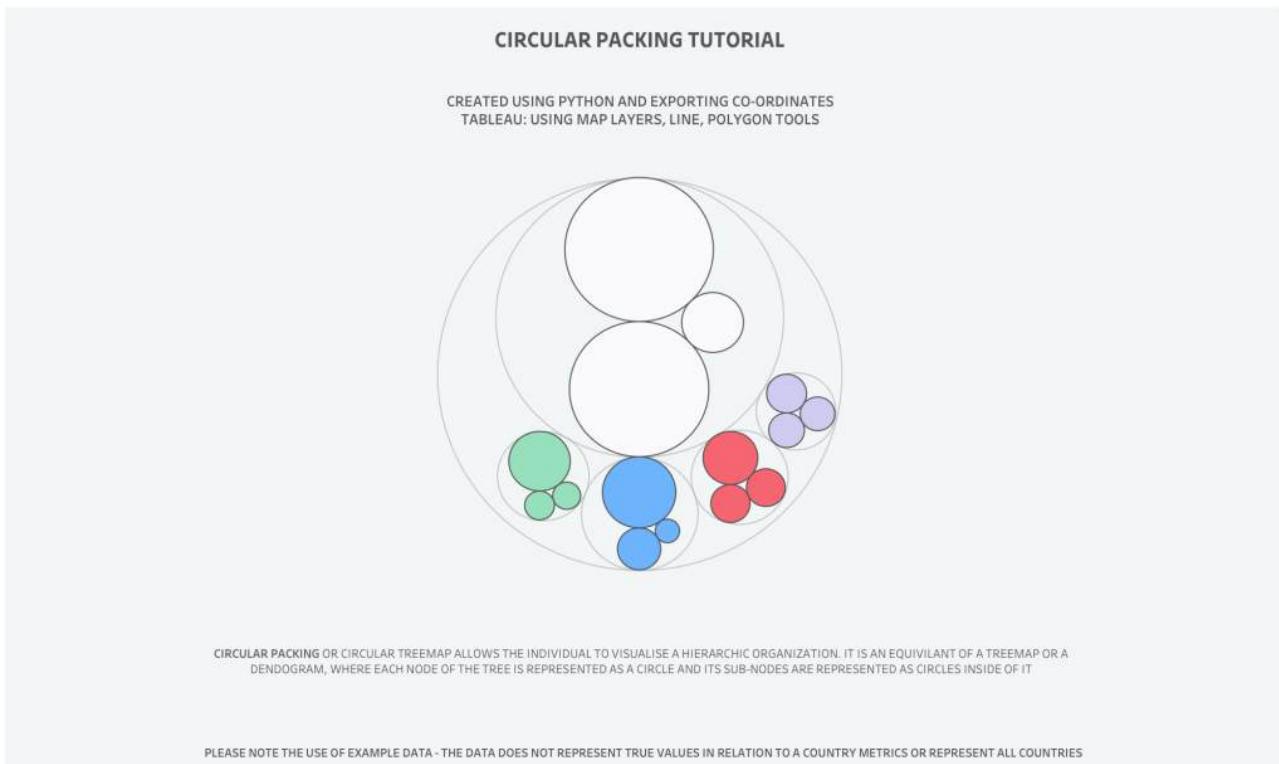
Add ID to colour, Sort the colour descending on Rank. (This is because we want Level 1 at the back, i.e the world. Level 2 of continents to sit in front, and then Level 3 of countries to be on top.)

You can then change the marks card to be polygon if you want the circles to be filled!



As further steps, I added a few more calculations 4a,5a,5b to the workbook to show how you can make the most of layering functionality to create some pretty cool alternative versions of the chart. They cover off how to make some of the circles lines and some as polygons. Download the workbook to see.

There we have it our finished packed circle!



As always, Let me know how you get on with this one. I can be reached on Twitter, @_CJMayes.

LOGGING OFF,
CJ

SHAPING YOUR CAREER IN ANALYTICS WITH SIMON BEAUMONT

Welcome to the September edition of “What’s Good?”.

I Hope everyone has had a nice summer holiday period. September tends to be the time everyone settles back in and things really ramp up again. A great time to reflect on the year so far and scope out what you

want to achieve with the remaining quarter. With that in mind I am delighted to invite Simon Beaumont to this months “What’s Good?” to discuss shaping your career in analytics and visualisation more specifically. Simon is a B.I Director at JLL, Tableau Zen Master, Tableau Ambassador, previous IronViz finalist amongst many other accolades. Having got to know him, he’s also a really nice guy! (I’m not sure what you put that under on the CV.)

If you aren't already, please follow him on his socials. He can be found on [Twitter](#), [Tableau](#) and his own [blog site](#).

CJ: Simon, for those who don't know you. Tell us a little bit about your background and your data journey so far.

S: If I am honest I stumbled across a career in data a little by accident. I left University in 2001 (giving away my age) knowing that I loved statistics, finding stories supported by numbers, but I had no idea how I could actually make a career out of it. I started in the National Health Service in England as an analyst, living and breathing Excel every day and quickly realised my calling was to help people make sense of “numbers”. I progressed in the NHS, eventually becoming a head of department for analytics, where I had responsibility to shape the organisation’s approach to data and to think more strategically, going beyond dashboards and reports, to thinking about the tools and platforms we were using to help people see and understand their data... and sure enough that is when I came across Tableau. Eight years later I am honoured to be a Tableau Zen Master and Ambassador and have so much to thank the community for. It is fair to say none of what I do today is truly my own thinking or approach; pretty much everything I do has been shaped by the community, whether that be the way I lead a data function or the way I explore my creative side, in my personal time, through regularly participating in #SportsVizSunday and other community initiatives.

CJ: It's evident your passion for football, and sport more generally. You co-founded **SportsVizSunday** back in 2018. Did you imagine it becoming this popular? What is it about the blend of sport and analytics you love so much? ([link](#))

S: I think IronViz this year sums up why I love sports and analytics, when you viz what you love, that passion really comes through in what you do, and for me I love sports. There are so many different stories to tell through sports data, whether it be different sports, focusing on individual sports people or the flow of a match or race... no two vizzes are ever the same and this inspires me to use sports as a way to explore new viz techniques and approaches to storytelling. Also I love the way a shared love of sports and data can bring people together. Ever since starting SportsVizSunday in 2018 the initiative has been about connecting likeminded people together and helping to showcase the talents of others. I honestly think people participate in it because they enjoy it, not to tick a box but because vizzing what they love genuinely puts a smile on their face. I mean as a Pompey fan, if I can enjoy building a Man United viz, then surely that speaks volumes about the ability for sports to bridge divides and inspire people; and not an ounce of glory hunting involved, or at least on my part, wouldn't you say CJ?

CJ side note: *I do read and edit these blogs so I'm not sure how the glory hunting comment got through Quality Assurance.*



CJ: What does being a Tableau Zen Master mean to you? What advice would you give to those wanting to reach this level of accomplishment?

S: Above all else, being a Tableau Zen Master is a massive honour for me, mainly because it is a recognition that has come from the community and from so many people who I admire and respect. I would never suggest I am technically the greatest Master in Tableau, sure I can hold my own, but when I look at vizes like your latest IronViz feeder entry I honestly think wow, and seeing others push the limits of the tool really inspires me to push myself to develop and progress my own tools. What I love about the current cohort of Zen Masters is they all demonstrate mastery in their own way, and it is through that combined mastery that the magic happens. The sum of the whole really is greater than the individual parts. And for anyone wanting to achieve Zen Master I would give two pieces of advice. Firstly it is absolutely OK to aspire to be a Zen Master, having a goal can really help drive people and focus their minds; but if you are going to aspire to it just make sure you do it through being true to yourself. Follow your own path to Zen, do what you love, not what you think others want to see. This authenticity is what will really set you apart and help you to inspire others.

CJ: What and who motivates you? How does that build into having a successful career?

S: For me I want to look back on a day knowing I have challenged myself to be better than the previous day and to embrace new challenges with an open mind. Data gives me the chance to do that, as often no two days are ever the same, let alone two dashboards or tasks. That said, the big thing for me these days, is being a data leader and taking pride in the successes of my team. My primary purpose is to support my team to succeed and be the best analysts they can be; leading people gives changes your outlook on work, it is less about you and more about the people you lead. Some of my best days are when my day is filled with quick 30 minute chats with my team, helping them overcome a problem, seeing them grow – I think that's a really important principle to follow if you want to be a successful data leader.

CJ: Your blog on data culture is coming up to a year old. Have there been any positives in the past year that have reinforced your thoughts on the way you think about data culture? ([link](#))

S: One of the most positive aspects of the last year and the challenges COVID has given us, is the acceptance that people cannot perform at 100% every day, we all face different challenges every day and on top of that life can simply throw us curve balls at times. I have found it really refreshing to see people acknowledge that data cannot give hard answers, but circumstance and context has to be understood before you can gain true insights. This speaks to me when it comes to using data to celebrate success, it is way too easy for someone to use a dashboard to identify all the “red” and to point the finger and criticise failure. If you use data positively, and compassionately people will be more likely to engage with data and view it as a tool to help them succeed, as opposed to fear it as being a driver for criticism and negativity.

CJ: This particular statement on Twitter really stood out to me. Often the idea of not only expressing our own values and behaviours but also talking about them freely is quite new to some. What traits do you personally admire?



Simon Beaumont @SimonBeaumont04 · Jun 16

...

CoE thought of the day : An interview is just as much a chance for you to sell the role, team & org to candidates as it is a chance for them to sell themselves to you. I'm talking values, behaviours, vision aka culture. It's what will stand you out in a competitive market place 🌟

1

2

38

↑

S: Honesty, Curiosity and Compassion. At work we actually go one stage further than this and have common values and behaviours we all sign up to as a team; this really helps ensure we pull together and not only deliver fantastic solutions but also work well together to support each other in delivering these.

CJ: What advice would you give to those wanting to make a real impact at an interview?

S: Keep it short and succinct. It is a real skill to be able to express your thoughts in a concise way and it genuinely will stand you out from the crowd if the person interviewing you doesn't have to listen to ten minutes of rambling thoughts when in reality the first 30 seconds contained all the pertinent points. Don't fall into the trap of thinking more words demonstrates a greater understanding of the subject matter.

CJ: So....Workplace. You seem exceptionally good at building out a talented team. I really enjoyed reading your blog on COE. In your eyes, what makes a company attractive to join? What underlying data culture principles feed into that? ([Link](#))

S: I want to work for a company where the biggest asset is its people not its platform or technology. Any company can go out and purchase the latest software but that software can only make a difference when it is used by people. I think the principles of investing in people and continuous learning are some of the most

powerful ones that companies can sign up to and can really help give them a USP when it comes to attracting and retaining talent. Another one is celebrating success. So often wins are taken for granted, banked and people quickly move on to the next big project. Instead of this I like to commit to showcase achievements and thanking others. Sometimes the smallest of recognition, just a passing thank you can go a long way.

CJ: Are there any principles you take from Tableau Public and apply in the work setting. Alternatively is there anything you've learnt in the work environment and applied to your way of thinking in the data community?

S: I often think about when I first see a viz on Tableau Public. I am more likely to engage with the viz if I understand the context and background to the story, as opposed to just a fancy chart that is attention grabbing; I like to have confidence that I understand what I am looking at before I start to engage with it and learn from it. This is a core with any work based dashboard too – the ability to understand what you are engaging with before you jump in and take action.

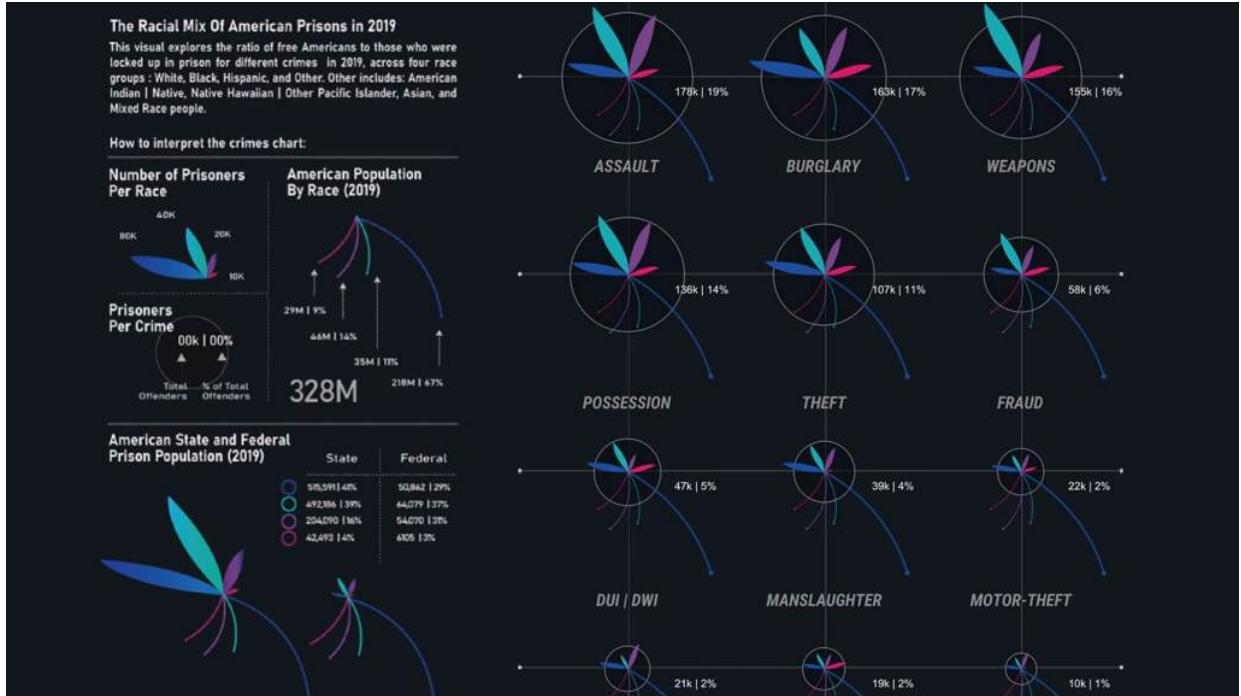
CJ: What do you think the main pitfalls are in building out teams. Hypothetically, what are the takeaways for someone who is wanting to play a Tableau role within that?

S: Working in silos. It would be so easy for someone to think data viz can be a one person job with each analyst working in isolation from their peers. In reality this is one of the biggest failings I see in so many analytics teams. If analysts do not share their knowledge, collaborate through feedback, can you truly call yourself a team? What happens when a dashboard fails and that person is on leave? Do teams ever really evolve or innovate if people are only relying on their own individual knowledge to succeed? I would suggest not. Take time to appreciate the importance of sharing, the importance of collaborating and by doing so you will have a stronger, more highly performing team that will be set up for sustained success, as opposed to short term glory.

CJ: I really admire the fact you always tweet a Tableau Featured Friday. Why is uplifting others in the community important to you?

S: The Tableau community is massive and it is so easy to just get consumed by the same voices, to be inspired by the same authors, but we all have to start somewhere and I remember in my early days how hard it was to get vizzes recognised or to feel like your voice was being heard. That is where TableauFF can really help. It is a community commitment to showcase on Twitter every Friday, using the hashtag #TableauFF, an upcoming Tableau Public author or someone not yet widely known across the community. I do it because I see the lift it gives to the featured author and for me they deserve the recognition – I don't pick people based on volume of vizzes created, rather I pick people who demonstrate a genuine talent for data viz and data design. If I look at some of the newer members of the community, people like **Chimidi Nwosu**, **Damola Ladipo**, these are well known names now, but when they first burst onto the scenes I was really struck by how clean and engaging their designs were and it is amazing to see how they have since progressed and inspired others. That, for me, is what our community is all about, the more you showcase others, the more you learn, the more diverse voices become and together we all grow.

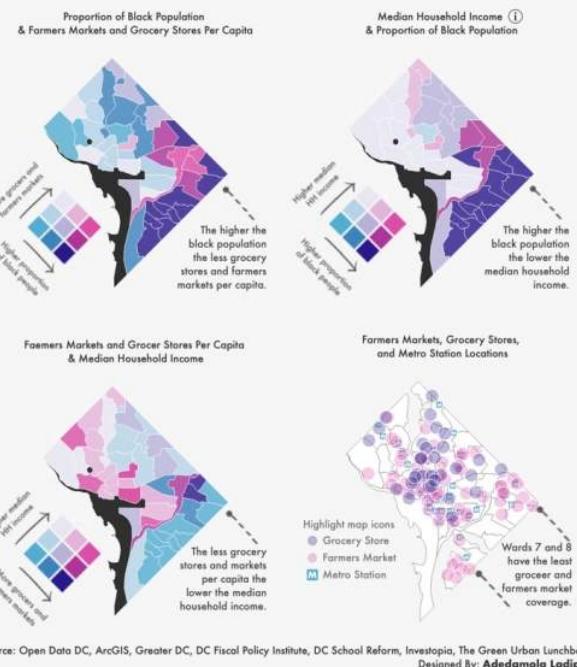
Chimidi's viz on racial mix of American prisons and Damola's viz on food apartheid below:



FOOD APARTHEID IN WASHINGTON, D.C.

This data visualization shows an analysis of food apartheid in Washington, D.C., by neighborhood cluster. Unlike the more commonly used term 'food desert,' food apartheid looks at the whole food system by taking into account income, race, and geography and how it impacts social and racial inequalities. The term food desert leaves out the critical social disparities that exist in food access. Overall, food apartheid shows that the systems in place make it difficult for people of color and low-income areas to access fresh and healthy food.

Specifically, the visualization includes four analysis areas of the proportion of black people and grocery stores and farmers markets per capita, the proportion of black people to median household (HH) income, grocery stores, and farmers markets per capita compared to median HH income, the location of every grocery store and farmers market with a 0.5-mile radius (standard distance for 100+ HHs in an urban area to access fresh food).



CJ: What advice would you give to those that are just starting their Tableau Public page?

S: Don't be intimidated! Everyone has to start somewhere and if you compare yourselves against others you risk being paralysed by this fear of not being good enough.... Which is complete rubbish! Recognise that, just with anything you enjoy, you get better with practice; and if you want to give yourself a helping hand, focus on clean design and simplicity. Two of my data viz idols really focus on this concept, **Ryan Sleeper** and **Cole Nussbaumer Knaflic**, I would thoroughly recommend checking out both of their websites to understand how removing ink from a viz can also really help remove the complexity for your audience.

CJ: With so many Tableau Public users.... What really makes someone's page stand out?

S: I am going to be a little bit controversial and blunt when I answer this.... What doesn't make someone's page stand out to me is funky chart types or bright colours. I will openly admit unusual chart types and viz

techniques have a place and I will never shy away from a good radial viz, but when I see a Tableau Public profile containing lots of “white space”, great uses of font, colour and layout that is what really pops for me. I love a viz where the story is the hero and the charts really compliment that story.

CJ: To get a job using Tableau, many believe you have to showcase your skill through what I'm going to call ‘art dashboards’ or ‘business dashboards’. Do you think this is the main consideration? What other factors are important for those who are trying to leverage their profile for recruiting purposes?

S: I really enjoy recruiting as it is the chance to attract new talent and new voices to my team; but when recruiting candidates the main thing I look for is to understand the candidates values and behaviours. Shock horror, but I honestly believe that anyone can learn Tableau and Alteryx if they have a passion for data, but it is far harder to change someone's values or the way they approach tasks. Often I will focus on scenario based questions that give the candidate the opportunity to demonstrate things such as how they collaborate with others, their approach to giving and receiving feedback and how they build relationships with stakeholders. Of course a strong Tableau Public profile is a massive plus point, but I think people should recognise Tableau Public and certification are not the be all and end all; they have to be complimented by softer skills too.

CJ: What tools and skills do you think are becoming more important for analysts? Will this change over time?

S: Data Fluency is massive at the moment and will only get more important as the appetite for data grows across industries. When I say data fluency I relate to the skills an individual has to interpret and understand their data and act on it in a responsible manner. At the end of the day is a user doesn't understand how to read a chart or understand the nuances of their data, how can we ever expect someone to take action, let alone the right action. Whilst an analyst may be traditionally responsible for developing the dashboard and maintaining it, I see analysts will be increasingly expected to educate and coach their users, in addition to just develop content. As data professionals we are subject matter experts so I think it is only fair we should be expected to share our knowledge and up-skill others.

CJ: Have you seen anything recently in the community you have loved? Blog, dashboard or otherwise?

S: It would be way too easy to say IronViz! So I won't! One of the best things I have seen lately is the new **Data Leaders Collaborative** which is a community, sponsored, by Tableau, to help data leaders come together to share their experiences with others and help foster discussion beyond simply data viz. This for me is huge as it gives data leaders, whether they be established or aspiring, a platform to support each other grow and to elevate others, just like Tableau Public does for those wishing to share their data viz skills.



CJ: When I say the word “Innovative” to you in the context of the tableau community and data more generally. What comes to mind?

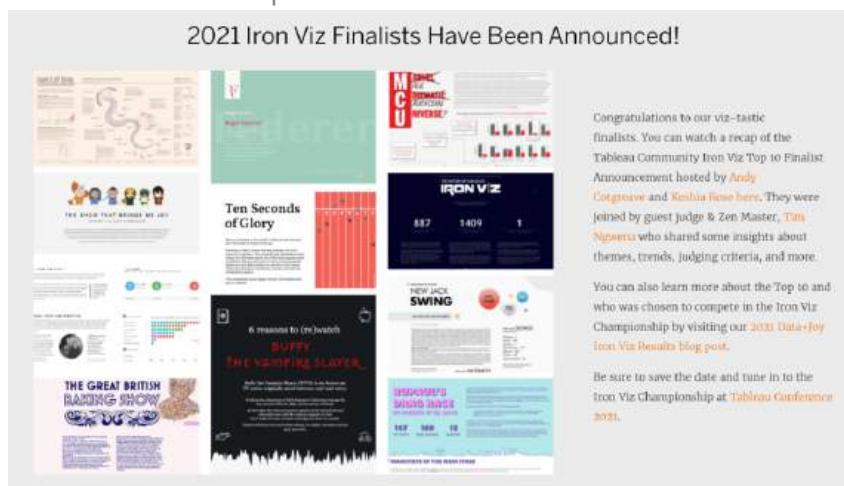
S: New voices, new concepts and new techniques. However I don't necessarily think innovation is limited to the latest viz crave, a massive part of innovation is the thinking behind the innovation, understanding the why and the benefit the innovation can bring to your intended audience. It is for this reason I love reading or listening to how people came up with their innovation and to get a peek under the hood of their design process; understanding the why, not just the what can help take all of us to the next level when it comes to our understanding and knowledge of data viz and Tableau.

CJ: Having made it to the final of the IronViz competition last year and been a judge this year. What stood out this year?

S: The quality was insanely good! Seriously, I know we say this every year, but judging the final round was really tough this year as there was so little to separate many of the vizzes. That said there is one thing I feel implored to share, and this came post the results being made public. I read a few posts referring negatively

to long form dashboards and to other tools used in the build of the vizzes. It wasn't the discussion that disappointed me, but rather the tone. At a time when people should be celebrating success, especially during one of the toughest years in living memory with all that is going on COVID related, it saddened me that people, within an hour, of the results being posted, were so keen to criticise or critique. I am not saying people shouldn't reflect, of course they can, and reflection often leads to innovation and improvement, but I wish people had the chance to celebrate and recognise achievement before the vizzes were being torn apart for being long or for leveraging Figma or Illustrator... Which by the way, neither of which I have any problems with. Firstly IronViz is not a business dashboard competition, so long form naturally lends itself more easily to the judging criteria, and as for other tools, Tableau doesn't, and never should, pretend to be the master of all things design and data viz. It would be foolish to think this way, and personally I think the way the community has leveraged design tools to compliment data viz and charts has really helped elevate the quality of the competition and the vizzes created.

2021 Iron Viz Finalists Have Been Announced!



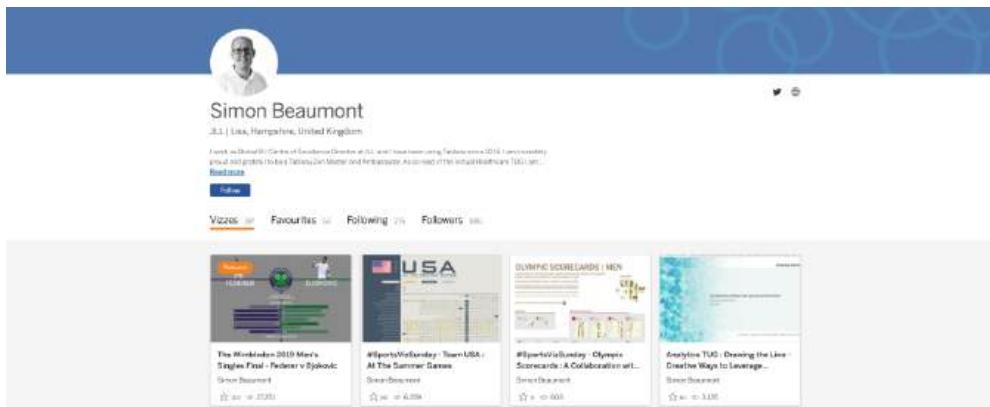
Congratulations to our viz-tastic finalists. You can watch a recap of the Tableau Community Iron Viz Top 10 Finalist Announcement hosted by [Andy Cotterrell](#) and [Keshia Rose here](#). They were joined by guest judge & Zen Master, [Tim Nipperla](#) who shared some insights about themes, trends, judging criteria, and more.

You can also learn more about the Top 10 and who was chosen to compete in the Iron Viz Championship by visiting our [2021 Data+Joy Iron Viz Results](#) blog post.

Be sure to save the date and tune in to the Iron Viz Championship at [Tableau Conference 2021](#).

CJ: You have a healthy 185 vizzes on your Tableau Public. Do you have a favourite?

S: Yep! The one that always makes me smile is my **Federer v Djokovic viz from Wimbledon 2019**. The reason it is my favourite is it was the first time I really pushed my design skills to visualise data in a unique and, hopefully, engaging way. Before this I had attempted a few creative vizzes, but never one that I would consider "data art" and a bit more abstract in its design. I was really proud of the way I was able to visualise every point of the five set epic and do it using techniques I would never have previously dreamt of using. It still puts a smile on my face, although I wish I had access at the time to some of the capability Tableau gives us today, doing the viz using map layers would have been way easier than the layered sheets I did back when I built it.



Simon Beaumont
JSL | USA, Hampshire, United Kingdom
I work in Digital Strategy at Hampshire County Council. I am a Tableau lover and have been using Tableau since 2014. I currently lead the Tableau User Group for Hampshire County Council and Hampshire Health Foundation. As co-chair of the Initial Healthcare Tableau User Group.

Vizzes 185 | Favourites 10 | Following 29 | Followers 166

The Wimbledon 2019 Men's Singles Final - Federer v Djokovic
#SportsVizSunday - Team USA At The Summer Games
#SportsVizSunday - Olympic Scorecards: A Collaboration w/...
Analyzing TUG - Drawing the Line: Creative Ways to Leverage...

CJ: Finally, what's next for you? What are you most looking forward to in the rest of this year?

S: One of the highlights for me this year has been able to collaborate with some amazing individuals, including yourself, CJ. I genuinely love doing viz projects with other people as it helps me appreciate other

perspectives and often leads to a design that is infinitely better than what I could have come up with by myself. I really hope to squeeze in another one by the end of 2021 and to achieve a couple more in 2022.

CJ Round-up:

It's refreshing hearing Simons thoughts on supporting people and teams. I appreciate his ability to see the individuals before the work, and how creating the right environment leads to great team success and in turn better work outputs.

I recently listened to Simon on the **Data and Love** podcast, hosted by **Zach Bowders** and loved it. If you haven't already, do check it out if you can find the time. There is a huge segment on both passion projects and the appreciation of being surrounded by other creatives that is worth extra attention!

Simon briefly mentioned earlier the new data culture conversations. He didn't plug his own video at the time, but you can view it [here](#).

"For me, when you truly collaborate, you show some vulnerability" -SB

LOGGING OFF,

CJ

PYTHON: FROM BENCHWARMER TO MVP

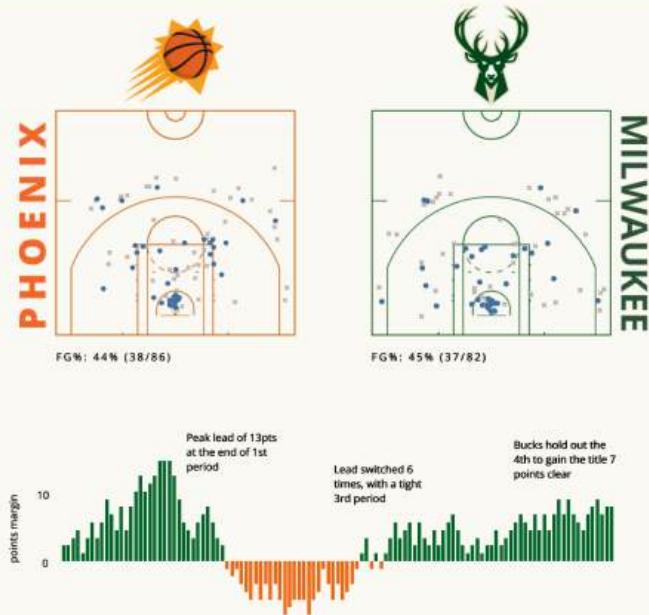
Hi All,

Welcome back after a short break. I hope everyone has taken time to recharge a little over the summer period.

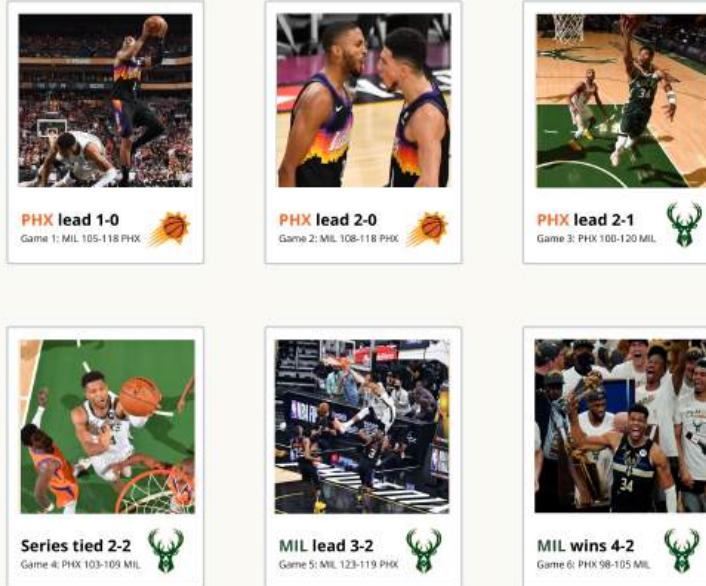
As the title suggests, today we will be looking at **NBA data**, using the NBA API. I already hear your internal screams: "CJ stop doing python tutorials when you're terrible at python."

In all seriousness, If individuals have some tips they want to share do get in touch via **Twitter**. This has just been my long standing wing-it approach in the hope to influence others to start to code. Learning supplementary skills is something I'm pretty passionate about and think it can really help you grow.

I hope to revisit these datasets to create a more detailed visualisation further down the line, but here is something I mocked up from the data. You can download it on Tableau as part of this blog.



Bucks in six! Milwaukee Bucks made themselves champions for the second time in their history and first since 1971. The Bucks came back from a 0-2 deficit in the series to win 4-2. Giannis Antetokounmpo averaged 35.2 points, 13.2 rebounds and 5.0 assists in The Finals, scoring 50 points in the last game.



You may have seen, last June #SportsVizSunday released a dataset of shot location data for the NBA from 1997-2020, provided by **Zak Geis**. In fact, this was the first #SportsVizSunday I ever took part in. You can access the #SportsVizSunday original data on the SVS repo if you'd like to skip straight to visualising data.

Alternatively the data from my tutorial can be found by following the github link at the top of the page.

This tutorial will deviate slightly from last Junes data and will focus on three main components.

1. Can we get the Games details from the play-offs of most recent year?
2. Can we then find the Play-by-Play match details for the final game in the play-offs?
3. Can we finally find a more granular level of detail of the shot locations for the final game? (same schema as in the #SportsVizSunday Dataset)



NBA_API

NBA_API is an API Client package to access the APIs for NBA.com.

Some useful documentation to look through relevant for the tutorial are:

[League Game Finder](#)

[Play by Play](#)

[Shot Chart Detail](#)

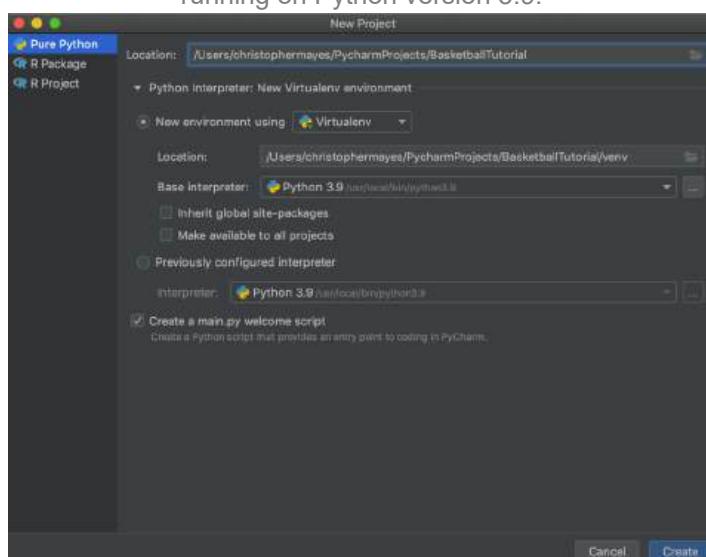
[THE CODE](#)

Available via Github. The code is sequential. The below walkthrough will explain each aspect of the data we look to retrieve.

If you would like to see an alternative version of the code that loops through all the play-off games. Please take a look at the loop folder within the repo.

WALKTHROUGH

Open up your Pycharm console or interface of your choosing. I'm using a new virtual environment and running on Python version 3.9.



You will want to head to the terminal and run the following package installs.

```
•          pip install nba_api  
•          pip install pandas
```

Copy the GitHub code into the console and we are in a position to run the code!

```
import requests
from nba_api.stats.endpoints import leaguegamefinder
from nba_api.stats.endpoints import playbyplayv2
from nba_api.stats.endpoints import shotchartdetail
import json
import pandas as pd
import time

"""Get the games so we can choose what one we want to look at"""
try:
    result = leaguegamefinder.LeagueGameFinder(
        season_nullable='2020-21',
        season_type_nullable="Playoffs"
    )
    time.sleep(5)
except requests.exceptions.ReadTimeout:
    print('Timeout error for games')
    time.sleep(5)

"""Export the games to CSV"""
all_games = result.get_data_frames()[0]
all_games.to_csv('Games.csv', index=False)

"""Take an example Game_ID from the Games CSV"""
game_id = '0042000406'

"""Print the Play by Play"""
try:
    pbp = playbyplayv2.PlayByPlayV2(game_id)
    pbp = pbp.get_data_frames()[0]
    pbp.to_csv('PBP.csv', mode='w', index=False, header=True)
    time.sleep(5)
except requests.exceptions.ReadTimeout:
    print('Timeout error for plays')
    time.sleep(5)

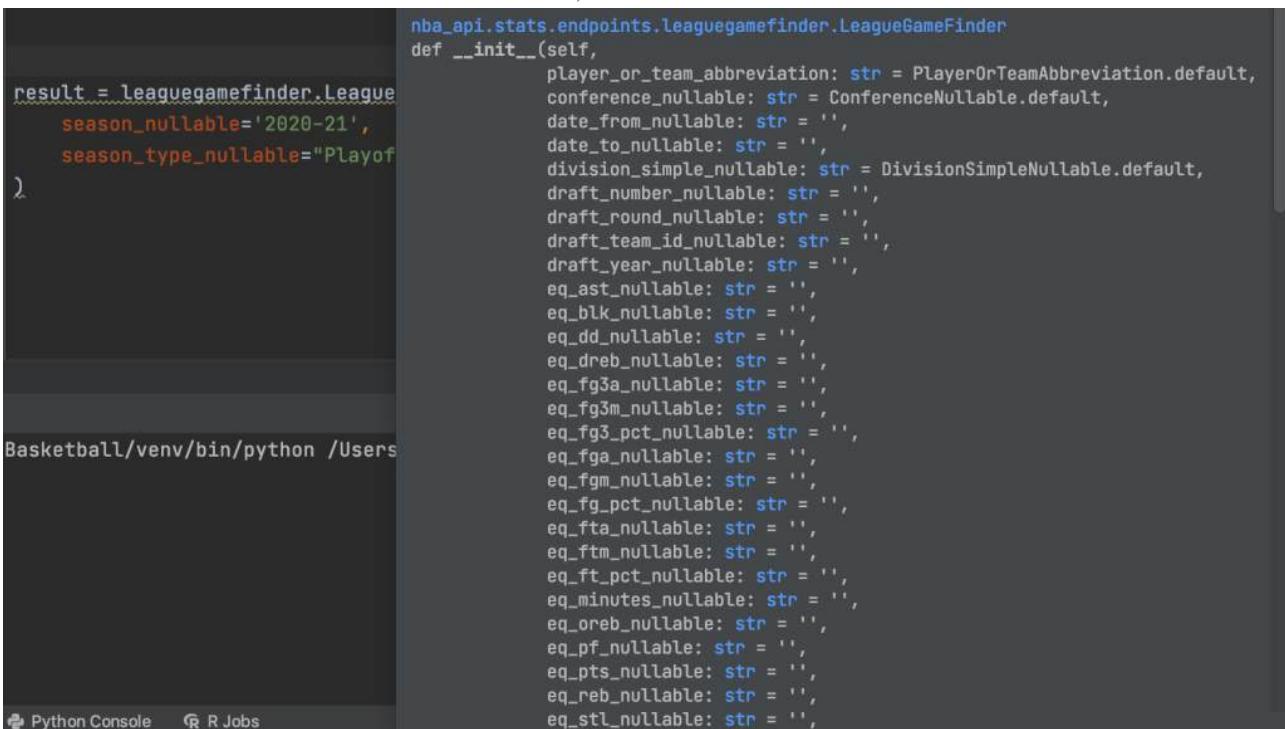
"""Find the shot details for the chosen game"""
try:
    response = shotchartdetail.ShotChartDetail(
        team_id=0, # When set to zero it takes all teams
        player_id=0, # When set to zero it takes all players
        game_id_nullable='0042000406', # 10 digit value
        context_measure_simple='FGA', # All shots, Default is 'PTS' (Shots Made)
        season_type_all_star='Playoffs'
    )
    content = json.loads(response.get_json())
except requests.exceptions.ReadTimeout:
    print('Timeout error for shots')
    time.sleep(5)

"""Transform shot data contents into dataframe"""
results = content['resultSets'][0]
headers = results['headers']
rows = results['rowSet']
df = pd.DataFrame(rows)
df.columns = headers

"""Write Shot location to CSV"""
df.to_csv('ShotData.csv', index=False)
```

Games.csv

You can amend attributes such as season and year amongst other things. You can hover over the class for more information, or visit the [documentation](#).



```
result = leaguegamefinder.League
        season_nullable='2020-21',
        season_type_nullable="Playoff"
    )
```

Basketball/venv/bin/python /Users

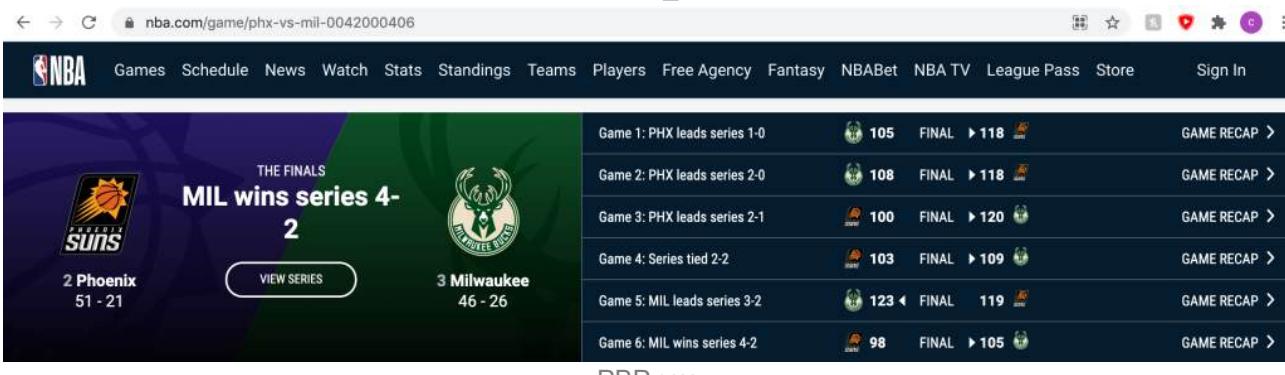
```
nba_api.stats.endpoints.leaguegamefinder.LeagueGameFinder
def __init__(self,
    player_or_team_abbreviation: str = PlayerOrTeamAbbreviation.default,
    conference_nullable: str = ConferenceNullable.default,
    date_from_nullable: str = '',
    date_to_nullable: str = '',
    division_simple_nullable: str = DivisionSimpleNullable.default,
    draft_number_nullable: str = '',
    draft_round_nullable: str = '',
    draft_team_id_nullable: str = '',
    draft_year_nullable: str = '',
    eq_ast_nullable: str = '',
    eq_blk_nullable: str = '',
    eq_dd_nullable: str = '',
    eq_dreb_nullable: str = '',
    eq_fg3a_nullable: str = '',
    eq_fg3m_nullable: str = '',
    eq_fg3_pct_nullable: str = '',
    eq_fga_nullable: str = '',
    eq_fgm_nullable: str = '',
    eq_fg_pct_nullable: str = '',
    eq_fta_nullable: str = '',
    eq_ftm_nullable: str = '',
    eq_ft_pct_nullable: str = '',
    eq_minutes_nullable: str = '',
    eq_oreb_nullable: str = '',
    eq_pf_nullable: str = '',
    eq_pts_nullable: str = '',
    eq_reb_nullable: str = '',
    eq_stl_nullable: str = ''
```

In short, this dataset we retrieve includes a list of game_id's for the playoffs of the most recent year. We can then use this game_id later on in the code having look through the newly exported csv.

I take the game_id of the final game in the playoffs between Phoenix Suns and Milwaukee.

You will notice the Game_ID is actually part of the URL. This means if you have a specific game in mind you can theoretically find it on the website and take it from the NBA website, under games.

In this case the Game_ID is 0042000406



The screenshot shows the NBA.com game recap for Game 6 of the 2020 NBA Finals. The recap lists the following games:

Game	Team	Score	Status	Final Score	Replay	Recap
Game 1	PHX	105	FINAL	118		GAME RECAP >
Game 2	PHX	108	FINAL	118		GAME RECAP >
Game 3	PHX	100	FINAL	120		GAME RECAP >
Game 4	MIL	103	FINAL	109		GAME RECAP >
Game 5	MIL	123	FINAL	119		GAME RECAP >
Game 6	MIL	98	FINAL	105		GAME RECAP >

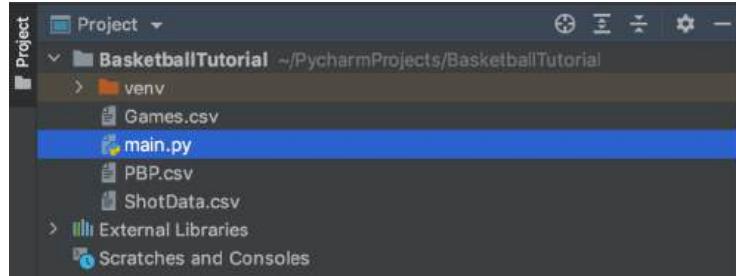
PBP.csv

The play by play csv contains all the game events associated to that particular match using our chosen game_id. I have hardcoded this value for the case of the tutorial, having run the Game report and looked for the game I wanted.

Shot data.csv

Finally, we find all the shot events taken during the match, we can look to left join this data to our pbp events data sheet when in Tableau!

Once the code has finished and exited you will see the three files appear in your folder file path. I'm normally quite lazy and drag them onto my desktop afterwards for when I build my Tableau visualisations, and use the original file path as a staging house but it's completely at your discretion where you want your files to sit.



LOOKING AT THE DATA IN MORE DETAILS

Games

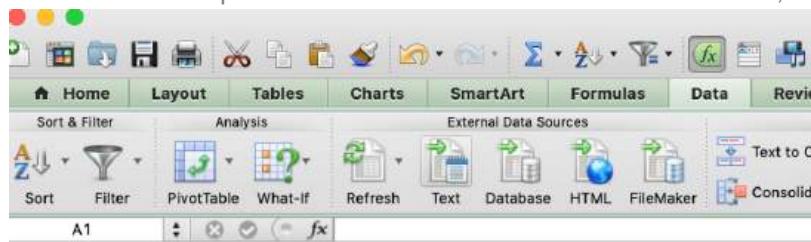
You'll see that the GameID is a 10 digit code. If you open the file in excel, be cautious that it will chop off leading zero's. A copy of the play-offs file is held in the GITHUB repo. You'll also see that the dataset is held at team level. Therefore we have duplicate columns of GameID's where one team wins, and one loses.

Play By Play

You may come across the issue of the score line appearing as a date when you open the csv because of the way your formatting is set up. It may read a score line of 2-2 as the 2nd of February.

K	L	M	N	O	P	Q
SCORE	SCOREMARGIN	PERSON1TYPE	PLAYER1_ID	PLAYER1_NA	PLAYER1_TEAM_ID	PLAYER1_TE
			0	0		
			4	204323 Cheyenne Pa	1611661329	Chicago
0 - 2	2		4	1627674 Kahleah Cop	1611661329	Chicago
			5	1628280 Brionna Jone	1611661323	Connecticut
			4	1630113 Ruthy Hebar	1611661329	Chicago
			4	204323 Cheyenne Pa	1611661329	Chicago
			5	203826 Alyssa Thom	1611661323	Connecticut
			5	202662 Jasmine Tho	1611661323	Connecticut
			5	203826 Alyssa Thom	1611661323	Connecticut
02-Feb	TIE		5	203826 Alyssa Thom	1611661323	Connecticut
			5	203826 Alyssa Thom	1611661323	Connecticut
			5	201896 Briann Janua	1611661323	Connecticut
02-Mar	1		4	201516 Allie Quigley	1611661329	Chicago
02-Apr	2		4	201516 Allie Quigley	1611661329	Chicago
04-Apr	TIE		5	203826 Alyssa Thom	1611661323	Connecticut
04-Jul	3		4	202664 Courtney Vai	1611661329	Chicago

A quick way around this is to open a fresh excel document. Go to the data tab, Import as text.



Text Import Wizard - Step 2 of 3

This screen lets you set the delimiters your data contains. You can see how your text is affected in the preview below.

Delimiters

Treat consecutive delimiters as one

Tab Semicolon Comma
 Space Other:

Text qualifier: "

Data preview

GAME_ID	EVENTNUM	EVENTMSGTYPE	EVENTMSGACTIONTYPE	PERIOD	WCTIMESTRING	PCTI
1042000111	2	12	0	1	7:04 PM	10:0
1042000111	4	10	0	1	7:04 PM	10:0
1042000111	7	1	73	1	7:04 PM	9:43
1042000111	9	2	6	1	7:04 PM	9:28
1042000111	10	4	0	1	7:05 PM	9:25

Text Import Wizard - Step 3 of 3

This screen lets you select each column and set the Data Format.

'General' converts numeric values to numbers, date values to dates, and all remaining values to text.

[Advanced...](#)

Column data format

General

Text

Date: DMY

Do not import column (Skip)

Data preview

Text	Text	Text	Text	Text	Text	Text	Text
GAME_ID	EVENTNUM	EVENTMSGTYPE	EVENTMSGACTIONTYPE	PERIOD	WCTIMESTRING	PCTI	
1042000111	2	12	0	1	7:04 PM	10:0	
1042000111	4	10	0	1	7:04 PM	10:0	
1042000111	7	1	73	1	7:04 PM	9:43	
1042000111	9	2	6	1	7:04 PM	9:28	
1042000111	10	4	0	1	7:05 PM	9:25	

[Cancel](#)

[< Back](#)

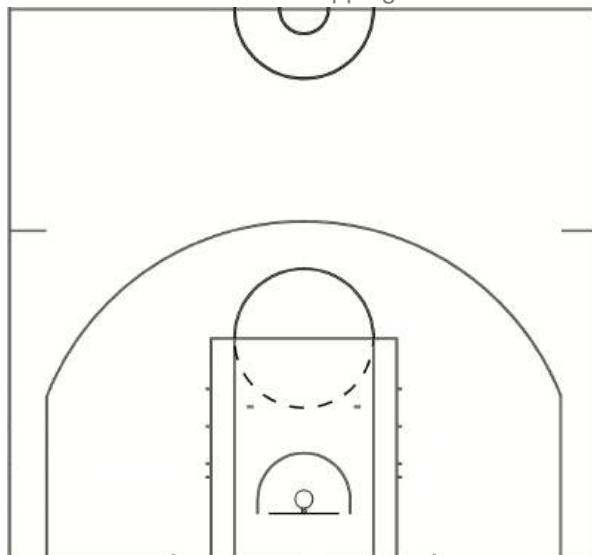
[Next >](#)

[Finish](#)

You can then use a comma delimiter and make the fields you want into text field, which will sort the date error, then re-save this file down.

Shot Data

In terms of the shot location data, I would recommend using the co-ordinates if you plot them in Tableau. The shot data hosts a whole wealth of information in terms of the team, scorer, shot and points type. Below is the court image. The recommended co-ordinates for mapping on Tableau are: X: 250, -250, Y: -52, 418.



Now we have our dataset at Game, Event, and Shot Level detail because of our common field of GameID between all three datasets. In addition to the event number between the pbp dataset and the shot dataset.

LEARNING POINTS

One of the main things I learnt was the NBA API will kick me out if I send a lot of requests to it in a loop to get the events for each of the individual matches. This is why my example just shows one match, rather than iterates through a list of the games outlined previous. This is also why you will see I have added in the try/except function into the code, as well as added a sleep timer. Probably a little over cautious but would rather be on the safe side so I can keep accessing data. If you feel comfortable with the code above, do take a look in the loop folder where an alternative python script looks to make the games csv into a list of games and then iterate through them making a larger csv for plays and shots to hold all events for the tournament! Secondly, I learnt the power of documentation. I hit a lot of errors on my journey. It took me ages to figure out how to write the play by play chunk of code because most tutorials I've read online look at specific players rather than at an event and team level. I initially struggled with what to pass through the function. The documentation I mentioned really helped me understand the different aspects. I'll happily admit my code rarely runs first time. If you're a new comer to Python don't get disheartened! Some main pain points included realising the gameID had to be 10 digits long, as well as zero default in playerid meant that you could include all players!

Thirdly, outlining what I want from the data and how to get it. There are plenty of resources out there for getting shot location data for individual players. You can check out a few good resources below:

These resources were particularly useful:

DataVizadry – NBA Shot Charts

Naveen Venkatesan -Make a simple NBA Shot Chart

I wanted to focus on how can we show a full game. Once I managed to get the play by play dataset, I was delighted to see that you can join the shots dataset with it on the event type! See below how this is done in Tableau.

The screenshot shows the Tableau Data Source Join interface. At the top, it says "PBP.csv is made of 2 tables." Below this, two tables are connected by a join icon: "PBP.csv" and "ShotData.csv". A modal window titled "Join" is open, showing four join types: Inner, Left, Right, and Full Outer. The "Left" join type is selected. The "Data Source" dropdown is set to "ShotData.csv". The join condition is defined as "Game Id = GAME ID (Shot...)" and "Eventnum = Game Event Id". Below the join conditions, there is a note "Add new join clause..." and a "Sort fields" section. On the right side of the interface, there are checkboxes for "Show aliases" and "Show hidden fields", and a preview of the joined data with columns like "Wctimestring", "Pctimestring", and "HomeDESCRIPTION". The preview shows several rows of data corresponding to the join conditions.

GOING FURTHER

- Try reading some of the other documentation to see what other NBA stats you can source. (Reading)
- Try finding the games for the regular season of last year. (python)
- Try creating a shot map in Tableau. (Tableau)
- Try create a visualisation showing the breakdown of game per play/minute. (Tableau)
- Try create the tournament bracket at the top of the page, using a previous template in collaboration with the [Flerlage Twins](#). (Tableau)

ADDED EXTRA

I stumbled across this beautiful website that makes your code look nice for blog posts. You can access it [here](#).



It allows you to edit the colour scheme and match it to your code type. There are other various sites and ways you can also embed your code ready to copy and paste straight from the site which I'll also be looking into, but I'm pretty pleased with the look of this one for a high level summary.

As always, Let me know how you get on with this one. I can be reached on Twitter, @_CJMayes.

LOGGING OFF,

CJ

TAKING A NEW ANGLE ON SHAPES

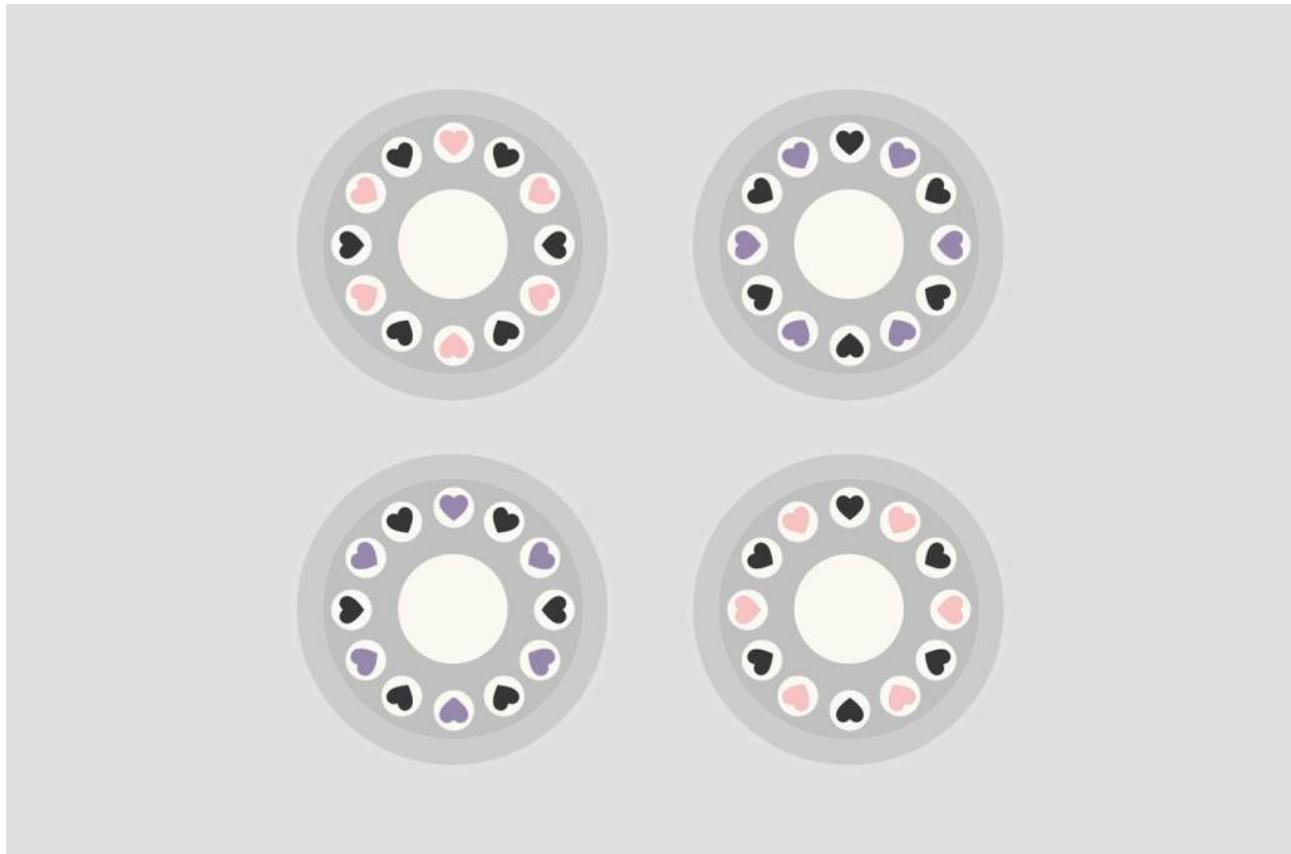
Hi All,

I hope everyone is still riding the buzz from #IronViz? Congratulations to **Lisa, Sam and Pradeep** for making the final. What beautiful visualisations they created for the competition. I can't wait to see them battle it out at the Tableau Conference. Best of luck to them! Check out some of the Tableau highlights [here](#).

A further thank you and congratulations to the Tableau team, the judging panel, as well as everyone else who entered this year. It really captures the supportive nature in the community with everyone playing a part. Before we jump in, a small side note this will probably be my last post before a few weeks off from blogging. The non-robotic side to my soul is looking forward to a bit of downtime and fingers crossed... some London sunshine. We will be back in September with a "What's Good?" blog.

TODAYS TOPIC

Today, we will be looking to rotate custom shapes and re-save them down for usage within our tableau dashboards for our radial charts!



This may have little applied user cases, but I have come across it a few times myself where I could have done with a rotated shape at the end of a chart point, but didn't want to save down lots of separate images. Today's tutorial is another mixture between Python and Tableau. Apologies for those out there that takes a disliking to code. I do want to re-iterate with my coding tutorials it's normally vaguely a case of just hitting the run button! Please, do not hesitate to reach out for help if you get stuck along part of the process, I'm always willing to help.

DESIGNING AN IMAGE TO ROTATE

This is my chosen desired image I will be rotating. You can find it in the repo, as Heart.png



When designing an image to rotate the things that should be considered are:

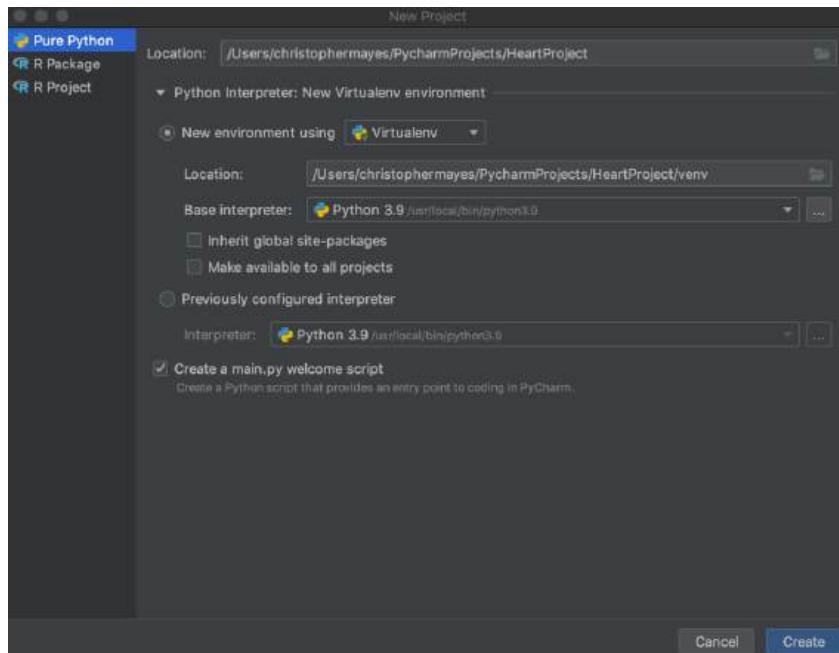
- Having a transparent background. (save the file as a png) You can see mine has a transparent background other than the circle and heart.
- Making the image square! We want to make sure we rotate through the mid-point of the square image each time. Shapes that aren't square will not rotate properly using this code.

PYTHON

We will be using Pycharm CE to run the code, but if you're more familiar with other interfaces feel free to use them.

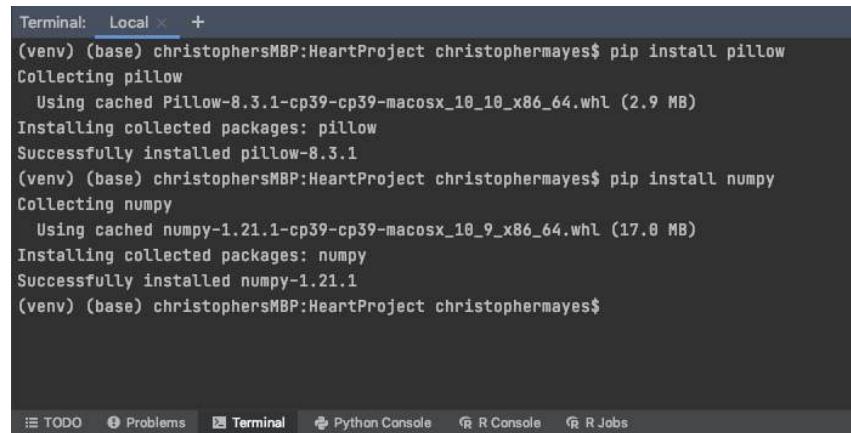
First, download the code template from the GIT repo.

Open a new project, in a virtual environment and paste the code into the main file.



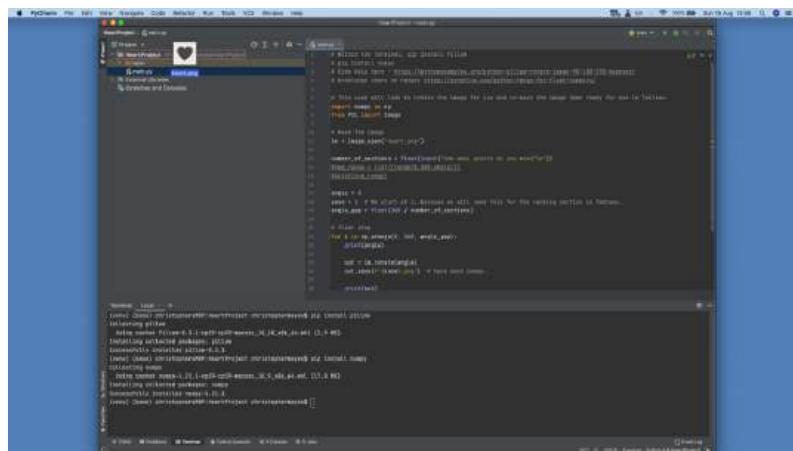
Before we run the code there are a few things we will need to do:

Within the terminal, run the commands ‘pip install pillow’ and ‘pip install numpy’. These are the two packages we will require. You can find the documentation [here](#), and [here](#), respectively.

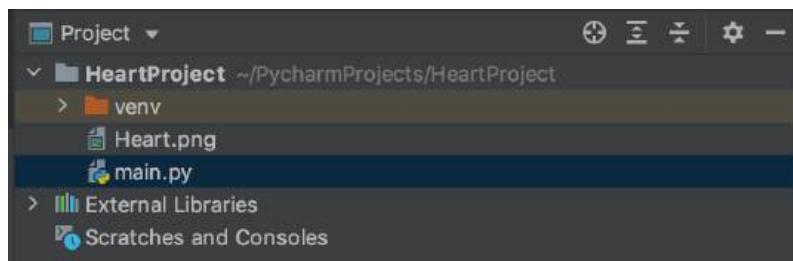
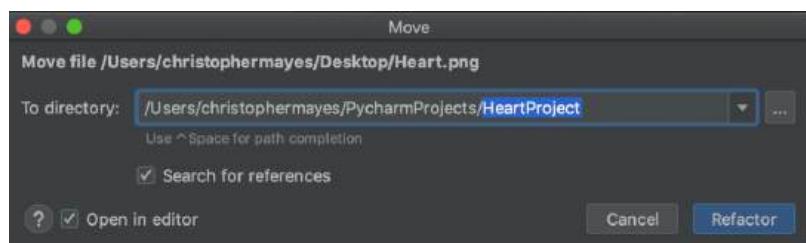


```
Terminal: Local +  
(venv) (base) christophersMBP:HeartProject christophermayes$ pip install pillow  
Collecting pillow  
  Using cached Pillow-8.3.1-cp39-cp39-macosx_10_10_x86_64.whl (2.9 MB)  
Installing collected packages: pillow  
Successfully installed pillow-8.3.1  
(venv) (base) christophersMBP:HeartProject christophermayes$ pip install numpy  
Collecting numpy  
  Using cached numpy-1.21.1-cp39-cp39-macosx_10_9_x86_64.whl (17.0 MB)  
Installing collected packages: numpy  
Successfully installed numpy-1.21.1  
(venv) (base) christophersMBP:HeartProject christophermayes$
```

Drag the image into your project folder.



It will ask to refactor, once you've done this it will have added the file into your project directory.



The final thing we want to do is change the file name of the heart file to your chosen file name ready to rotate.

```
im = Image.open("Heart.png")
```

EXPLAINING THE CODE

You will see I've added a few url's that will be useful as extra background reading at the top of the file.

- Firstly we open the image in python saving it to a variable.
- Next, is a question that appears in the terminal where you can type a number in for the number of points you have in your visualisation
- The for loop looks to save each new file down in the directory, starting with 1 proceeding to print as many equal rotations of the image until it's reached 360 degrees.

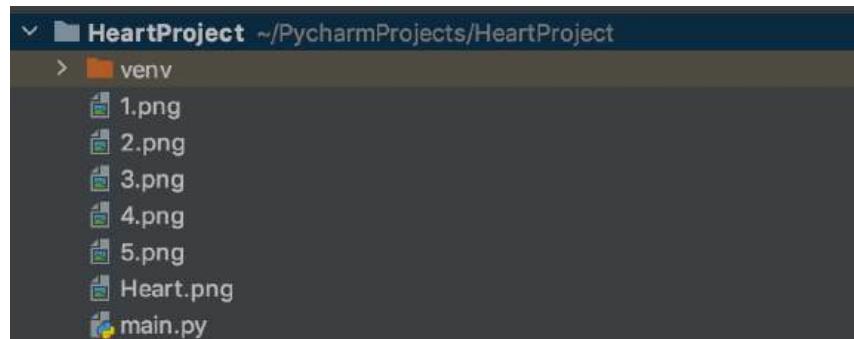
If this is a little confusing I recommend reading a simpler version of the documentation [here](#).

With all this information you are good to go!

Input a number into the terminal and press enter key, after hitting run.

```
How many points do you need?  
5
```

Once the code has exited, you will see them appear in your folder structure.



Here is what the output looks like:



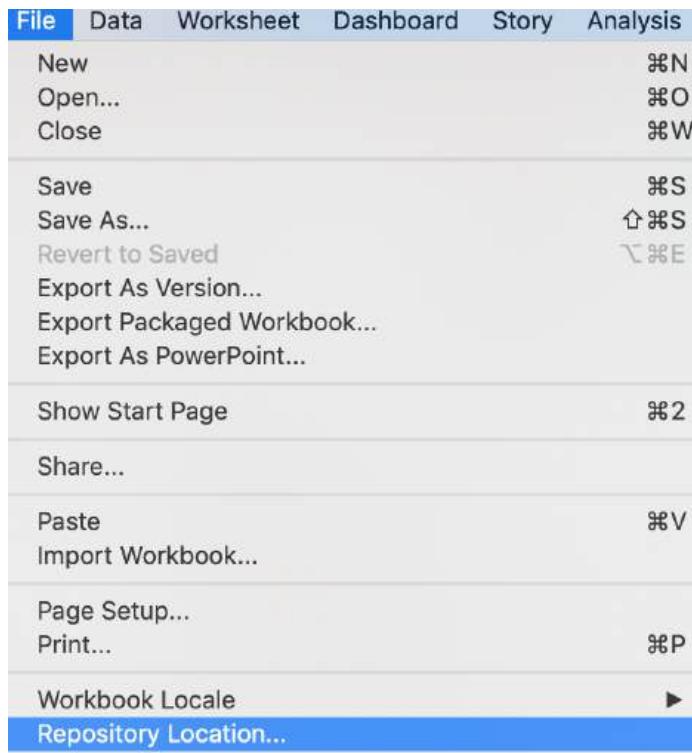








Now we have all the rotated versions of our image, we can load them into our Tableau Repository. Add the files in their own folder in your repository. Below is a reminder where the repository for your shapes are stored. You can drag them from your folder in Pycharm into the new folder within the repo.



TABLEAU

So, I won't go into too much detail on how to make a radial visualisation as that's pretty much my whole websites content... But to test the theory we will follow the simplest method. There are lots of different methods out there so do explore other means where necessary.

If you'd like to follow along you can find the example data in the repo, here.

We will want to make 4 calculations.

Angle – Create the angle between each circle. This will be a constant, given we want equal spacing between each point. 360 degrees divided by the number of points you have, in this case 5.

```
1a.Angle
360/5
// Whole circle divided by number of points
```

The calculation is valid. 4 Dependencies. Apply OK

Rank Angle – Taking the order of the points, find the angle around the circle of where the next point is situated. You will see I have added minus 1 to the calculation in order for the top image to be the first one and not the last in the circle. This is my alternative to using an index function.

1b. Rank Angle

([Rank]-1) * [1a. Angle]

The calculation is valid. 3 Dependencies

Apply OK

X & Y – sin and cos are used to make it a circle.

2a. X

`cos(radians([1b. Rank Angle]))`

The calculation is valid.

1 Dependency

Apply

OK

2b. Y

`sin(radians([1b. Rank Angle]))`

The calculation is valid.

1 Dependency

Apply

OK

With the calculations done we are ready to drag Y onto columns, X onto rows.

I like to fix the axis, to make it more apparent the shape of the radial chart.

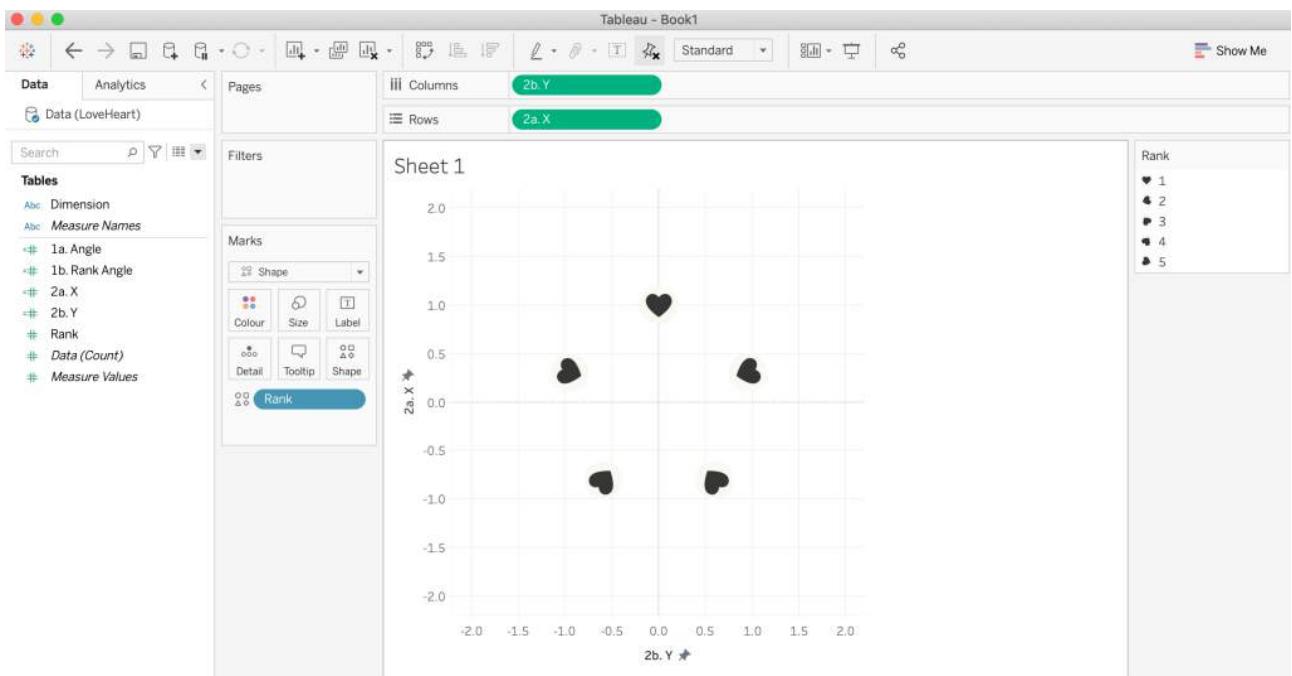


Change the marks to Shape and drag Rank onto shape. Find your repository and click apply.

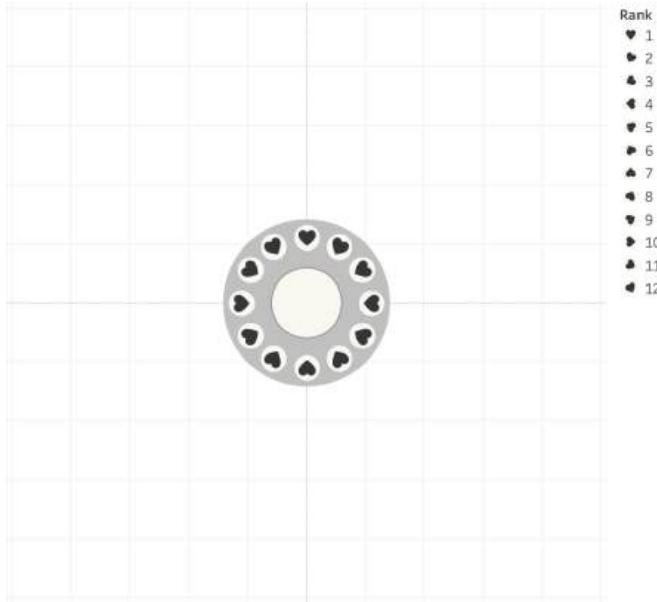
The beauty about putting Rank (integers from our dataset) onto the Shape is that it matches the file names from our python dataset! This is purposefully intended, especially if you have lots of points, it saves you going through trying to match the correct images up!

i.e it automatically associates the first value with our first image, and so on.

If all goes well, you should see the below:



Below is an example of having this in action, with 12 points.



Once you have this knuckled down, you could look to implement them as start / end points on radial column and bar charts. I think it would provide a nice effect.

GOING FURTHER

- Try incorporate this into your own radial visualisation. (E.g Radial bars, column, sankeys, coxcomb, or radar)
- Try using your own custom shape, that you've created.
Use vectors so that you can re-colour!

As always, Let me know how you get on with this one. I can be reached on Twitter, @_CJMayes.

LOGGING OFF,
CJ

PARAMETER ACTIONS WITH ANT PULLEY

Welcome to the August edition of “What’s Good?”.

It is with great joy I invite Ant Pulley to the blog for the August edition of “What’s Good?” This month’s topic is on Parameter Actions. I’ve known Ant for a good chunk of time now, having previously had the pleasure of working in the same division when at Lloyds Banking Group. Ant joined Tableau Public shortly after, and I have been nothing but impressed by his talent of technical builds as well as commitment to the makeover Mondays.

If you aren’t already, please follow him on his socials. He can be found on [Twitter](#), [Tableau](#) and his own [blog site](#).

CJ: Thanks for joining Ant, for those who may not know you as well can you give a little background to yourself and your data journey?

A: Thanks so much for having me CJ – really enjoyed your blog series, so I was very happy you wanted to include me on it!

About me – so I have been working in analytical jobs since straight out of Uni for about 18 years in a range of industries – Defence, Government, Retail, Maintenance and most recently Banking. I started off very much in the Excel modelling and VBA world until I joined Tesco around 9 years ago – there I got to use SQL an awful lot and also started in more of a reporting role, primarily using Excel at first, then a bit of Power BI and finally moving onto Tableau in the last few years. I found I really enjoyed the Tableau and Visualisation side of things and so moved to a job at Lloyds Banking Group two years ago which was solely focussed on BI and Visualisation, mainly in Tableau – ideal!

CJ: You joined Tableau Public back in April 2019. What prompted you to join the community on TP and Twitter? What has been your favourite thing about it?

A: Yes that's right – I set my account up when I started looking for the new role at Lloyds as I wanted to do some upskilling outside of work. So initially it was used for exercises and a small number of personal projects. It stayed fairly quiet on there until around August 2020 when I decided to take the plunge and get involved on the Twitter scene.

There were a few reasons for this. I had intended on getting involved for a while as I had seen **Marc Reid** and **Amar Singh** (who I also work with) heavily involved with the community and the various initiatives. I would also be remiss to not mention you CJ – once you had started appearing I just thought I had to get involved! 😊

Another main reason for starting it, probably the same for a lot of people last year, is COVID. During the first few months of COVID I didn't really have much time for anything as my daughter was home 100% of the time so my wife and I were having to juggle work and childcare, not leaving too much extra time. Once she had gone back to nursery there was suddenly a lot more time available, so I decided "now or never" and took the plunge.

I had a really welcoming start on the Twitter community with my Digital Scotland Makeover Monday viz – mainly thanks to **Marc Reid** who gave me a follow Friday shout out off the back of it.

So that was a nice boost to the confidence! Since then I had been focussing on mainly getting Makeover Monday's done and building up my profile. The DataFam on Twitter are really welcoming, making it very easy to post your stuff up.

CJ: What advice would you give to new members of the community?

A: I'd say just don't be afraid to get involved and post your content up! The hardest thing to start doing is to get yourself out there and posting your work – for me I was worried about how it would be received and if I would get any negative comments. What I found is the opposite – people are really supportive, and any feedback they give is always constructive rather than too critical.

I found Makeover Monday a great way to get involved as there are a load of people who do this regularly, and a big community around it. Also as you are given data sets each week, it is a nice way to build up your profile without having to do any potentially time consuming data work.

Another thing I would definitely advise, and one I'm not personally so good at, is to ask for feedback. If you do that you will improve a lot quicker (assuming that is your aim!) – but it also gets conversations going with other people, building up that network.

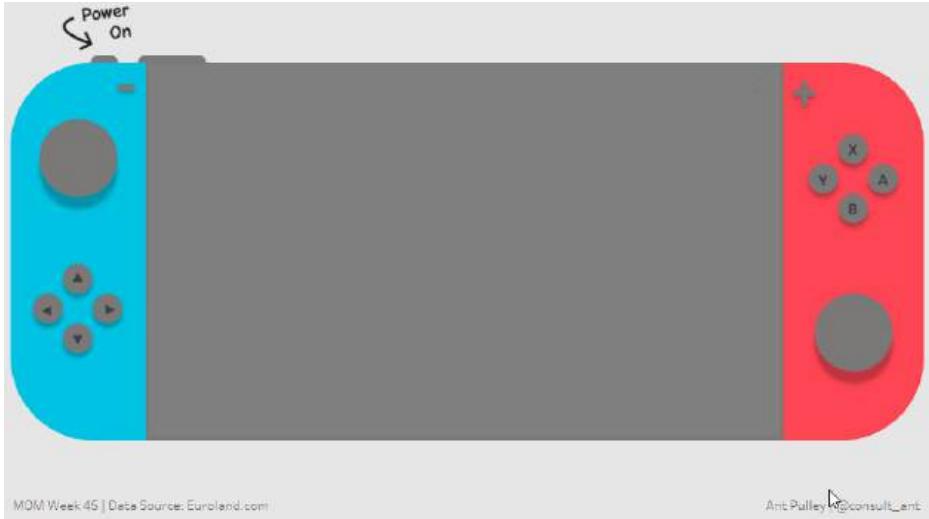
CJ side note: I was asked this at a recent VizConnect and bashfully said 'resilience' I way prefer Ant's answer. If you'd like to read a little more on feedback check out last months blog [What's Good with Sarah Bartlett](#).

CJ: Since joining you've produced 59* fantastic vizzes. They showcase such an array of chart types, designs and technical functions. Which has been your favourite to build and why?

*At the time of writing

A: Thank you! I like to try different things, which is probably why you don't see too many vizzes of mine looking very similar. I also have some really silly ones that you can't really call Data Viz, but more playing around with some of the Tableau functionality.

I've had a lot of vizzes that I have really enjoyed doing, but probably one of my favourites was from a Makeover Monday quite a while ago on [Nintendo Switch sales](#).

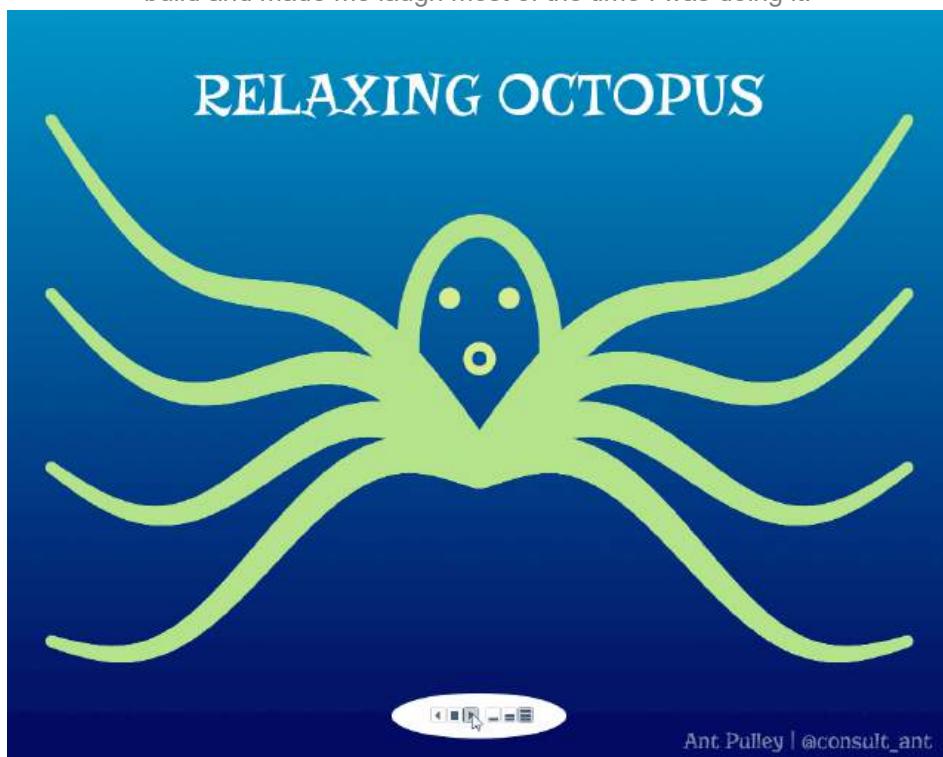


MOM Week 45 | Data Source: Euroland.com

Ant.Pulley | @consult_ant

I remember being really excited about this when building it and staying up pretty late doing it – but people seemed to really like it and to date is my most favourited viz! The only slight regret I had is that in my initial share on twitter, I hadn't noticed some of my sheet backgrounds were not set to transparent, so my Gif didn't look as clean as I would have liked! But that is pretty minor!

I should probably also mention my most pointless viz (so far) – the **Relaxing Octopus** – also very fun to build and made me laugh most of the time I was doing it!



CJ: Recently it has been the IronVizFeeder2021, I was particularly blown away by your curvy timeline. I thought the design of making it look like a music sheet was a particularly nice touch. What have been your main takeaways from your very first IronViz?

A: Thanks CJ – I was really happy with this one. I tried to veer away (although not fully 😊) from a heavily parameter/interactive driven viz and get more design involved – and had a flash of inspiration with the music inspired timeline.

In terms of my first Iron Viz, I found it a really great experience. It was easily the most time and thought I had put into a public Viz and I think that opened my eyes a lot in terms of how to approach my public work in future.

Up until now I had been doing primarily quick turnaround Makeover Monday or other initiatives (e.g. Diversity in Data) but have not spent a big chunk of time on them. So doing this with the IronViz and seeing what I

could come up with having put that extra effort in was really interesting. For example I did a lot more sketches on the subject before I started building it and spent more time thinking about it before really kicking it off.

I also loved seeing all the other entries coming in as you get such a huge range of ideas. I think this year with the theme being very open, there is a great range of topics as well as designs.

I have written about how I found the process in a bit more detail [here](#), this also includes some technical bits around how I built the viz.

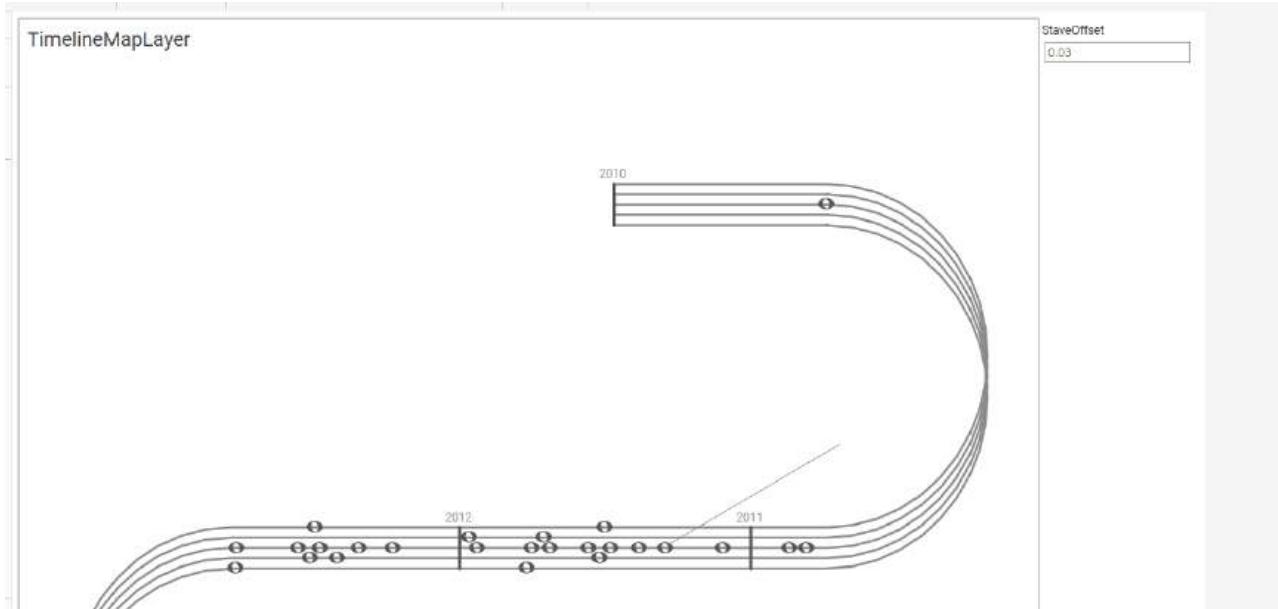
CJ: You've shared multiple blogs on your site [consult-ant](#). I felt the examples on parameters particularly stood out. Why do you think parameters are a useful tool to use within your visualisation?

A: Primarily for me – Interactivity. Parameters allow so much to be done on top of a standard viz, whether it is changing the chart type, the components within the chart, reference values, aggregations and more. Parameters on their own were great, but when Parameter Actions came in a while back, this was a game changer as it opened up the ability to customise your UI a lot more. Previously you had to have a parameter on the sheet in the default format, but with Parameter Actions you can drive any parameter change from a sheet. This means creating buttons/interactive features was really easy.



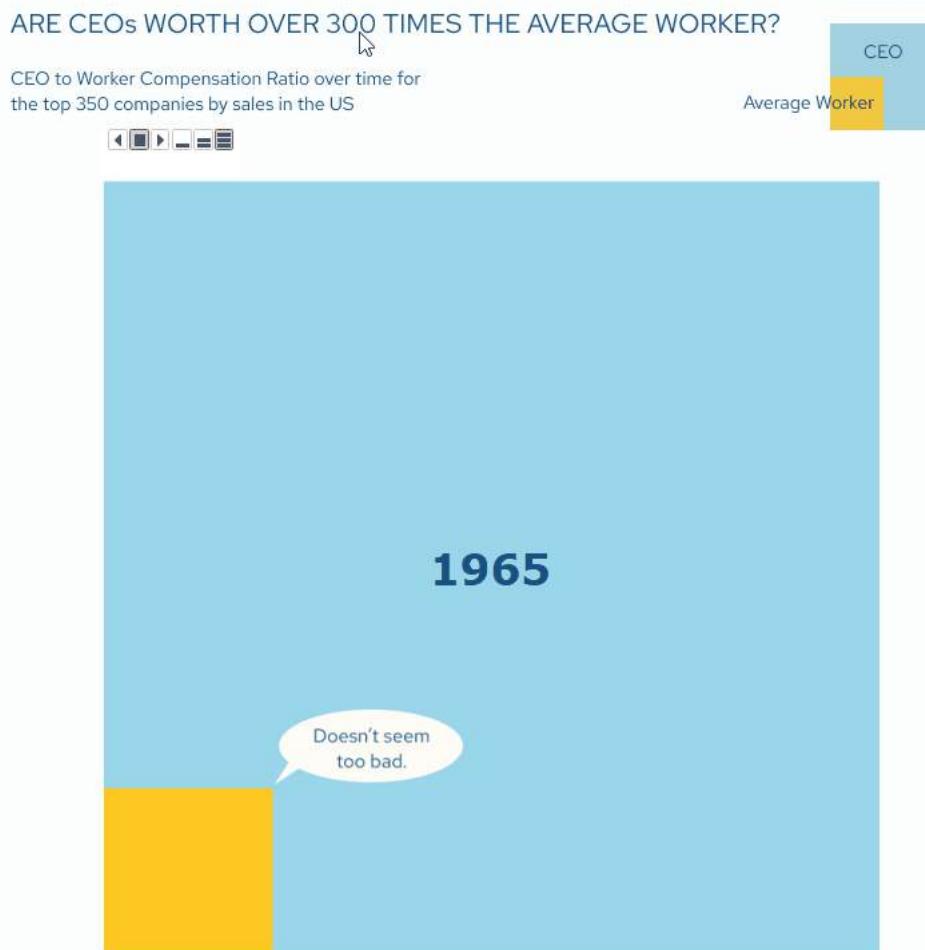
Also with Parameter Actions, the ability to drive a particular parameter with data from your data source can be really powerful. Allowing easy drilling down of data, or changing of reference points for the user to explore the viz. Another very useful one I find is the ability to configure your vizes more easily.

By this I mean using a parameter to change e.g. the relative positioning of marks. I used this a few times in my IronViz entry when building the curvy timeline, where I would use a parameter in some calculated fields rather than hard coded values. This means I can alter the parameter on the dashboard until the viz 'fits' right without having to amend any calculations



CJ: I love your ability to use parameters to drive animation. What tips and tricks have you come across when building these types of visuals?

A: I really love the animation functionality in Tableau as it can add so much to a visualisation. I have used parameters a lot to drive the animation based on user selection, and also more recently I have also discovered using Pages for a different style of animation:

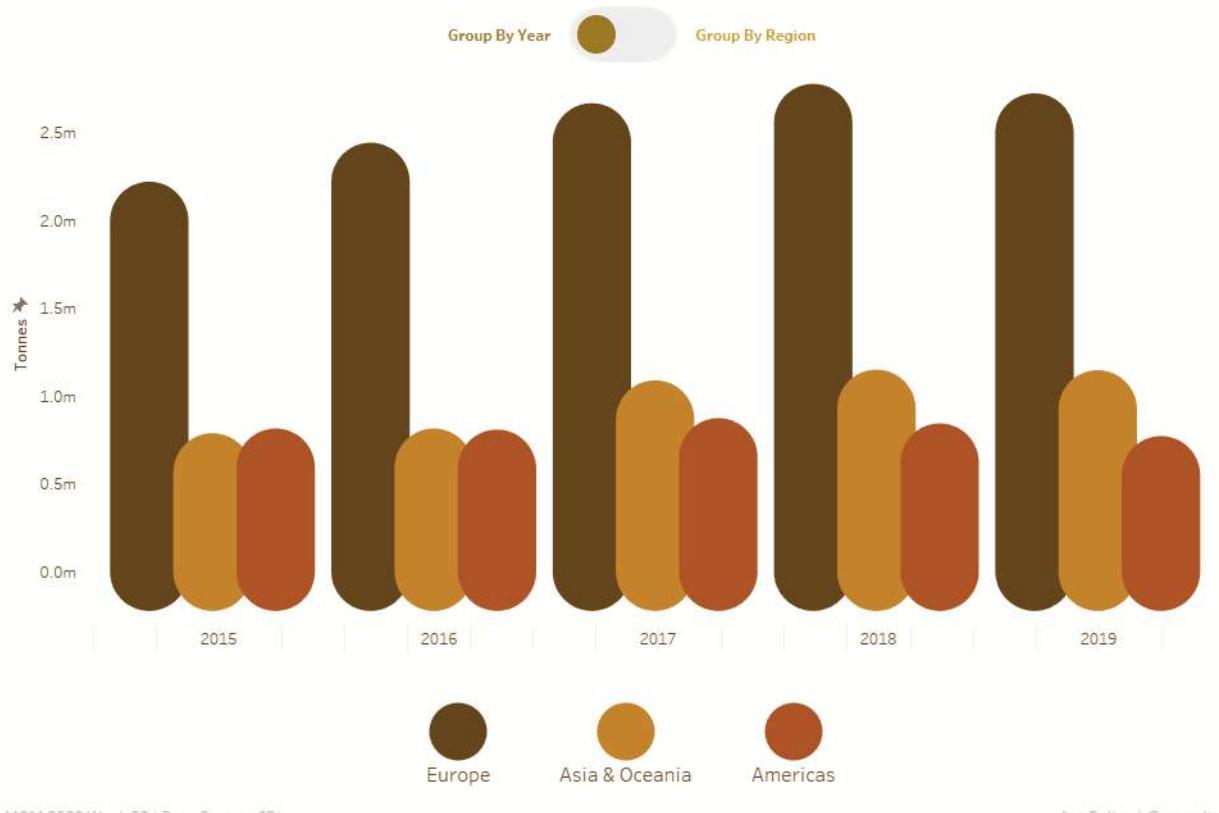


In starting with animations I would often refer people to Marc Reid's [blog](#) on the fundamentals of how they work, as there are a few things you need to understand – for example how Tableau designates a 'Mark ID' to use in the animation.

For using parameters with animations, there are a few ways this could work. I have done some (e.g. the chocolate makeover Monday) which use buttons to drive the animation. In this case clicking the button changes a parameter, which alters the coordinates of things on the view.

Europeans Love Chocolate

And they import more cocoa than the Americas, Asia and Oceania combined



MOM 2020 Week 52 | Data Source: CBI

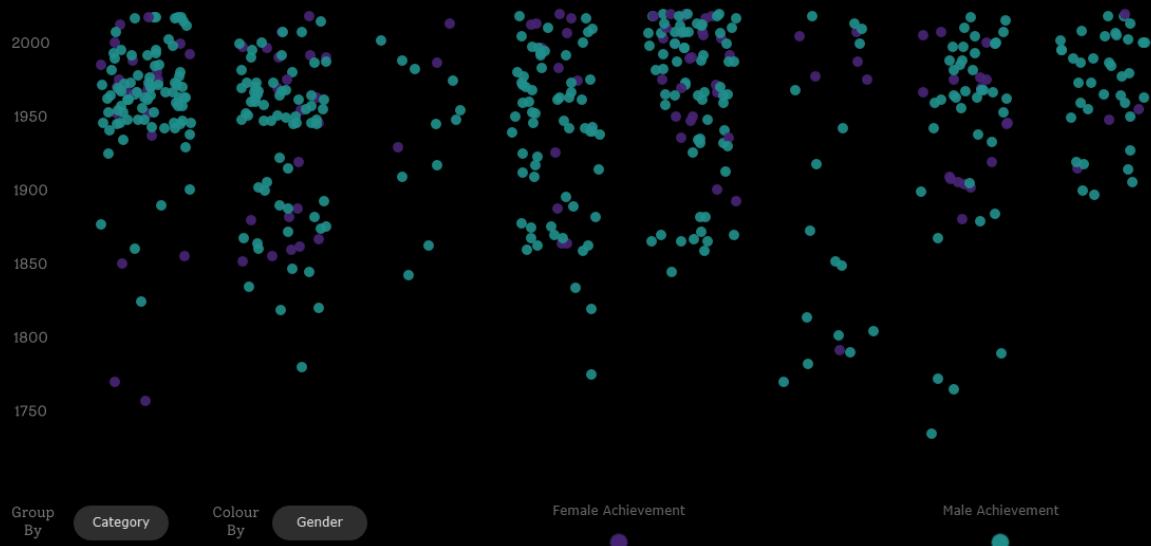
Ant Pulley | @consult_ant

This looks like a bar chart with time along the X axis – whereas it is actually just lines plotted on the chart. I have added coordinate into the data to create a line for each element, and then use a parameter with some calculated fields to move them round the sheet. One trick I often use in animations, and one I used above, is fixing the X and Y axes. This means I can 'store' elements off the canvas and animate them in when I want them – i.e, the year on year difference bars in the above example which slide in from the top. These are actually always there, just beyond the maximum of the Y axis. You can see my blog on the above, [here](#). Another useful trick I found out recently is to do with using colour on marks. With animations, if you are using a parameter to change a category of a mark on the mark colour, this would generally break the animation. I used a trick a few times to instead have a continuous measure that you use on colour (e.g. 1-10) and instead you assign each of those numbers a colour and choose (or create) a stepped colour palette that has enough points to colour each number differently. As the colour measure is continuous, the animations will still flow! I did this on #BlackHistoryMonth viz for Diversity in Data (see below) where I was able to colour by Gender or Category when the user made the selection.

NOTABLE BLACK ACHIEVEMENTS

#BLACKHISTORYMONTH

Arts & Entertainment 107	Education & Science 88	Law 14	Military 75	Politics 93	Religion 22	Social & Jobs 57	Sports 41
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#DiversityInData February 2021 | Data Source: Wikipedia & Kaggle

Ant Pulley | @consult_ant

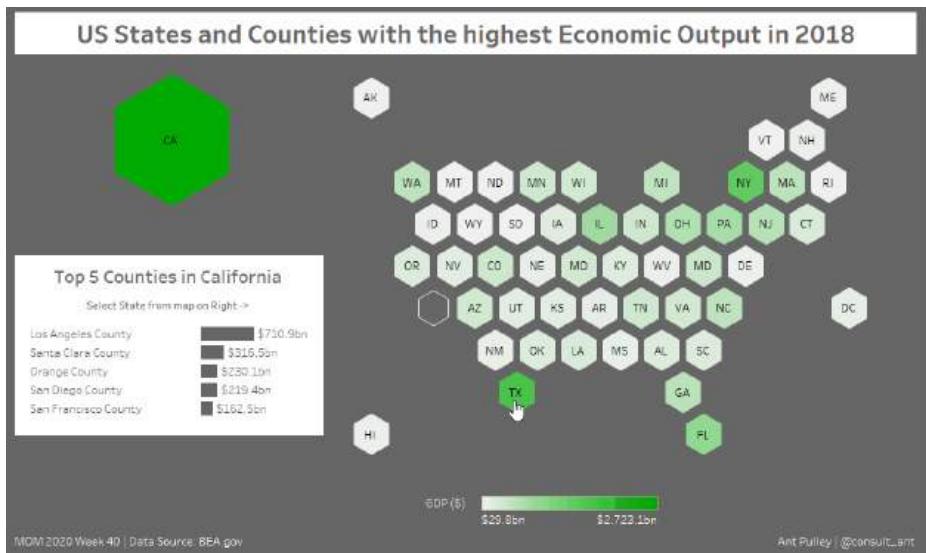
CJ: Your Mario Viz was a particular favourite in the community. I really enjoyed your VizConnect session on it. Do you have any other scenarios in mind where you could apply a similar logic?

#Tableau #VizConnect
VizConnect UI AND UX FOR DATA VISUALIZATION AND BUILDING A SLIDE PUZZLE IN TABLEAU
420 views • 5 Apr 2021

VizConnect CREATING DATA ART USING PARAMETRIC...
VizConnect
308 views • 3 months ago

A: Thanks CJ – yes that was another favourite of mine, and I really enjoyed getting the chance to do the VizConnect session.

In terms of other scenarios – there are a wealth of games that you could do in a similar vein (and loads have been done in Tableau Public). I had Connect4 in my head to do at some point! I used a simpler but similar logic in an earlier viz with a hexmap that animated



The fundamentals behind it is basically a transparent sheet controlling the parameters placed over the sheet you can actually see – so you can keep the visual sheet clean and only show the values, rather than having all the calculated parameter fields in it and messing up any animation.

This transparent overlay could be useful for all sorts of things where you want the sheet underneath to be clean and you want to keep all the ‘Parameter’ goodness in the transparent sheet. This also works very well if you wanted to just have a static image underneath which you have some transparent ‘Buttons’ over the top of it to activate parameter actions (like my Nintendo Viz I mentioned earlier).

In the Mario Viz, as well as the parameter/animation side of it – I also had the gamification elements. So I had a score counter and ‘Motivational Messages’ as well as the ‘Congratulations’ finished part. This could be a fun way to introduce users to different topics – make it more interactive and make people want to see what happens next. I see this a lot nowadays in company training videos to try and keep user engagement – making it much more gamified. So I don’t see why this could also be applied to some storytelling dashboards in the work domain.

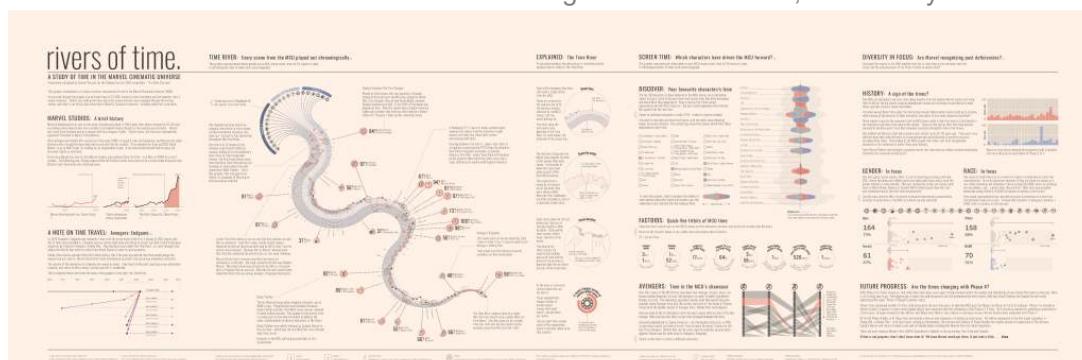
CJ: What visualisations on Tableau Public have particularly stood out to you recently?

A: Well we have just come out of IronViz season – so most of them! **Sam Parsons** **Marvel Time River** in particular I thought was exceptional!

One I saw a few months back that made me think ‘this is exactly the kind of viz I want to be able to design and build’ was by **George Koursaros** on the **Lord of the Rings** films – this got a viz of the day. It was exactly my kind of topic (Fantasy) and was done so beautifully – the design and viz just all fit together so well. I hope one day I can come up with something this good – I will probably retire shortly afterwards.

Another more recent one, and another **viz of the day**, was from **Nir Smilga**.

Again it was another subject right up my street (music) and I loved the interactivity of it and also the usefulness and education of it. Music is something I want to viz more, and I really loved this one!





Piano Classroom

How to...

Notes

Notes in C Key

All Progression | None chord | C Key

Chords

Choose a Key

Click on a Chord below ▾

Chords: I C ii Dm iii Em IV F V G vi Am vii Bdim

Chord Progressions and sample Songs

Song: None

Click on a Song (4) below ▾

Keys, Chords, Progression Data: Wikipedia
Piano Sounds: <https://openstax.org/r/Metronome> (Inspired by Yovel Deute) <https://openstax.org/r/PianoViz>
Songs by Progression: <https://www.backtheory.com/training>

Design: Nir Smilge [In](#) [Twitter](#) [GitHub](#)

CJ: Has there been anyone in the community that has inspired you? How about in terms of parameter actions?

A: It is too many to really name them all! But I can pull out a few.

Judit Bekker

Judit does some amazing design work and I am always looking at her stuff wondering how she thinks of it! I don't quite have that kind of eye for it yet, but I try to take some of her concepts and use them – particularly when it comes to layering elements.

CJ Mayes

This is you. I'm always impressed by your content, and it was some of the earlier blogs you wrote on mapping points to shapes that I have ended up using a number of times and keep referring back to!

*CJ side note: The above quote only cost me a tenner. *cheesy grin**

Zak Geis

I love his design tips and tricks, and I find myself using these more in a work context rather than Tableau Public as they align heavily with usability. Recently I have used his Visual Filters and KPI Filters concepts at work.

Ken Flerlage and Kevin Flerlage

Sorry to put these two under one heading! But it is because I use the Flerlage Twins blogs for a lot of different things. The most recent one being my IronViz curvy timeline – which I used their really easy to follow blog.

Chimdi Nwosu

Chimdi is always putting out top quality content on Tableau Public, and really regularly too – I often seem to be favouriting them. I love his designs, and have reached out to him for a little Figma help in the past which he has been happy to provide!

In terms of Parameter actions, the main person who really inspired most of the parameter work I do is **Marc Reid**, who I am lucky enough to work with. He showed some examples at work including a parameter action driven selection pane which changed the way I used parameters permanently. He also planted the seed of ‘painting’ with Tableau which I used in my **Bob Ross makeover Monday** a while back.

There are many many more!

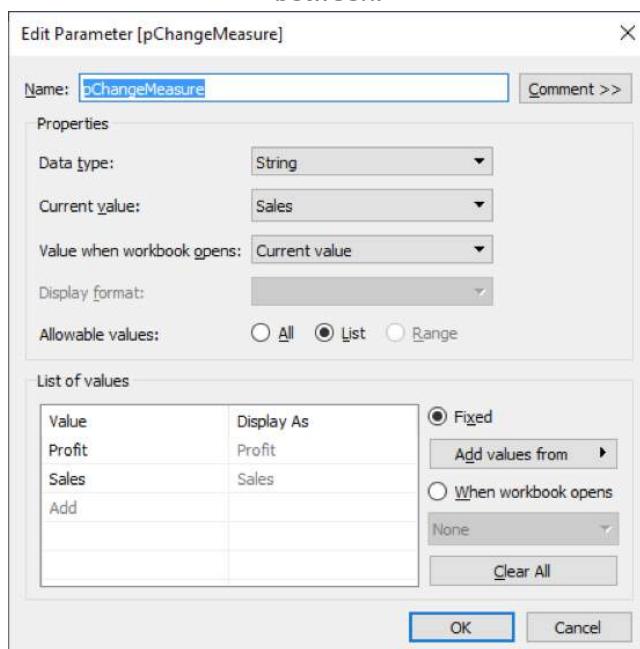
CJ: Can you give a run-through of a few parameter examples that can help with dashboard builds?

A: I can try! The beauty of Parameters are that they are so versatile, so you can really do an awful lot with them. I'll run through a couple, and then list some others with useful links.

Change a Measure/Category/Aggregation

This is probably one of the more straightforward uses of parameters – just changing a calculation based on a parameter value. You can use this to change the measure you are showing, change the categories being displayed or change the aggregation of the data.

For a measure switch, you can set up a parameter like the below with the measures you want to switch between.



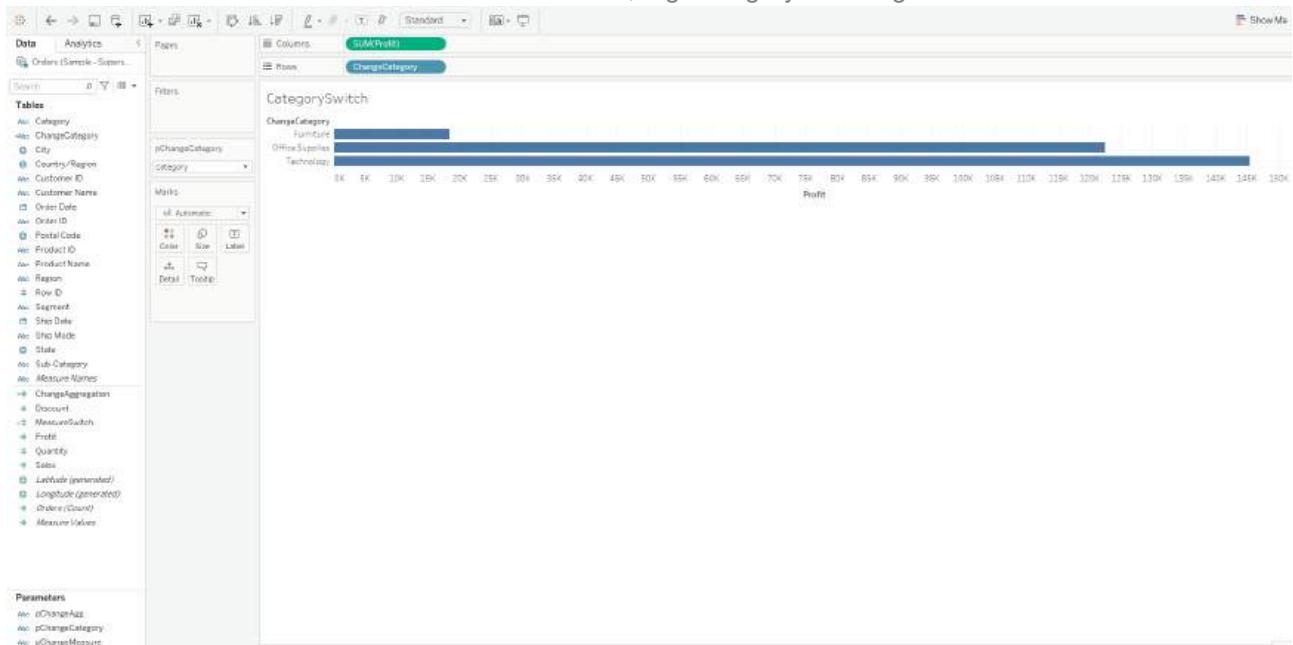
Then a calculated field which pulls in the measure based on the selection.



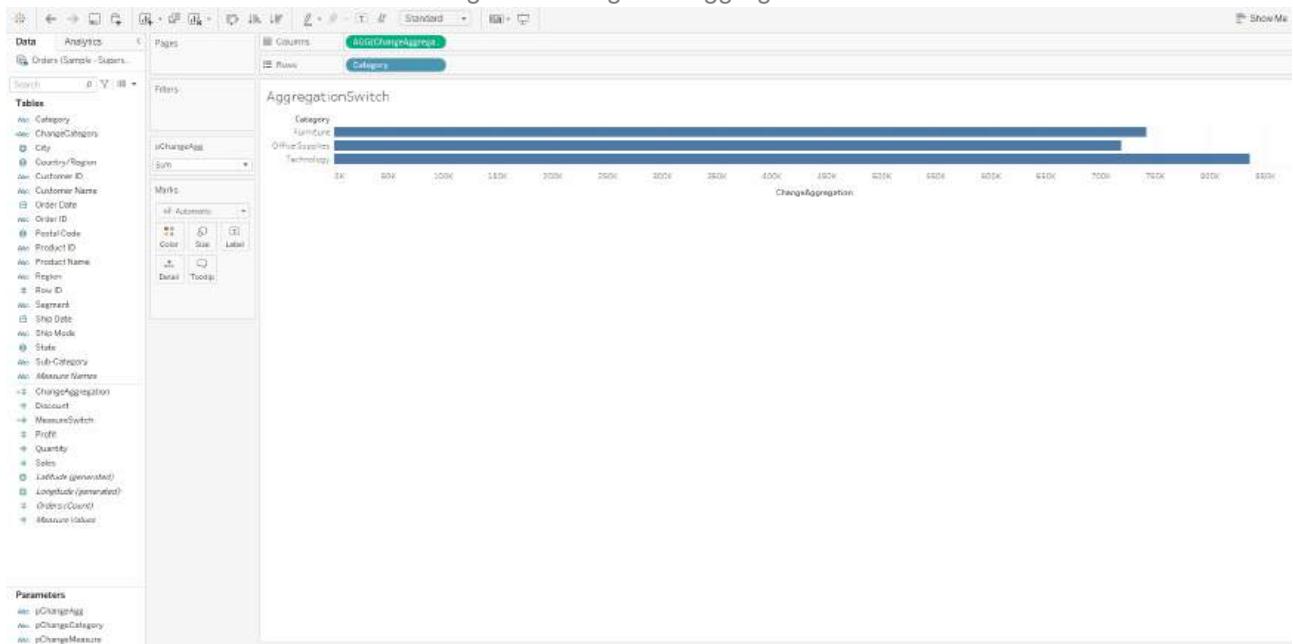
This can then be added to the view as a normal measure, and you can use the parameter to switch between the two:



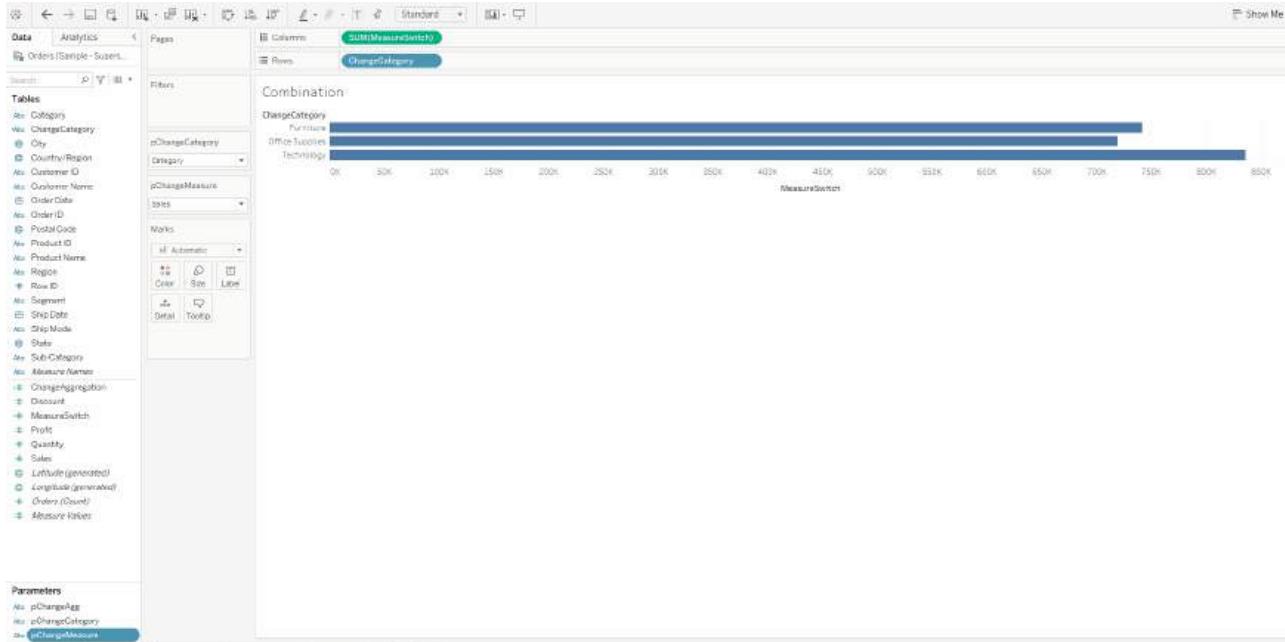
You can also do this with dimensions, e.g. category to change what is shown:



And also do things like change the aggregation of the measure:



You could also do a combination of them:

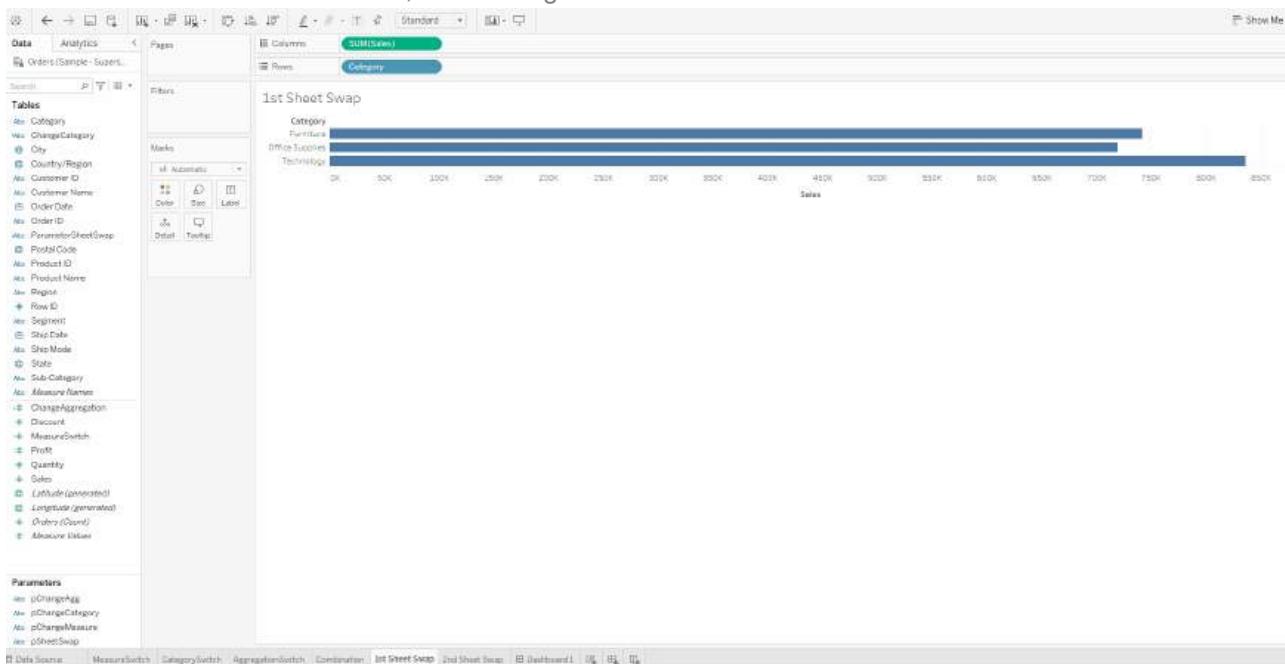


Swap Sheets

Sometimes just changing a measure isn't good enough, and you want the use to be able to switch the whole visualisation to a new one. You can use parameter actions for this (although Tableau 2021.2 has some ace show/hide functionality that could replace a lot of this use).

This basically involves setting up a container which contains two elements to be switched – both set to 'Fit Entire View'. Then for each sheet you set up a filter based on a parameter selection which only shows when the parameter selection is chosen.

The key things to make sure this works are getting the Fit settings correct, making sure sheet titles are turned off, and making sure there is a dimension in the view:



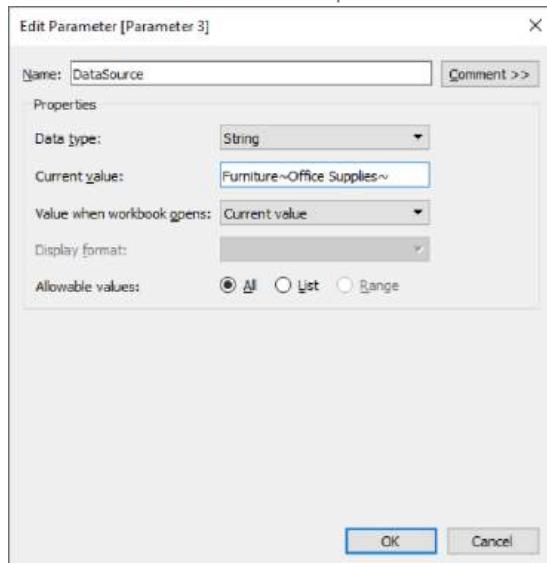
Use As a Filter

Useful particularly for filtering across data sources. You can use a parameter as a filter using a simple calculation on that parameter:

The screenshot shows the Tableau Data Source Editor interface. On the left, there's a sidebar with sections for 'Tables', 'Parameters', and 'Search'. The main area is titled 'Sheet 7' and contains a 'Marks' shelf with options like 'Automatic', 'Date', 'Geo', 'Text', 'Detail', and 'Twisty'. Below the Marks shelf is a 'Drop Fields Here' area. At the bottom of the editor are tabs for 'Data Source', 'MeasuresSwitch', 'CategorySwitch', 'AggregationSwitch', 'Combination', '1st Sheet Snap', '2nd Sheet Snap', 'Dashboard', 'Sheet 7', and 'Help'.

Use as a Data Source

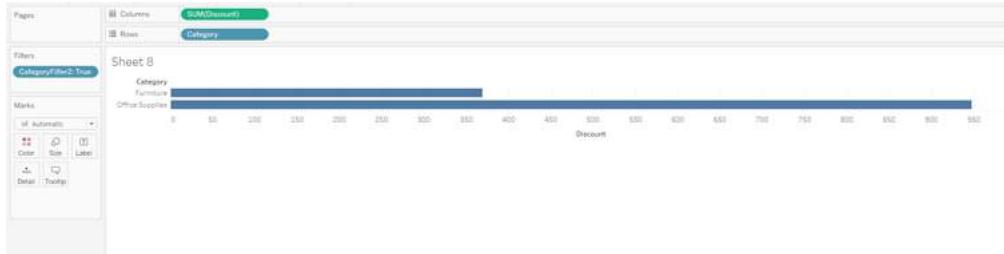
Slightly more complicated – and some of the blogs I mention below go into this – but this is basically the trick of storing multiple values in a Parameter that you can refer to later. You can do this using some form of delimiter and I often use a “~” so a parameter could look like:



This contains two of the category names, separated by a “~”. Then, you can search for these using another calculated field:



Which will return ‘True’ if it can find one of the categories in the DataSource parameter. You can then use this as a filter as well:



In combination with parameter actions, you can do some pretty powerful things with this technique. See some of the blogs below for more details on these.

Other Uses and Resources:

- Create **selections boxes** with parameter actions.
- Create **multi-selection boxes** (cc. Marc Reid).
- Create more **custom UI options**. I have created custom scroll bars in work, following this **great blog** by Lindsay Betzendahl – very useful if you have more than one worksheet to scroll at the same time.
- Using parameters as a data source – extension of the multi-select box – but you can use parameters to store anything really, which you can then reference via calculations. For example co-ordinates. See my **blog** on my Bob Ross viz where I used a lot of this.
- I haven't tried this yet, but you could go full Parameter Schema as described by **Rosario Gauna and Klaus Schulte** and essentially use parameters to create a query language for really customisable dashboards.

So as I said – versatile!

CJ: One of my favourite blogs of yours is citing process on inspiration. What are some upcoming things on your list of ideas to try out next?

A: I have an ever growing list of things I want to do next – some being a technical focus (e.g. a type of chart), some being a particular subject and some just being one specific line of text that has stuck in my head (e.g. a song lyric). A few on my list are:

- Charlie Parker (Alto Saxophone player)
- The Weather in Kington Langley (best not to ask)
- Coffee
- Whisky!
- Some sort of animated waffle chart
- A Sankey, as I haven't ever done one!
- I'm sure there will be many more 'Just for Fun' vizzes too

I'd also like to do more vizzes on Sustainability and Climate – hugely important issues that always deserve more light shining on them!

CJ: Finally, a fun one to end. If you were to redesign an old dashboard knowing what you know now, what would you change and why?

A: Good question! There are lots of vizzes I'd like to go back to and adapt. If I were to pick one, I'd go back well before I started doing Makeover Mondays and getting involved with the community to one of the very first vizzes I published on Public.

This was a viz I did on a bit of music theory called the '**Circle of Fifths**' and at the time I was really happy with what I had done. Looking back at it now and there is a lot I could do better. The design was pretty basic, and now I have done a music themed IronViz I think I can take learnings from that into this one – for example the use of icons and getting them to line up well.

Also this viz was done before I had learned anything about parameter actions! So there is functionality in it, but it is all rather painfully done in Action filters and careful positioning. I think I can get this one working much cleaner with that knowledge.

Map layers would also be a huge advantage in this viz as I was putting a lot of different elements together into one view.

I think I will probably re-do this viz at some point – I'll have to get your view on the next iteration!

CJ Round-up:

I'll keep it short and sweet this month. Ant killed it. I'm loving this blog and have learnt so much along the way. I particularly have loved the variation in different parameter user cases he mentions. This guest blog oozes creativity from a lot of different members of the community so I'm pleased to see the sheer number of references Ant cites for inspiration. His shout-outs covered a whole range of topics too. That's what it's all about!

As always, A huge thank you to Ant – I can tell a great amount of time and detail went into this. Looking forward to seeing some of your upcoming vizzes.

LOGGING OFF,

CJ

TACKLING RADAR CHARTS

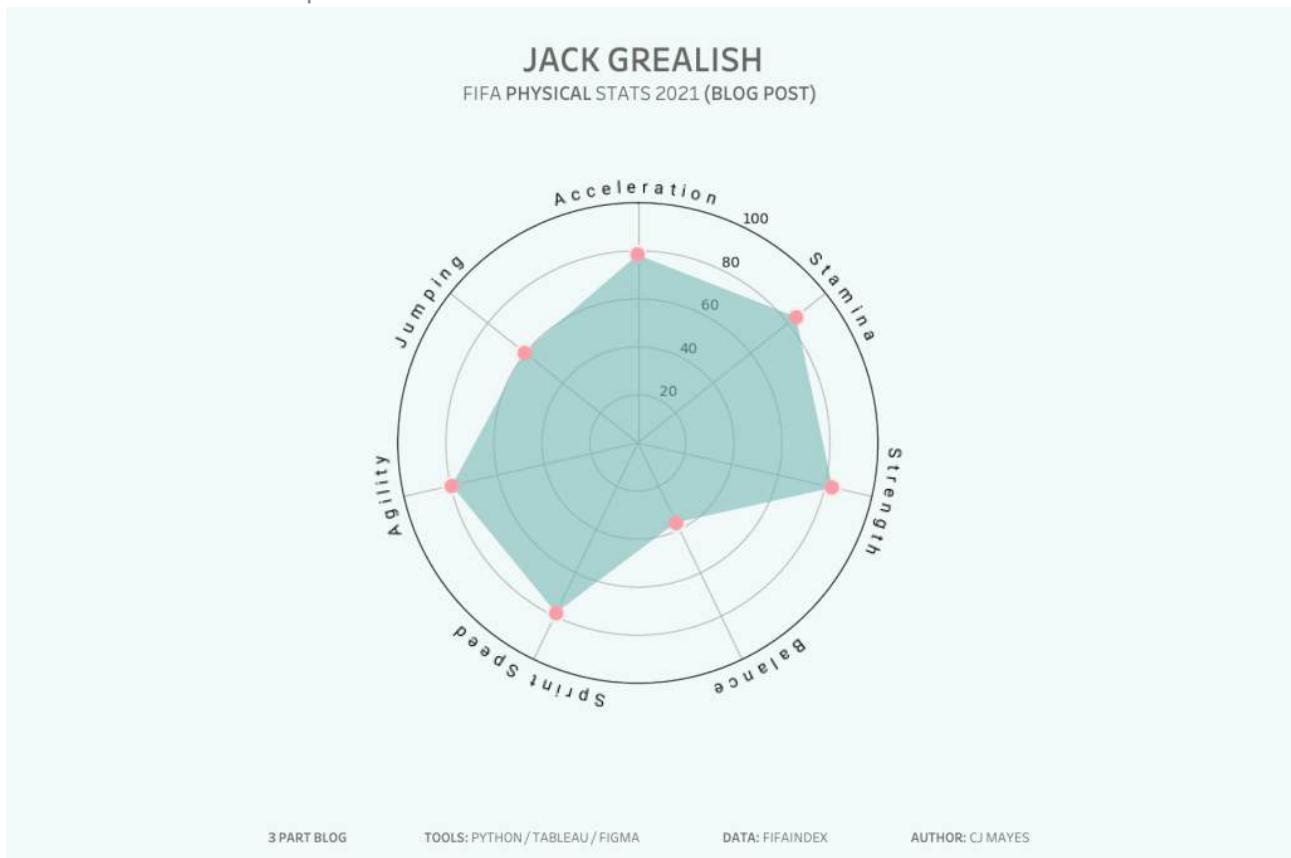
Hi All,

Another quick sports run-through this week.

Fun fact before we start, Jack Grealish broke the record for being fouled more times than any other soccer (football) player last season, with a total of 167 fouls won.

RADAR CHARTS

Radar charts are nothing new in the community but I am hoping to create more of a tableau 'bridge' for those that usually create their charts in Python. A radar chart is useful when trying to compare the relative weight or importance of different dimensions within one or more entities.



This blog post will be split into three sections outlined below. We will be looking to recreate the above visualisation in its entirety.

1. Python (Optional)
2. Tableau Build
3. Figma Design

A few shout-outs before we begin.

Firstly, **Mckay Johns**, I was looking through his original **radar chart** python tutorial which paved the way in piecing together my own code. He is killing it in the sports world making python more accessible for all.

Secondly, **Toan Hoang**. You will see a lot of the calculations are similar, if not the same to Toan's tutorial of **radar charts**. It is so easy to follow and would recommend giving it a go, as well as, if not prior to this blog! Lastly, **Autumn Battani** for giving me some commentary on the design aspect. You will see in section three how this played out in terms of circular text writing. Autumn has a clear talent for design so I am always looking on ways to improve on this front, from her.

I really owe it to these three individuals for the blog, I am just gluing the ideas together with the odd amendment rather than building anything from complete scratch so all credit goes to them.

PART 1 – PYTHON (OPTIONAL)

You can find the code on Github. I used PyCharm Community to run the code but feel free to use any preference of your own. We will be using the python code simply to create the background for our visualisation. If you would like to gloss over the python aspect, I have saved down a copy of the blank template on the GIT repo.

```

3  import matplotlib.pyplot as plt
4  import numpy as np
5
6  #Insert number of segments
7  print('What number of segments would you like? Enter a number:')
8  dimension = int(input())
9
10 # Leaving the factors as blank titles
11 factors = ['']*dimension
12
13 # New scale should be from 0 to 100.
14 new_max = 100
15 new_min = 0
16 new_range = new_max - new_min
17
18 # Each attribute we'll plot in the radar chart.
19 labels = ['']*dimension
20
21 #Keeping values blank
22 values = [0]*dimension
23
24 # Number of variables we're plotting.
25 num_vars = len(labels)
26
27 # Split the circle into even parts and save the angles
28 # so we know where to put each axis.
29 angles = np.linspace(0, 2 * np.pi, num_vars, endpoint=False).tolist()
30
31 # ax = plt.subplot(polar=True)
32 fig, ax = plt.subplots(figsize=(6, 6), subplot_kw=dict(polar=True))
33
34 # Fix axis to go in the right order and start at 12 o'clock.
35 ax.set_theta_offset(np.pi / 2)
36 ax.set_theta_direction(-1)
37
38 # Labeling Blank
39 ax.set_thetagrids(np.degrees(angles), labels)
40
41 # Ensure radar goes from 0 to 100.
42 ax.set_ylim(0, 100)
43
44 # Set position of y-labels (0-100) to be in the middle
45 # of the first two axes.
46 ax.set_rlabel_position(100 / num_vars)
47
48 # Change the background color inside the circle itself.
49 ax.set_facecolor('#FAFAFA')
50
51 #Save with Transparent Background For Tableau
52 plt.savefig('Demo.png', transparent=True)

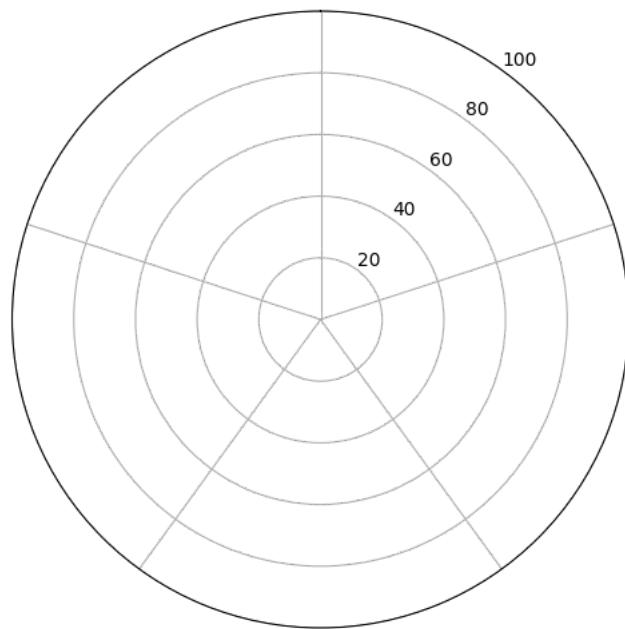
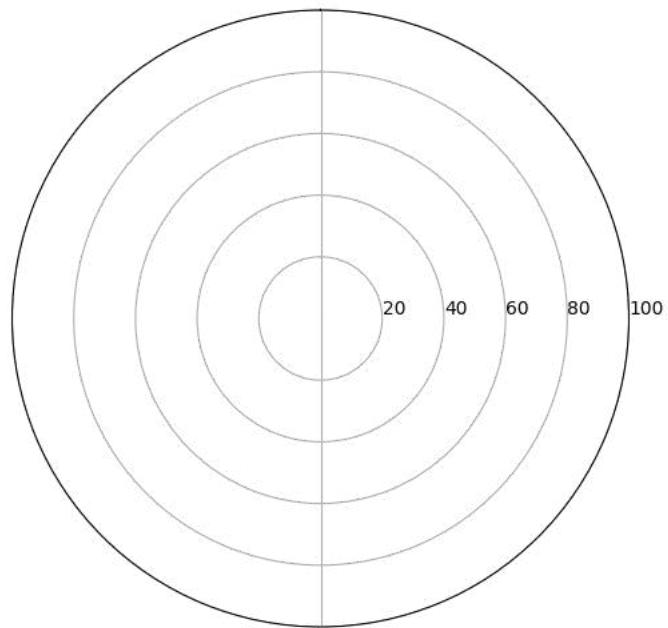
```

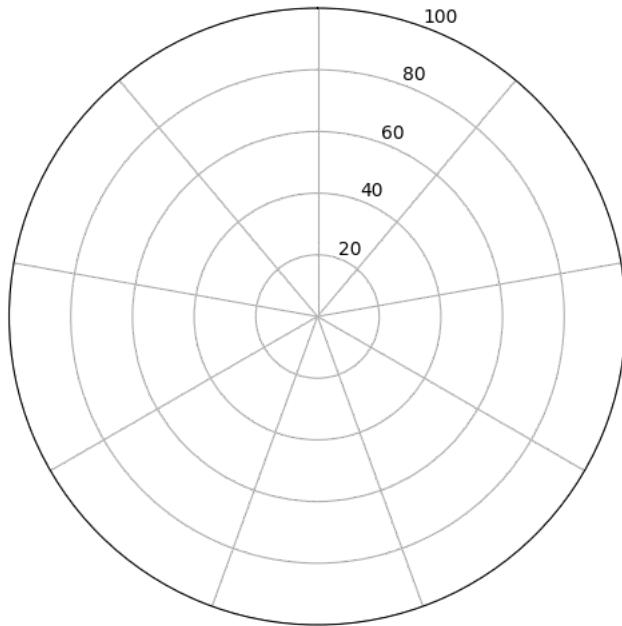
What happens when we run the code?

It will pop up asking for an input in the terminal. You will need to enter a number representing the number of metrics. In the case of the Jack Grealish dashboard this number was 7 (segments) accounting for Acceleration, Stamina, Strength, Balance, Sprint Speed, Agility and Jumping.

I've put some other examples of different segments saved on the GIT Repo so you can pick one suitable for your needs.

Here are some examples:





Don't forget if this is your first time trying this tutorial you may need to pip install numpy and matplotlib in the terminal.

One thing I'm particularly happy with is the final line of code which saves the background as transparent.

This will be super helpful for when we bring this image in as a map background on Tableau!

```
plt.savefig('Demo.png', transparent=True)
```

A final thing to note before we move on to the build is that I have made the numbers fall between 0-100 as that is what the FIFAINDEX metrics are out of. This is something to be cautious of, especially moving into the tableau section as you will have to find work arounds if you have separate metrics of all different ranges.

PART 2 – TABLEAU

You can access a copy of the original data on git. You will see it only has two columns, the dimension and an associated value between 0 and 100. The data I am using, was taken from the FIFA Index website, [here](#).

Physical	
Acceleration	79
Stamina	80
Strength	61
Balance	84
Sprint Speed	79
Agility	85
Jumping	37

Feel free to download the workbook using the link at the top of the page as a starting point for the visualisation.

The Calculations

There are 6 calculations within the workbook.

The first is index, which returns the index of the current row in the partition without any sorting. The next is count of dimension, which totals the number of different segment/categories. The next is Normal Value,

where we make the value a decimal between 0 and 1 by dividing by 100. The degrees calculation is where each of the points are rotated. The degrees will be the gap between each of the dimensions.

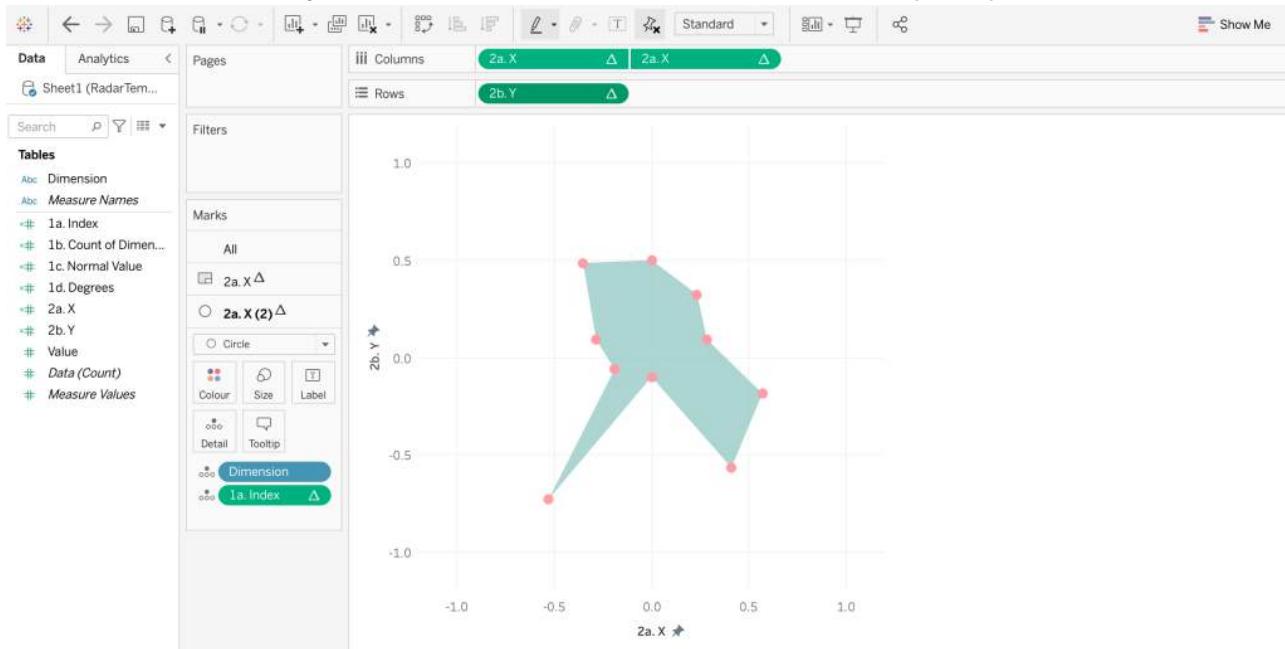
Finally the X and Y values use sin and cosine to make the points circular. The calculation will include degrees for the set spacing, index for ranking purposes and then the value to be able to give the distance away from the centre, i.e the player value/metric.

Hopefully that all makes sense. Once again, thank you to Toan Hoang for the inspiration and starting basis of the calculations.

You may have noticed I haven't written all the calcs out as it will be easier to go in and replace the dataset than build from scratch.

The Build

You can go ahead and replace references with your new data, ideally keeping dimension and value named correctly. Value must remain between 0 and 100. This is super important.



Here is an example above, of me replacing the dataset with 10 new dimension and values.

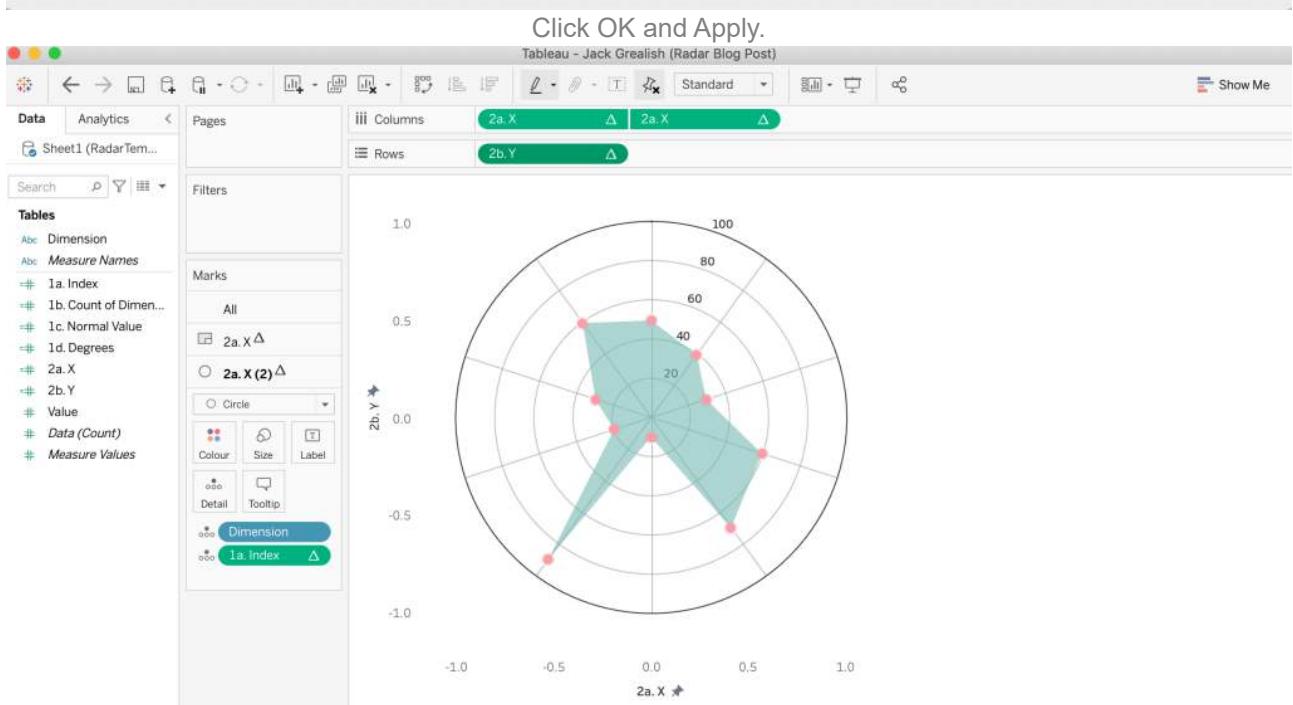
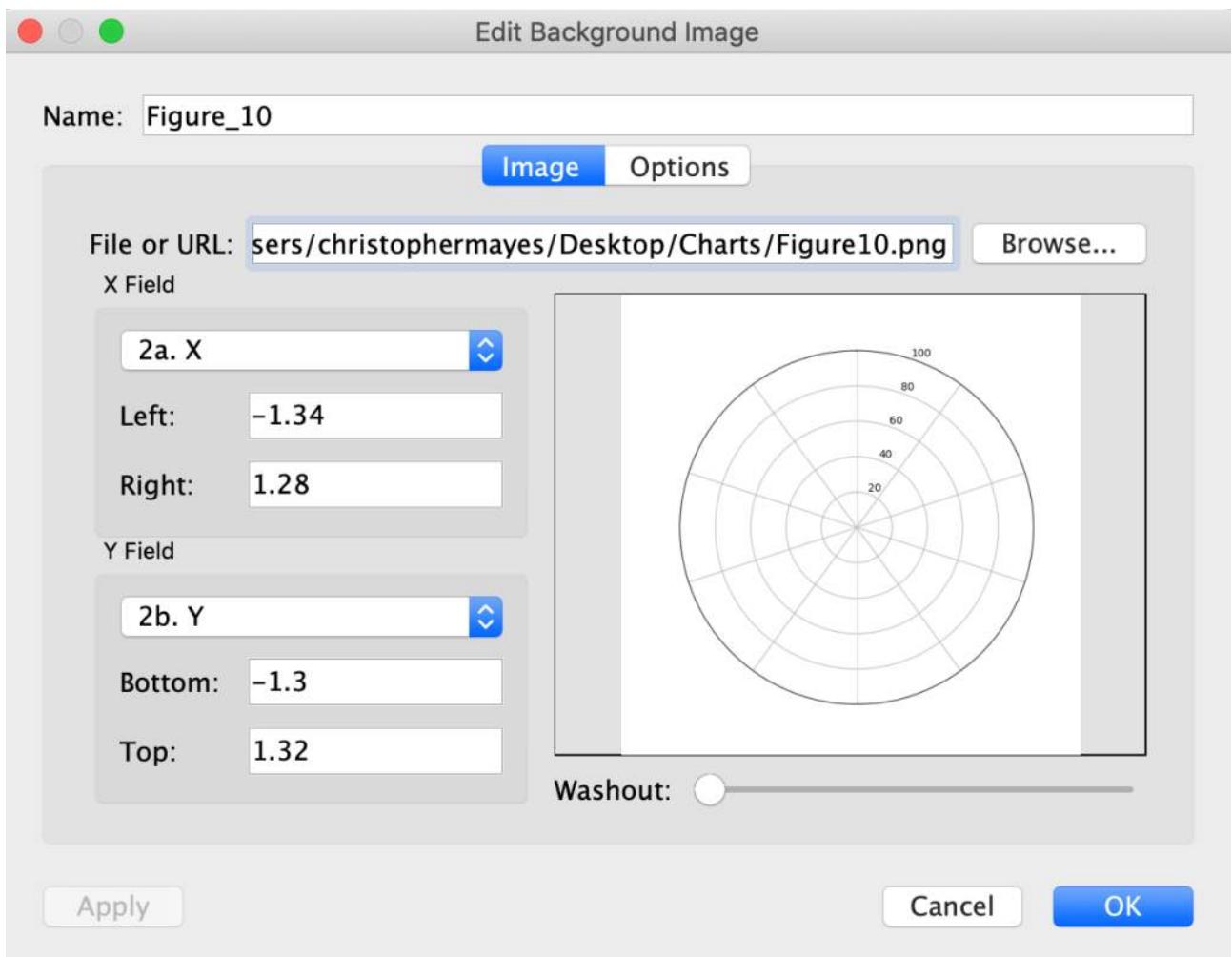
So now we will want to add a background.

Go to Maps – Background Images – datasetname.

Edit the chart to have the following components for X and Y. In Options, Leave lock aspect and always show viz both turned on.

Find the file with the correct segments from my GIT repo, or the python code you have ran, (with input 10).

Set the configuration as below.



We have just updated our radar chart with the new background we made in Python.

Note:

The axis is fixed on both the x and y between -1 and 1.

- If you'd like to understand more about the technical build please see [Toan's fantastic template](#).
- If you build it from scratch you will want to double check your nested calculations from his template.
- Play around with the opacity and colours.

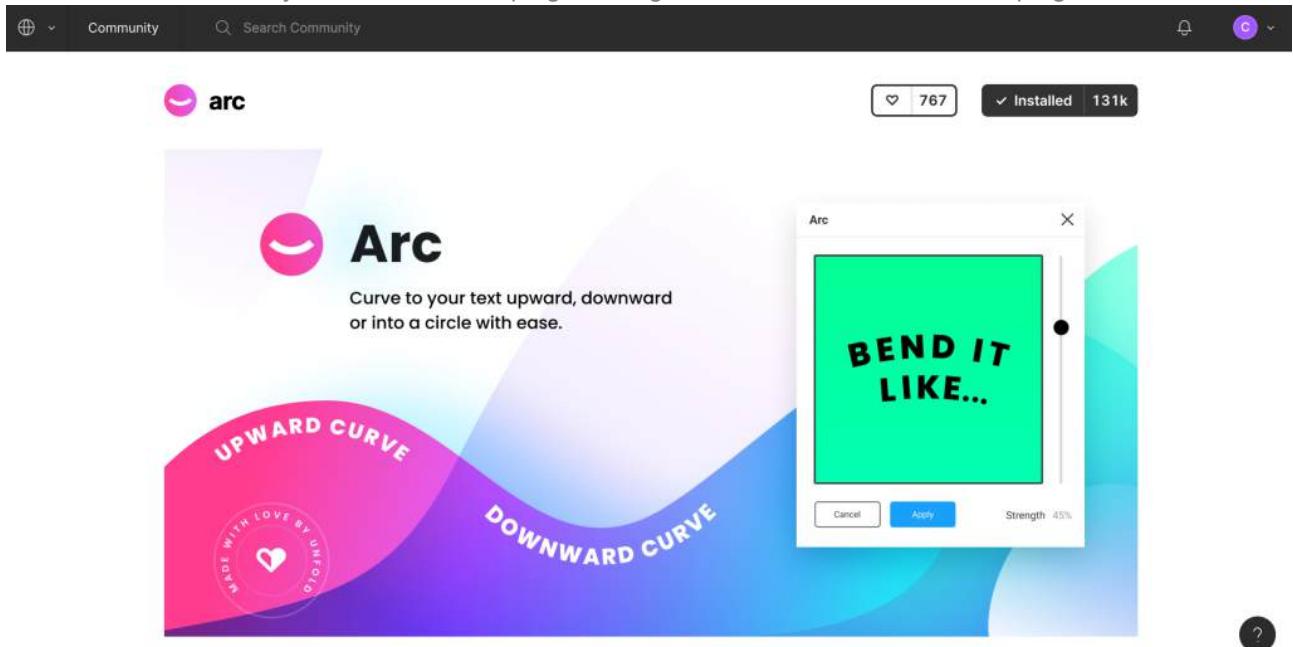
-And there we have it. The final visualisation with the chart background snapped on.

-(Side note: If you are struggling to get your alignment of values to the background image using the configuration I gave, otherwise, try making all the points 100 and align them to the edges, then switch the values to your real values.)

PART 3 – FIGMA DESIGN

Finally, I was asked on a recent **VizConnect** how to make curved writing.

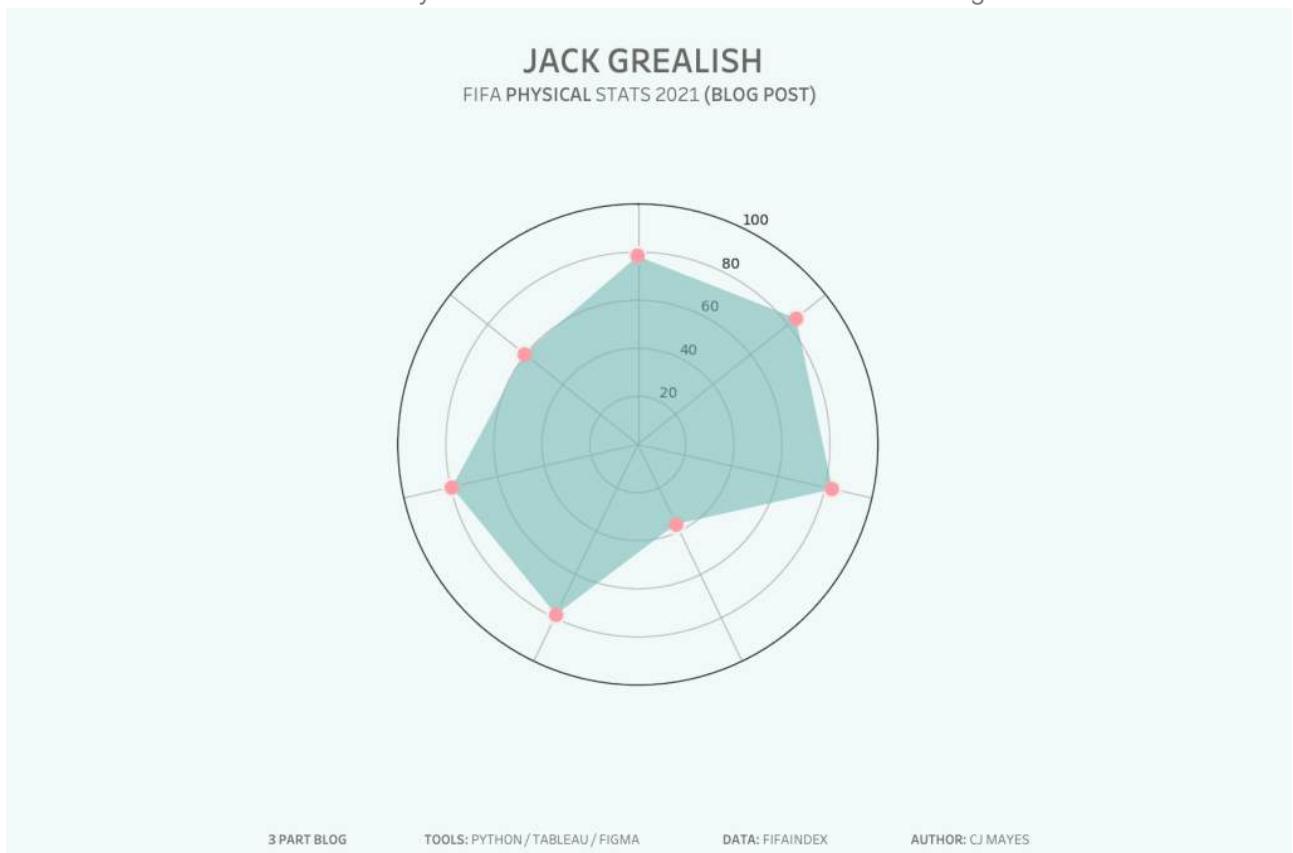
I have recently come across this plugin on Figma called **Arc**. Check out the plug-in, [here](#).



Step 1.

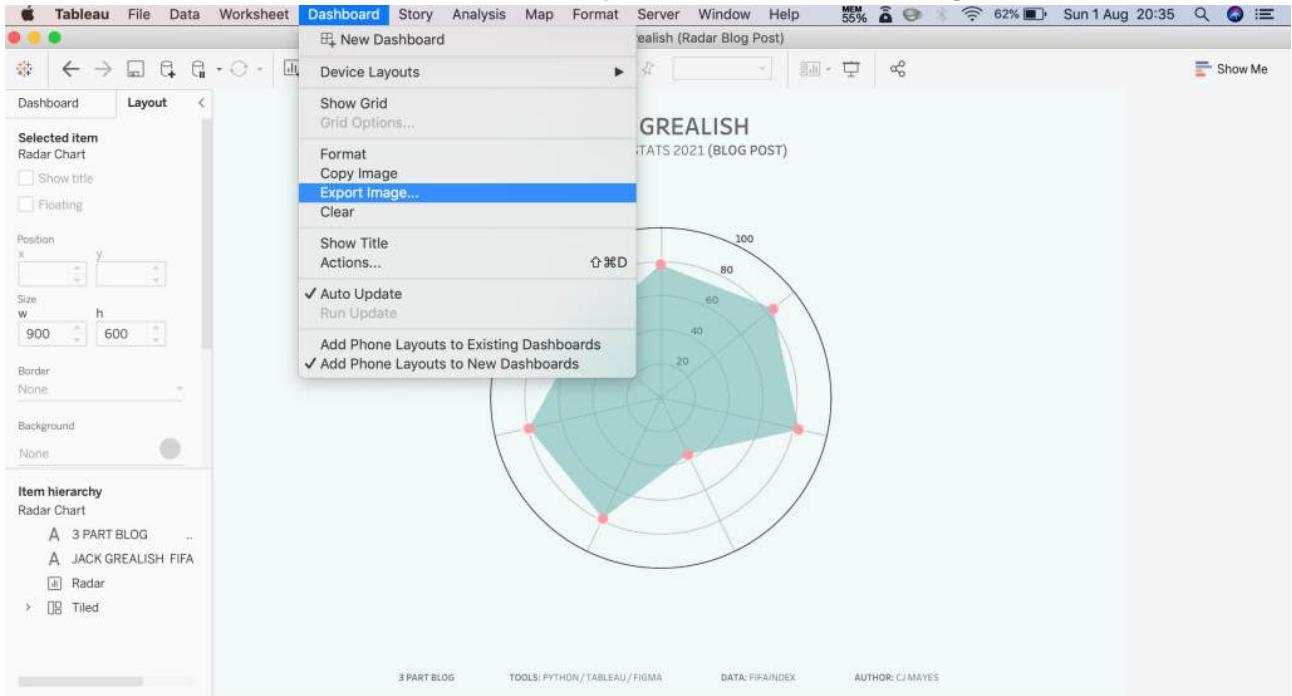
Build your dashboard as desired to size without the background.

Here is my 900x600 dashboard without the curved writing.



So now we will want to add the text at the end of each segment.

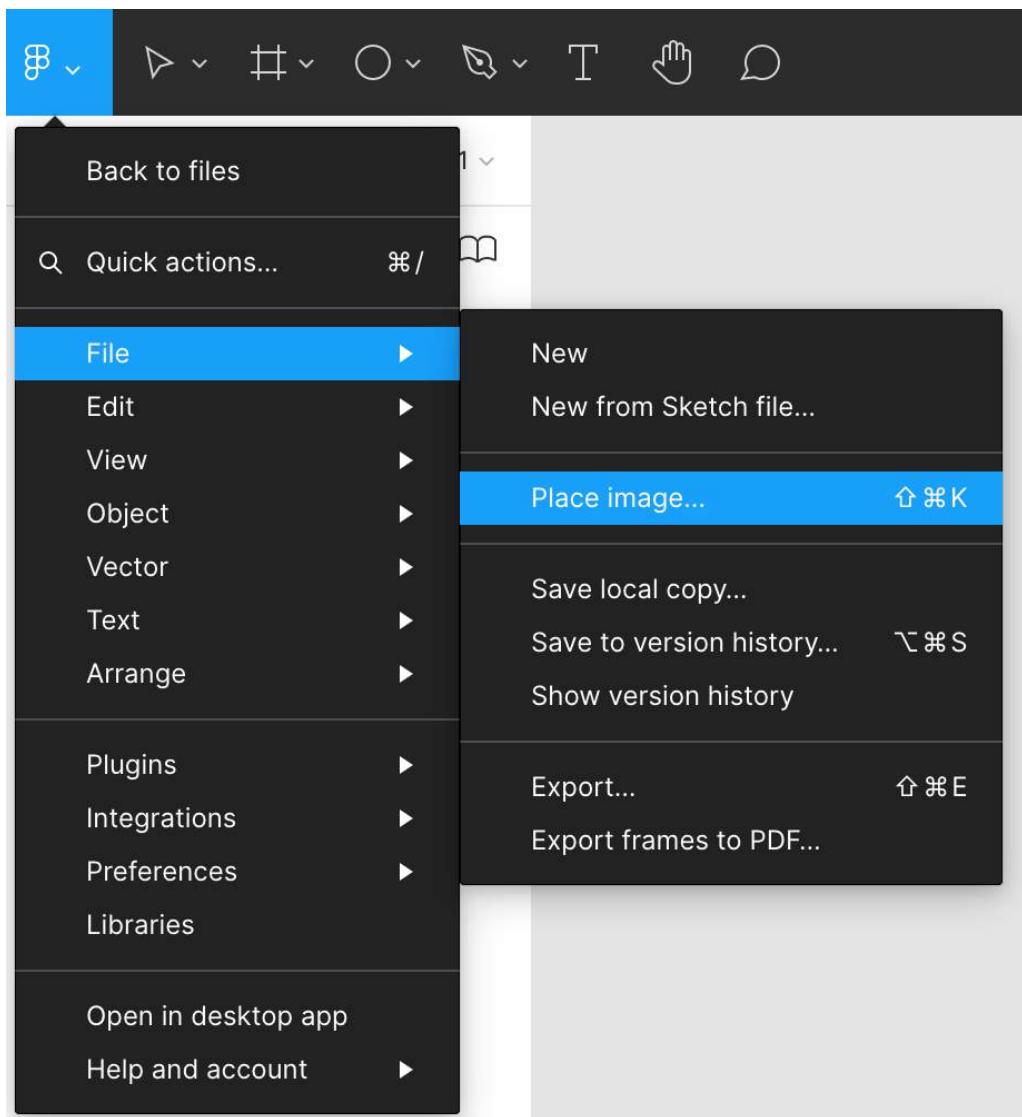
-Go to dashboard and export the dashboard as an image.



-Load up Figma and download the plug-in.

-Open a new blank project.

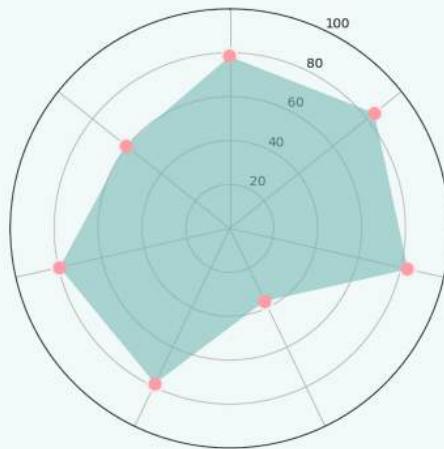
-Go to File, Place Image and locate your dashboard image that we want to add text to.



-Next you will want to use the text tool and create labels for. The text tool is the 6th button on the header above signalled with a "T".

Acceleration Stamina Strength Balance Sprint Speed Agility Jumping

Acceleration	Sprint Speed
Stamina	Agility
Strength	Jumping
Balance	



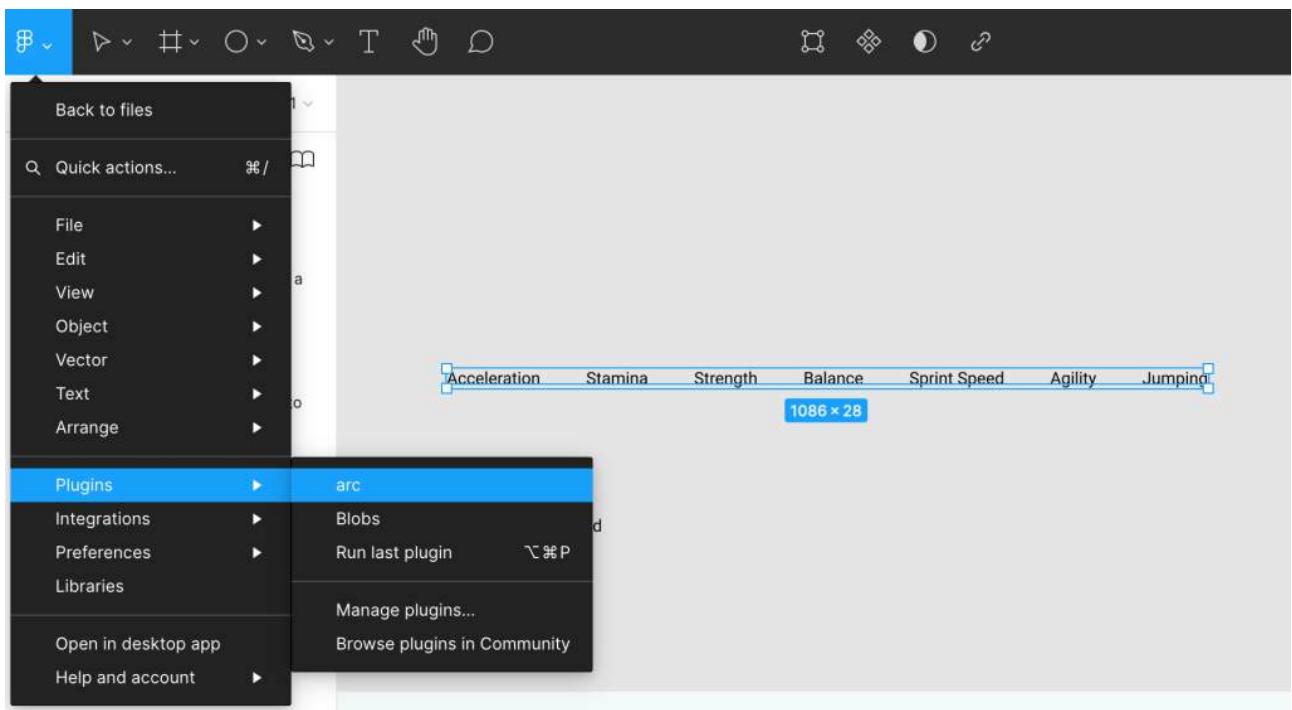
Method 1.

Create the text as one long string with all the dimensions.

Acceleration Stamina Strength Balance Sprint Speed Agility Jumping

1086 × 28

-Go to Figma, Plugins, arc while you have your text highlighted.





arc



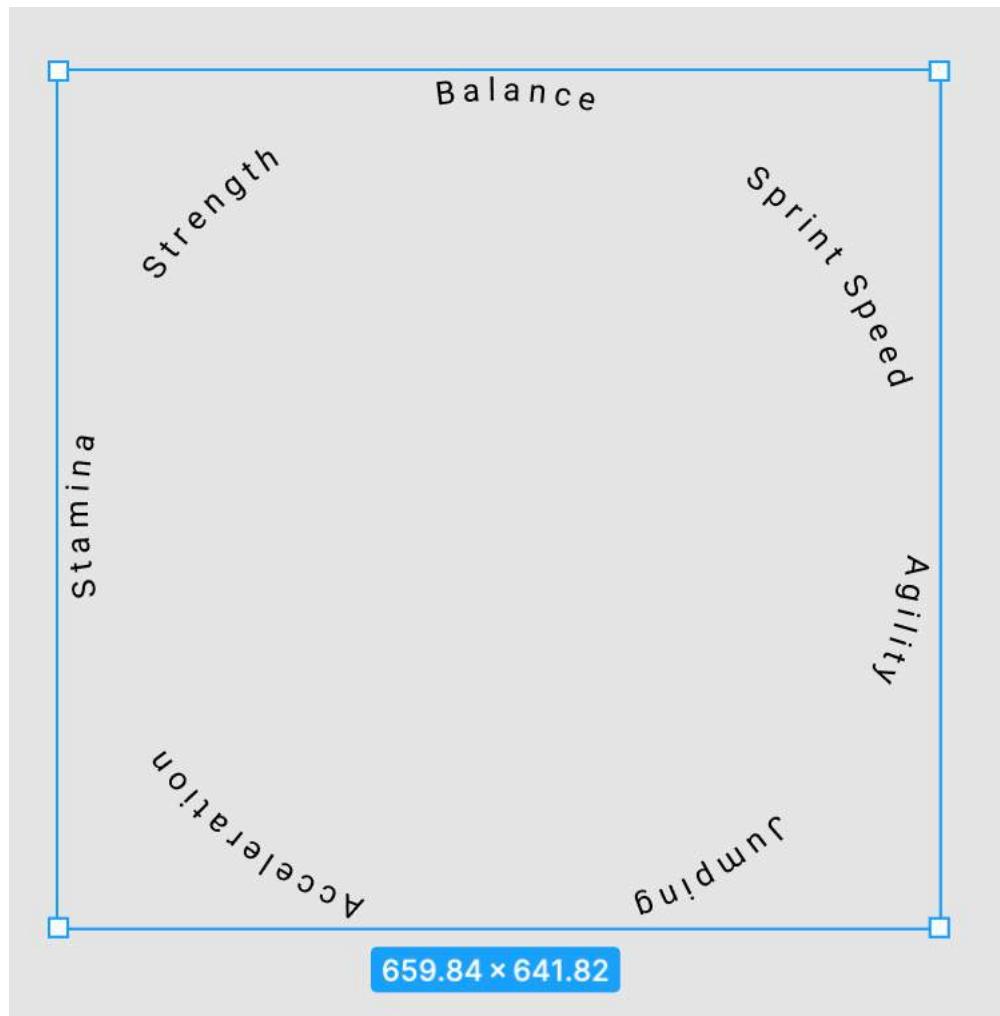
Reset

Apply

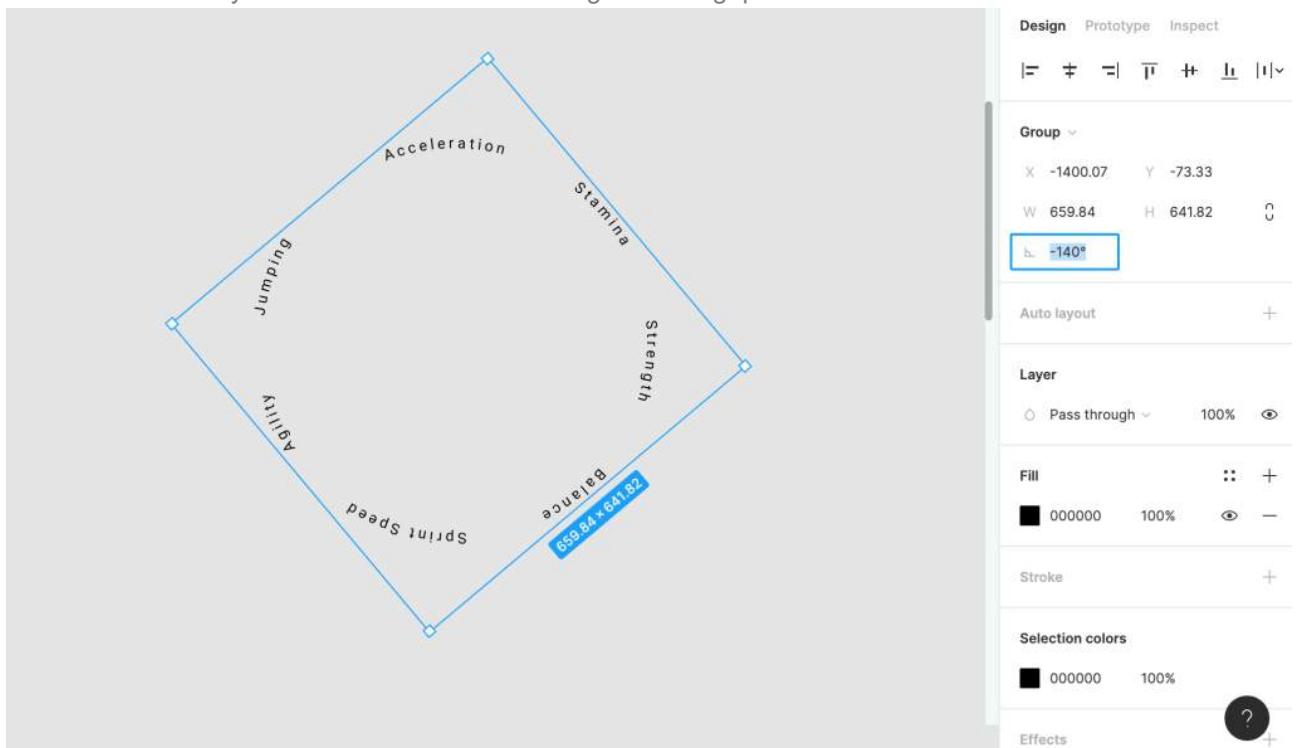
Bend Strength 💪

70 %

Adjust the bend strength to a desired amount, this may take a few re-trys.



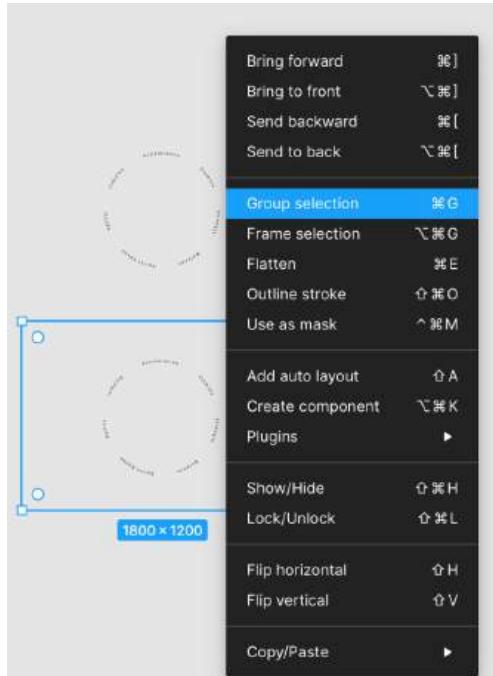
Above is the results. A side note would be that I added in extra manual spaces in the text string to space out the words evenly. Then it was a case of making sure the gap between the first and last word was even.



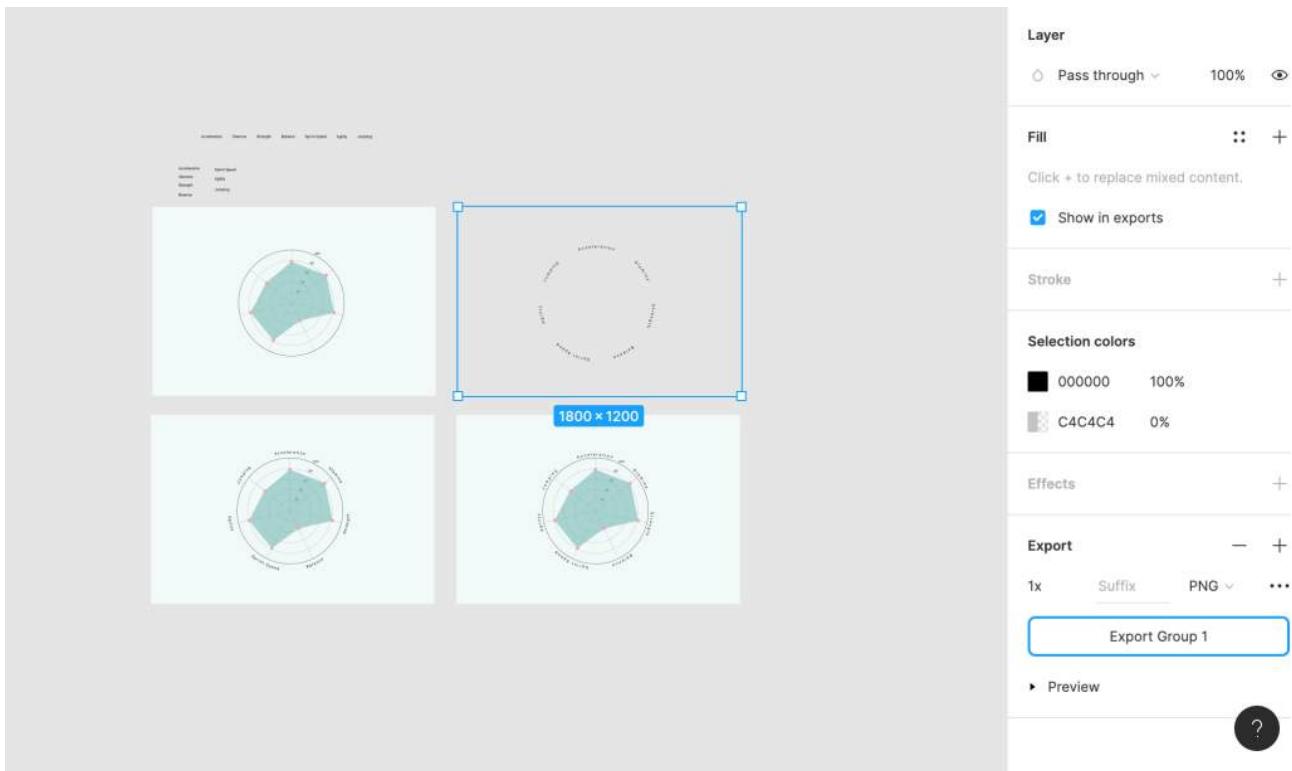
-You'll notice the text needs to be rotated. I amend my file to -140 degrees to get Acceleration to the top.
 -Overlay the file over the original text.



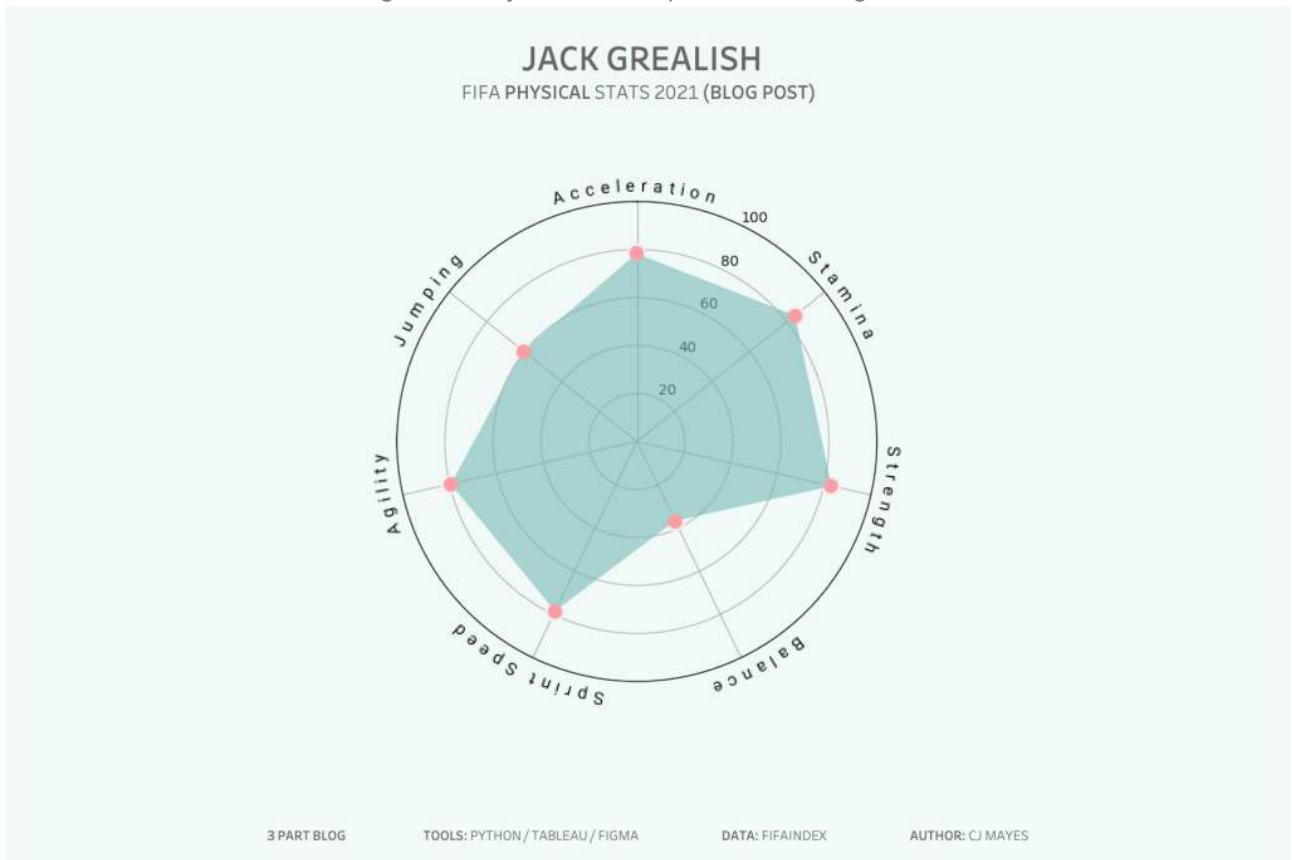
Once you are happy with the sizing and it is overlaid over your original visualisation, you will want to turn down the opacity of the original visualisation. You may need to resize (proportionally) the text to fit round the chart. This is done by clicking on the original image and going to layer pass-through and turning it to 0. -Next you want to group the original (now transparent) viz with your new text. This will mean that your text can now be saved with the correct proportions. This is because we don't want to export the visualisation as an image back in, we just want to keep the text! You can group your text and background image through using ctrl/cmd + G, or right click Group selection.



-Finally export the new image and bring it into your Tableau Dashboard as an image!



If all goes well, you will end up with something like this:

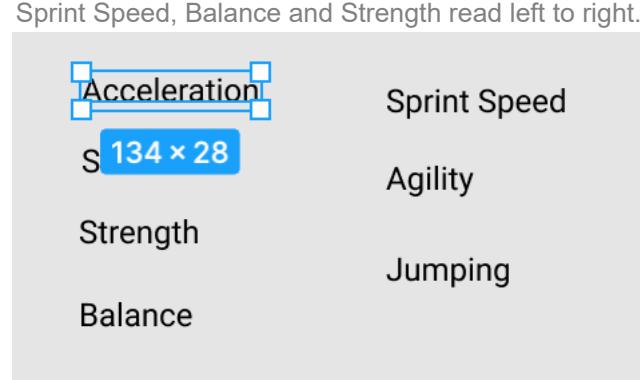


A little bit tricky. This was probably only my third time using Figma so apologies if it's not best practice. I hope I can improve and share simultaneously moving forward. Let me know how you get on.

Method 2

During discussions with Autumn, I wanted to know if the text should face upwards at the bottom. It's a bit of an open debate as to whether the text should continually wrap around clockwise, or flip and be read from left to right. I'll let you make up what you prefer. The above tutorial outlines a continual wrap.

If you prefer the second option (the bottom half of the writing facing inwards) then you will need to follow the same procedure as above but make each word individually with its own text wrap/arc and rotation. I won't be covering it off in detail here, but for comparisons here is the difference below. You will see I made Agility, Sprint Speed, Balance and Strength read left to right.

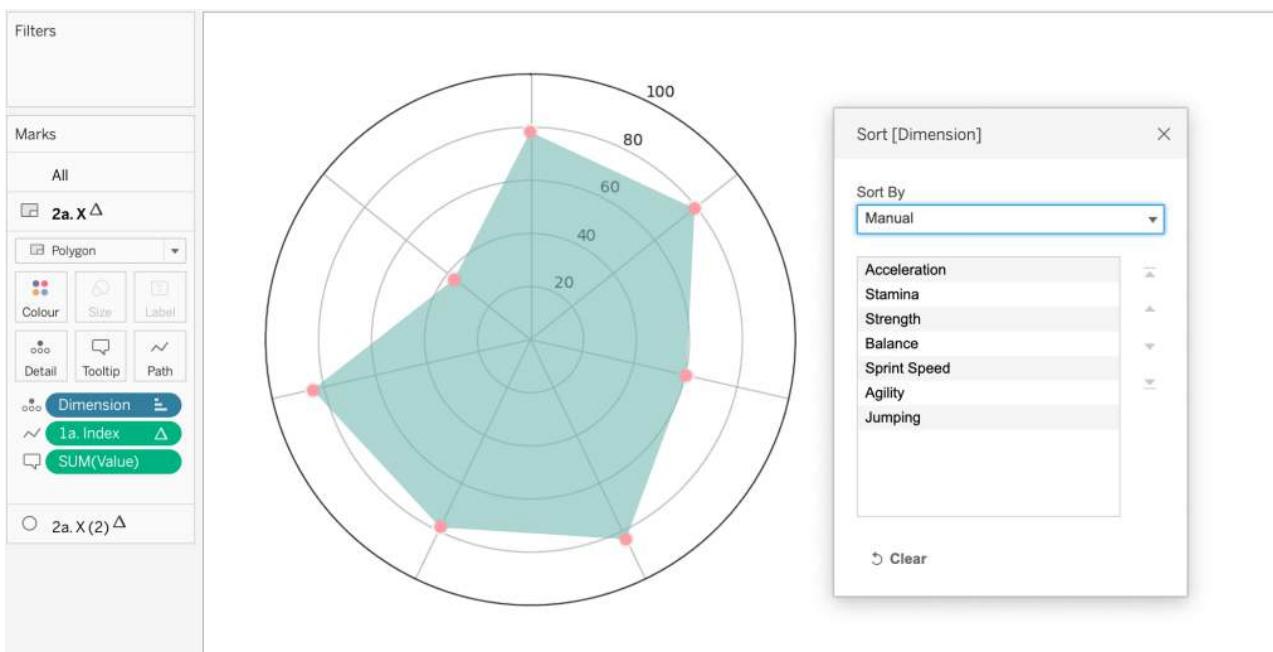




The final thing to check in Tableau once you have your headers in place is that your dimensions are sorted in the correct order!

This is a super important step to take if you have done labelling.

Right click on dimension, go to sort and make sure they are sorted clockwise in the same order as your text labels.



GOING FURTHER

Try playing around with different segment numbers.

Try adding in a different players metrics over the top.

Try making a whole team's metrics in grid form.

As always, Let me know how you get on with this one. I can be reached on Twitter, @_CJMayes. A simple one in terms of Tableau build, but maybe a few nuances in terms of the background alignment and

challenges with Figma curved writing.

LOGGING OFF,

CJ

FEEDBACK LOOPS AND LEVERAGING YOUR SKILLSET WITH SARAH BARTLETT

Welcome to the July edition of “What’s Good?”.

Sarah is one of the most uplifting, committed, supportive and all-around talented members of the community.

Whether it is feedback, hosting events, uplifting others, creating art, visualisations or blogging.

Sarah is a Tableau Zen Master, previous and current. She is also a Tableau Social Ambassador, LondonTUG representative and founder of IronQuest. You can find her on Twitter, Youtube, Tableau Public and her blog.

This month’s topic is on the feedback loop and how to leverage your skills.

You can find her social accounts through [this link](#).

The image shows the homepage of Sarah Bartlett's website. The header is purple with white text for "Home", "About Me", "Tutorials", "iron Quest", "Dear Data", "Talks", and "Contact". Below the header is a dark purple banner with the text "SARAH LOVES DATA" in white, followed by "For the love of data, analytics & Tableau | Home of #IronQuest".



IRON QUEST

Iron Quest Diversity in Entertainment Recap

July 12, 2021 — 0 Comments



IRON QUEST, IRON VIZ

Reasons to Enter Iron Viz 2021

June 2, 2021 — 2 Comments

CJ: Sarah, thank you for agreeing to be part of the What’s Good series. To start, how is your new role going?

Are you enjoying being back as a Tableau Developer?



Sarah Bartlett @sarahlovesdata · Jul 6

Today is my first day working at @RedHat as a Tableau Enablement Consultant! 🎉

...

I'm super excited to work with an amazing team on the #Tableau Centre of Excellence, supporting internal Tableau users & helping them make better data informed decisions #lifeatredhat

S: Firstly, thank you for inviting me to be part of the What’s Good series. I’m really enjoying my new role at Red Hat! While I never stopped being a Tableau Developer, this role will see me using Tableau more than I was previously. In addition to that, I’ll be supporting our internal Tableau Community, including building out resources to ensure our users are well-equipped to create world-class analytics and make data-informed decisions.

CJ: You founded your [blog](#) back in 2016. For those that live under a rock(!), Explain a little about your data journey so far.

S: That’s right, but I actually began my Tableau journey in 2014. I was introduced to Tableau whilst working as an Analyst in the Facilities Management industry. At the time I was working heavily in Excel so as you can imagine, Tableau’s capabilities blew me away! I discovered the community when looking for ways to improve my Tableau skills. This was around the same time that #MakeoverMonday started. I joined Twitter and nervously submitted my first-ever Tableau Public viz in week 9 of that year. From there, I jumped at the

opportunity to participate in more community projects and attend Tableau User Group events. I was lucky enough to make it to the final of IronViz Europe in 2018 and my IronViz experience inspired me to launch the #IronQuest project in 2019; a project which follows the same format as the IronViz feeder competition. For the last 4 years I have been working as a Tableau Consultant, supporting clients with their Tableau needs, as well as getting involved in shaping data strategies and internal community building.

CJ: We've just had IronViz 2021 feeder. What are some of your reflections?

S: IronViz season is always a busy, but exciting time for me! Given my leadership of IronQuest and its close association with IronViz, I tend to put any IronQuest activities on hold while the feeder(s) are open. For the first time in a number of years, I was neither judging nor competing in IronViz this year. While the judging experience is great, it means you can't really get immersed in the contest like you would as a regular on-looker. This year, I was able to enjoy the entries as they appeared on Twitter (in previous years I've muted the hashtag in an effort to remain impartial as a judge). It feels like the standard of entries raises a notch every year, with this year being no exception. There are so many impressive vizzes in the IronViz gallery! However, I realise how IronViz can also stir up emotions of 'not being good enough' as participants inevitably compare themselves to the competition. This is one of the reasons I set up IronQuest; to give people a safe space to practice and improve their skills and in turn, their confidence. I regularly remind participants, IronViz isn't all about winning. That might sound counterintuitive but it's no different to running a marathon. The vast majority of athletes don't enter with the hope of winning. Instead, they enter for the challenge and the experience; often in competition with their own best performance, rather than anyone else. With over 300 people entering IronViz this year, the odds of winning or even reaching the top 10, are slim. All things considered, participants shouldn't feel disheartened if they don't make the top spot. If you participated in IronViz this year you likely pushed yourself out of your comfort zone, learnt new skills, and hopefully enjoyed the experience. That in itself is something to be proud of.

CJ: You alongside others in the community set up feedback sessions for IronViz. Of the three marking criteria Design, Story-Telling and Analysis which do you find most community members excel at?

S: I would say it depends. The community as a whole is passionate about design. Many community members share blogs with design tips or tutorials on how to use complimentary tools (such as Figma) to improve their designs in Tableau. Likewise, regular participants in community projects such as MakeoverMonday tend to learn data viz design best practices quite quickly, simply by looking at the work shared by more experienced participants or project leaders and regular practice. As a result, the standard of data viz designs shared in the community have improved in recent years. The same goes for storytelling too. I would say the area people tend to struggle with the most is analysis. In Iron Viz, the judges aren't looking for you to simply present the data you found. They want you to bring the interesting insights in your data to the surface and share these instead. In other words, as well as showing the "what", attempt to show the "why" and "how". All of this must be done whilst selecting the best-suited charts for the job too! I think people often think that adding a fancy chart to a viz will score them extra points but that's simply not the case. If the chart helps to tell the story and uncover interesting insights that's great. But including a chart simply because you think it looks good isn't the right approach. There's nothing wrong with using bar charts if they work effectively with your data.

CJ: You've done 10 IronQuest Feedback videos on youtube. How important is it to have feedback? Do you have any common themes you feedback on for the IronQuest?

Sarah Bartlett
247 subscribers

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1:25:23	1:25:47	2:21:08	2:02:08	1:51:09
Iron Quest Feedback - Diversity in Entertainment... 18 views • 6 days ago	Iron Quest Feedback - Games with Kevin Flerlage 97 views • 2 months ago	Iron Quest Feedback - History 101 views • 4 months ago	Iron Quest Feedback - Passion Projects 139 views • 5 months ago	IronQuest Feedback - Black & White 112 views • 6 months ago
1:46:01	3:40:50	53:06	1:49:13	2:13:07
Iron Quest Feedback - Mobile First 114 views • 8 months ago	Iron Quest Feedback - Myths, Mystery & Magic 95 views • 9 months ago	Iron Quest Feedback - Quantified Self 131 views • 1 year ago	Iron Quest Feedback - Maps 137 views • 1 year ago	Iron Quest Feedback - Healthcare in Prisons 70 views • 1 year ago

S: Feedback is an important part of IronQuest. I set up this project to give people a safe space to practice and improve their skills. I believe feedback plays a crucial role in 'getting better' and has been key for me throughout my Tableau journey. Practice alone is great, but if we don't actively seek feedback on our work, I believe we're missing a further opportunity to improve. Through seeking feedback from others, we can identify areas for improvement in our work that we may not have even considered. Often simple tweaks identified through feedback can make a big difference too.

In terms of common feedback themes, most of our feedback focuses on design and presentation. With a project like IronQuest where everyone is using their own datasets, it's more difficult to offer feedback on the way the data has been analysed (unless there's something obvious that could be changed). Effective use of colour, accessibility considerations, font hierarchies and layout are things that we cover frequently. You'll be surprised how many people publish vizes or charts without titles too!

CJ: Have you had a favourite IronQuest?

3:40:50	53:06
Iron Quest Feedback - Myths, Mystery & Magic 95 views • 9 months ago	Iron Quest Feedback - Quantified Self 131 views • 1 year ago

S: I actually have two! Both were from 2020; the Quantified Self round and "Myths, Mystery and Magic". Firstly, the Quantified Self round was run in the middle of the first Coronavirus wave. At this point, many countries had lockdowns in place and peoples lives had inevitably changed dramatically. As a result, many people were taking up new hobbies or tracking aspects of their lives they had never recorded before. This meant that many people had data that was begging to be visualised! We received a record 64 entries for this round and each viz offered a unique insight into the authors' life. It was really inspiring to see how other people were using the lockdown to their advantage.

My second favourite round was "Myths, Mystery and Magic", which also ran in 2020. The idea of this round was to visualise something fun and wacky, given everything that was going on in the world at the time. The community never fails to disappoint and the entries for this round were everything I had hoped they would

be, and more! Aliens, witches, local legends, mythical creatures, conspiracy theories, and many more. You name it, we had a viz for it!

CJ: Is there a right and wrong way to give feedback? Do you have any considerations for those that want to be more included in both giving and receiving feedback?

S: Yes, I believe there's certainly a way to give feedback that's both effective and sensitive at the same time. Asking for feedback puts the requestor in a vulnerable position. As someone requesting feedback, the last thing you want to hear is that your viz isn't very good or needs significant improvement. **Fi Gordon** has an effective method of giving feedback which I have adopted in my approach. She starts off by calling out things she likes in a viz. This helps to put the requestor at ease and builds confidence. She then follows this up with "I suggest"; drawing attention to areas which could be improved. I think the language here is important. Feedback should always be taken as a suggestion. In the community-setting, nobody is obliged to iterate their viz based on the feedback they receive from others. Nobody understands the viz better than the author and there may be a logical reason why things are designed in a particular way. The feedback purely stands as advice, which can be taken on board or politely ignored.

For those seeking feedback on their work on social media, stating you would like feedback in your post is important. If feedback has not been requested, it should not be given (unless there is a fundamental flaw in the viz which could cause harm or spread misinformation, of course). I tend to give feedback to other authors in private on social media. Not because I don't want others to see the feedback I have offered, but because feedback can be a sensitive topic and may not be well-received in a public setting. I strongly recommend reading this [post](#) by Ben Jones for more thoughts on this topic.

CJ: You produced a wonderful blog on reasons to enter the IronViz. Reason 5 specifically was to get noticed. Were there any new members of the community that caught your eye?

S: I love the way IronViz uncovers new talent! This year was no exception. However, if I start naming authors, I'll inevitably miss someone out! I will say I was so pleased to see so many authors enter IronViz for the first time this year! Many of these authors have been actively involved in the community for less than 12 months. However, even some longer-term community members took the plunge this year! Entering an IronViz feeder is not easy so I commend everyone for taking part.

CJ: You showed tremendous support during the IronViz feeder for those needing motivation. Why was this important to you?

S: Yes, and I touched on it before. IronViz can be an intimidating experience. Seeing other people show off their work on social media while you're still frantically working on your own creates immense pressure. It's at this point, imposter syndrome can kick in and for some people, this is the end of the road. I didn't want anyone to give up or feel like their work wasn't good enough. I felt like it was important to offer a few encouraging words for anyone who needed to hear them. I would hate for people to spend days working on a viz and in the end, not submit it because they felt it wasn't 'up to standard'. I've been in this position myself and it's not fun. Hopefully those posts helped people reach the final stretch!

CJ: You've created some awesome Procreate drawings. Do you consider it solely a hobby or do you think it helps with your data toolkit? In your opinion, what other tools compliment Tableau?



S: Thank you! I got started on Procreate after being inspired by **Autumn Battani**. Autumn gave me an overview of Procreate before I had used it and instantly, I knew I needed to get myself an iPad so I could try it myself. Right now, Procreate is solely a hobby, separate from my Tableau work. I'm still learning the basics and most of what I do is a product of following tutorials others post on YouTube or Instagram. I've always loved drawing and Procreate makes it so easy and fun. I also find drawing to be very relaxing, plus it gives me a chance to be creative outside of Tableau. That being said, at some point I'll explore ways to bring my Procreate work into Tableau. It would also make a great tool for wireframing!

CJ: What are your most favorite places to get inspirations for your drawings and dashboards?

S: For my drawings, my favourite resource is Art with Flo (<https://www.youtube.com/artwithflo>). Her tutorials are fantastic and really well explained.

For my dashboards, Tableau Public is my favourite source of inspiration. I'm always favouriting work there that could be useful to my future self. For inspiration outside of the Tableau world, my go-to places for inspiration are Pinterest, Dribble, Behance and Instagram. I keep libraries of inspiration on sites which allow it and try to organise my inspirations so they are easy to find later.

CJ: A lot of people want to get better at something but often fall short because of a variety of reasons such as time and motivation. Has this ever happened to you? What tips could you give?

S: Yes, of course! I think we all set out with the best intentions of practicing regularly, but then life gets in the way! I strongly believe that if you want to do something, you'll make the time for it, no matter how busy you are (as opposed to the "I'll do it when I find the time" approach). I try to schedule time in my calendar for things I want to do. That could be an hour before work, or some time in the evening. Do whatever works best for you. When I was learning Tableau, I stopped watching TV completely. I would put my daughter to bed in the evening and go straight onto Tableau. I've relaxed a bit now and use TV time as more of a reward these days. For example, if you sit down to watch Netflix in the evening, you'll likely be there all night. Netflix is designed to make you want to binge-watch shows! But if you discipline yourself to spend an hour or two on the thing you want to get better at first, you could always squeeze in an episode of your favourite show as a reward afterwards.

CJ: What's next for you?

S: Good question! Well, I recently started my new role at Red Hat so I'm excited to get more involved with that. Outside of work, I'm currently planning the next IronQuest round. It's going to be a good one! I also want to get back into vizing for fun. Much of my work over the past 12 months has been on IronQuest and other initiatives to support the community. As a result, I haven't done a personal viz in a while and I really miss it.

A screenshot of Sarah Bartlett's LinkedIn profile. At the top is a green header with her photo and name. Below is her bio: 'Tableau Zen Master | Founder #IronQuest | Tableau Enablement at Red Hat | London, United Kingdom'. Underneath is a section for 'Recent activity': 'Tableau Zen Master' and 'Tableau Trailblazer Ambassador...'. A 'Read more' link is present. Below this is a 'Follow' button. Under 'Vizzes' (157), there are four thumbnail cards: '#IronQuest Project Tracker', 'W.E.B. Du Bois Data Portrait - Plate 51', 'Hit the Trails', and 'The Myths & Legends Haunting Britain'. Each card includes a star rating, views, and likes.

CJ: Final question.... How do you find the time for everything!

S: Haha! I don't! Nobody can do everything. Believe me, I've tried (and failed). You might be able to keep up the pace for a while but eventually, you'll get burnt out and give up completely. There have been times in the last year or so when I've lost motivation and felt like giving up, but then I remember why I got started in the first place and how much I enjoy blogging, vizing and supporting others in the community. Now I try to balance my time better and give my attention to only a handful of things at a time. I'm getting better at saying "no" to things too!

CJ Round-Up:

I really loved Sarah's marathon analogy in the blog, that the vast majority of athletes don't enter with the hope of winning. Instead, for the challenge and experience. I think it echo's nicely the Tableau quote of "Win or Learn you Can't Lose".

A second element that resonated with me was her view on feedback and its delivery. I particularly would recommend the suggestion of reading [Ben Jones article](#), having gone and read it myself before publishing. Ben mentions trying to put yourself in the shoes of both the giver and the receiver of feedback. I think this mindset will really help shape the language used.

As always, a massive thank you to Sarah for the guest blog. I am super excited to see some of her personal vizzes come to life in the latter half of the year! Wishing her continued success and stay tuned for the next IronQuest!
LOGGING OFF.

IRONVIZFEEDER2021 RESOURCES

My FIRST EVER Iron Viz Entry.

What a feeling. I loved putting together my first ever Iron Viz. In my personal opinion it really has acted as a milestone for the past year of growth and development. Those who know me, know how important continual learning is to me. If you're not learning, you're not growing to be your best. To be able to have a platform where I can learn from others who share a passion for data, whilst celebrating one another's success along the way really is something special.

I have been blown away by the sheer quality of visualisations within the competition. Congratulations to every person who entered.

If you'd like to view some of the entrants seen on Twitter please check out the gallery **Will Sutton** put together [here](#). Tableau at some point will have a more accurate gallery of all entries.

I have written this blog over a series of evenings, just shortly after the feeder has finished. This blog post will cover some raw thoughts on putting together my Iron Viz Feeder. It will be more from an approach and resource angle rather than how well it marries up to the marking criteria. This is in the hope that it may inspire you to take elements from it, improve them and make it your own.

Overall I'm proud of my visualisation because it is a reflection of me. You can check the full version out using the link at the top of the page.

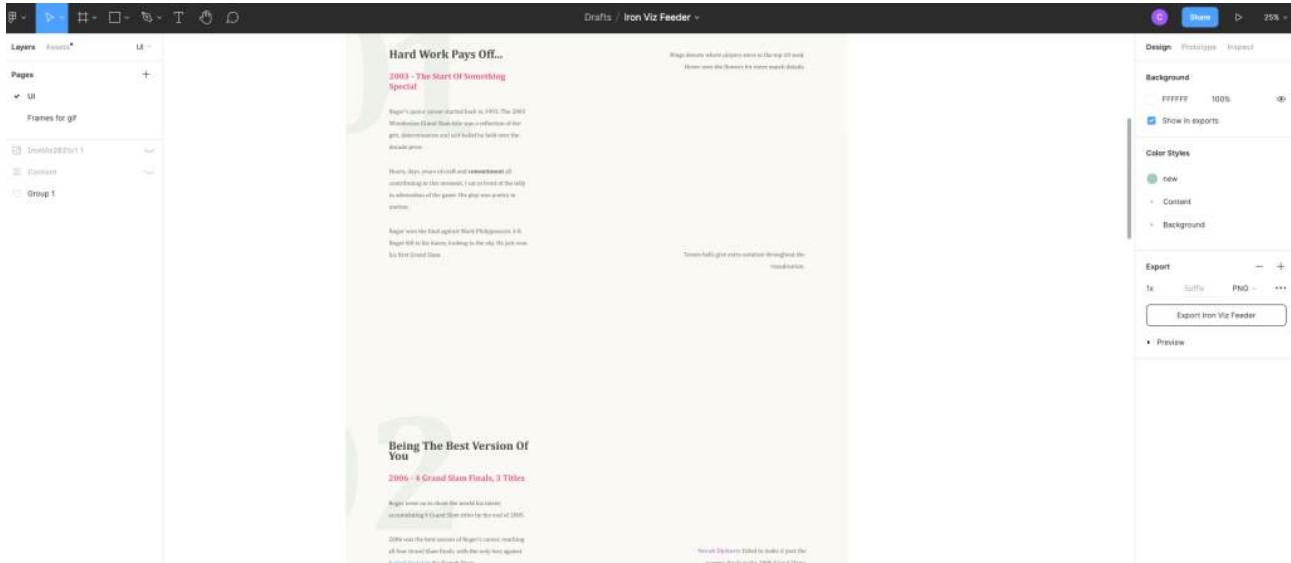
1.

BACKGROUND

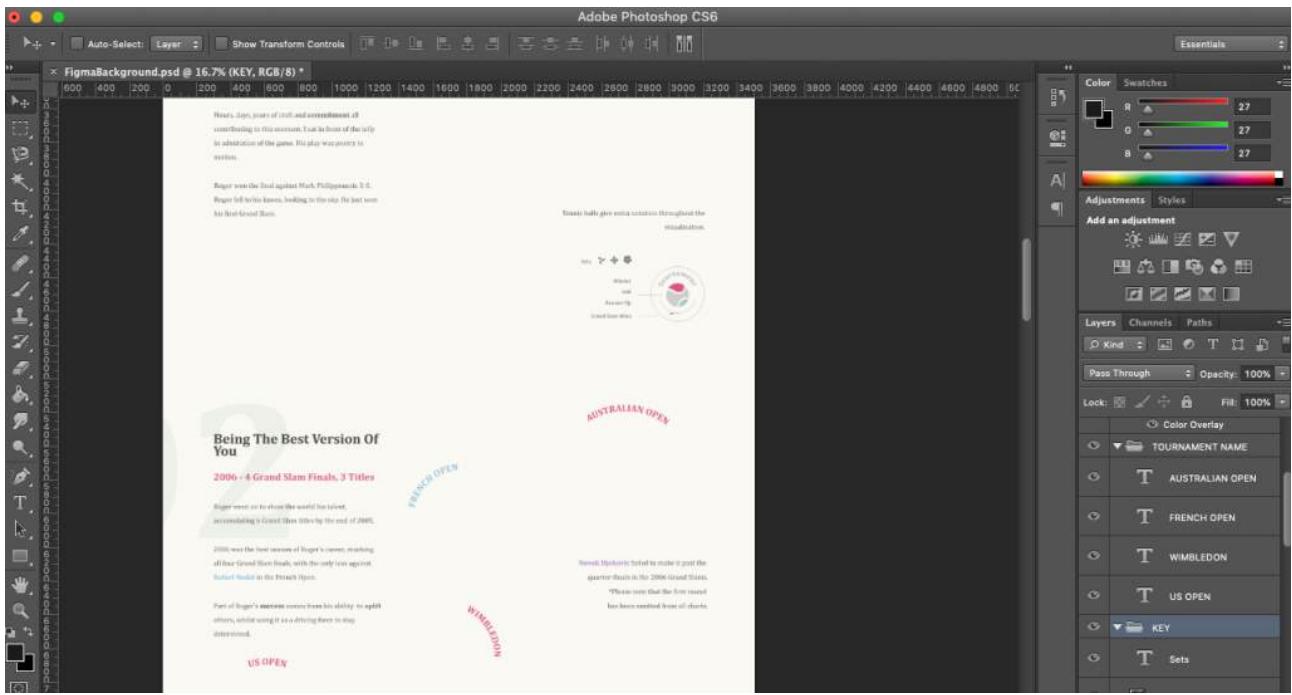
Resource

My first time using Figma. And wow, it's actually REALLY good. I love how intuitive it is to use. **Autumn** and **Lindsay**, amongst others have been doing some awesome tutorials on this front, which I'd recommend staying up to date with. Two examples are here: Autumn's [blog](#). Lindsay's [youtube](#).

I created separate A4's landscape and ended up gluing them together section by section, using the grouping tool before exporting.

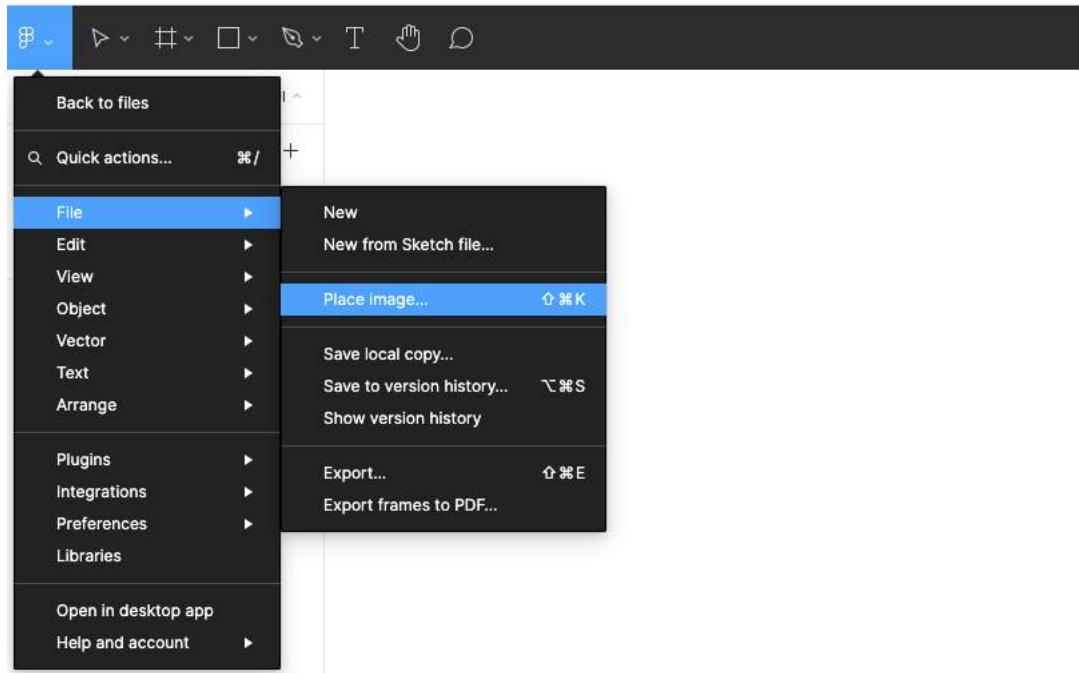


I ended up building the base in Figma, along with text (which saves in such a higher quality than previous tools I was using) then exported and added some final elements in photoshop, such as the key because it's what I'm used to and made life easier for me.



The visualisation ended up taking a lot of reshuffling. Patience is key whilst you figure out where everything is going to sit. Alignment and spacing can be a tricky one!

Tip: One thing I found that was useful was to export the whole dashboard as an image and overlay it into my Figma version. This meant I roughly knew where each chart component currently sat! You can then turn the opacity down.



Thoughts

I particularly focussed on getting the spaces between sections reasonable, as well as the alignment down the left and right side. During the build phase I ended up changing the grid at the bottom (section 4) from an 8 column (for 2 years worth of grand slam horizontally) to just 1 year of slams and therefore much longer – which opened it up for a timeline with more analytics to accompany the visualisation in section 4.

I played around with a colour tool on **Adobe**, where I also created my palette to try and make sure it was suitable for all eyesight's. You can put it through a colour blind simulator. The colours I aimed for were a blend of royal/elegant but simultaneously modern. I think it suits the story of the viz.



2. IDEAS

Thoughts

I had to reign in the abstract ideas slightly to focus on getting the analysis and story telling right. I did have some more ‘out there’ ideas to do with a nature theme which ended up getting stripped back. The small floral elements I think ended being quite complementary due to the colour palette and grand slam title wreath but that’s just my *humble* opinion.

The build of the small multiples and the key in section 1 are both inspired originally from the Wimbledon logo.

I wanted something that was round with the tournament name within it.

Resource

It was also my first time going to [Behance](#) for inspiration and came across the likes of **Gabriele Rossi**, **Valentina D'Efilippo**, **Michela Lazzaroni** amongst others. It's a wonderful resource that I think I will use more in the future in addition to my [Pinterest](#) page.

If there were one person I had to choose as a sports illustrative favourite from scrolling on Behance over the course of IronViz season it would be **Matt Miller**. His golf visualisations are out of this world. I'd like to implement some more of these concepts in the future.

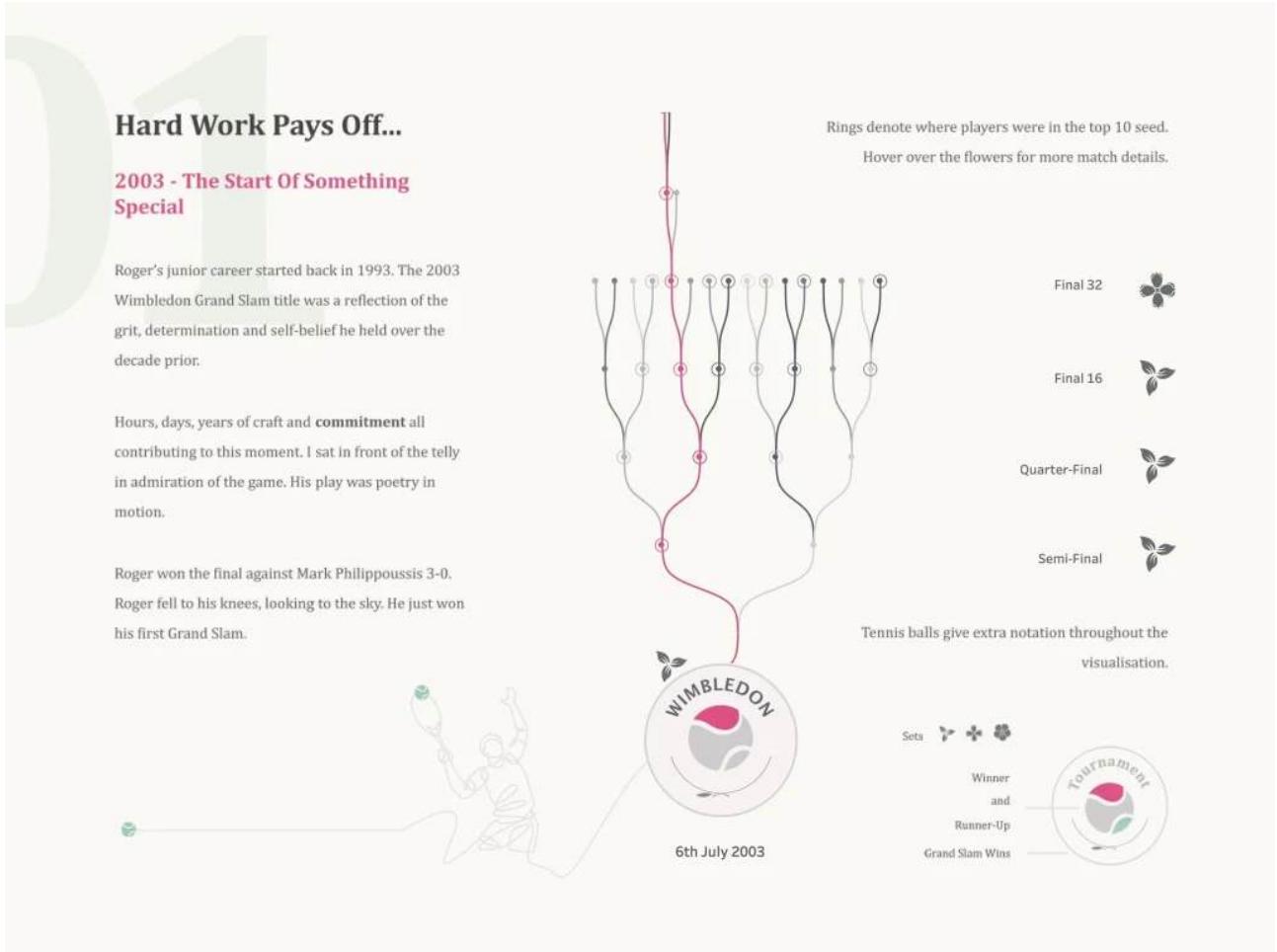
Finally, as noted in the bottom of my viz. I took a good look at previous years entries and was hugely inspired by **Alex Jones Coruna** visualisation when it comes to layout and sequence.

3. BUILD

What you won't see is that all my visual elements are prepped separately and then moulded into what they are. Theoretically I built everything twice!

Section One (Note section headers are named after the sheets in the workbook!)

The tournament bracket is an adaptation of the guest blog I did in collaboration with the **FlerlageTwins**, which is really just a hacked bump chart.

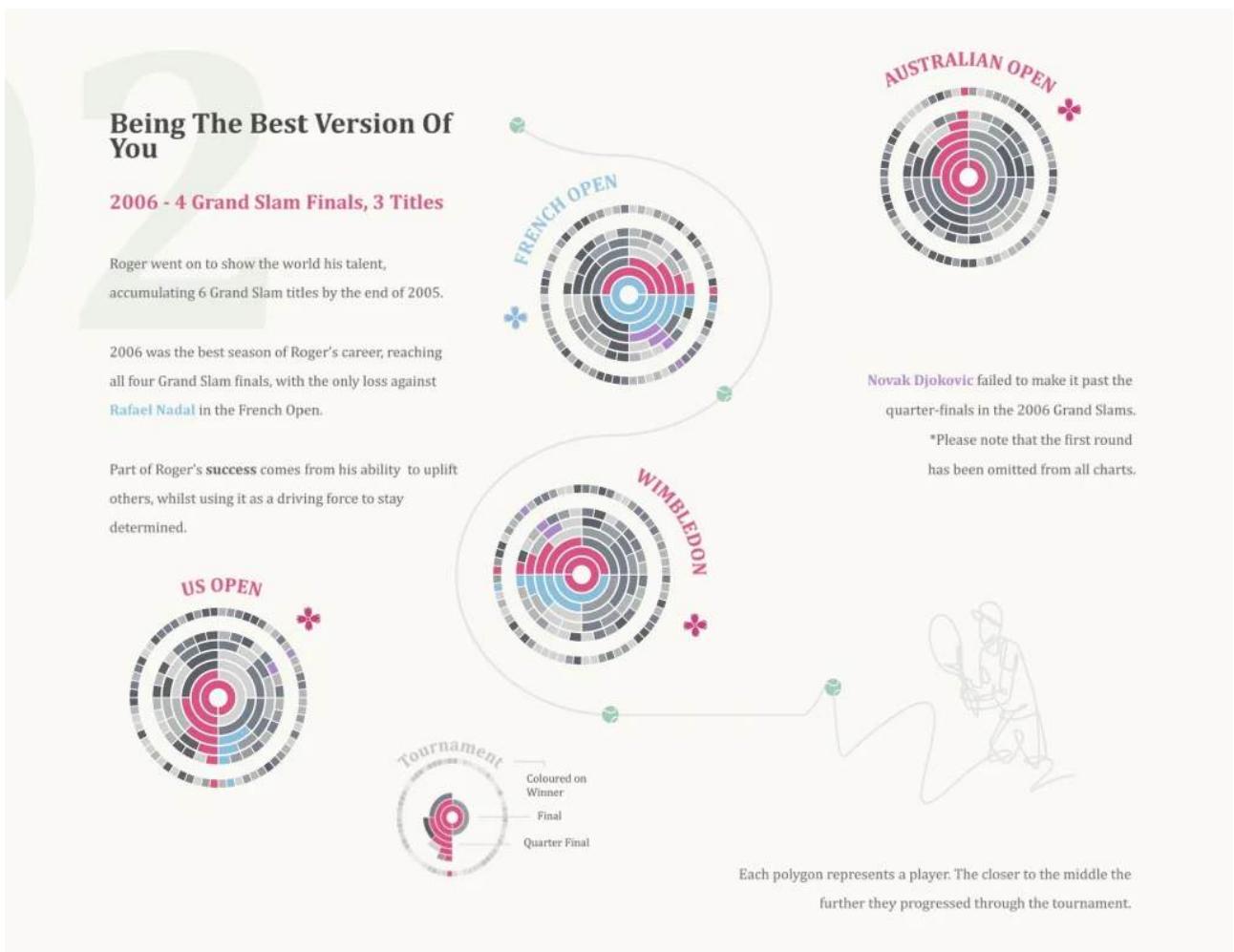


Section Two

The tournament polygons are an amended version of the [FlerlageTwins sunburst tutorial](#). I ended up creating each of them separately and re-exporting the finalised dataset to then create the charts in one sheet.

The curved line is using some logic stolen from [FlerlageTwins Arc Sankey tutorial](#) and then just amending the calculation of the points to widen for my tournament charts to fit through them. There is probably a much prettier way of creating this curve but it worked for what I needed.

Finishing touches of the set flower and the tennis balls then added for extra notation, which you will see in the calculations if you download the workbook.



Drawing players

The player were drawn separately. Once re-sizing the player and lining up, I managed to create a path between where the curved line stopped and the player starts. I used this **fantastic tool**, where I re-drew over an image all the different points for the players, and then had to rescale them accordingly in Tableau. You can find the tool [here](#).

Data Analytics <

Pages Columns Longitude (generated)

Rows Latitude (generated)

Filters Exclusions (Point l..)

Marks Text

MP. Set top

Text

Colour Size Text

Detail Tooltip

SUM(P2RG...) COLLECT(M...) Point Number

MP. Set text a...

MP. Sets

MP. Sets (2)

MP. Set text

MP. Player3 ba...

final

final+ (Section3Tie)

Icons

Section4 (Section4)

Square (Tennis)

final

Join

Point Number

Serve Number

Player3

Note

Point Id

Shape Id

Tie Break Grid

To_Join

Point Name

Server

Winner Name

Measure Names

final

Game No

Game Winner

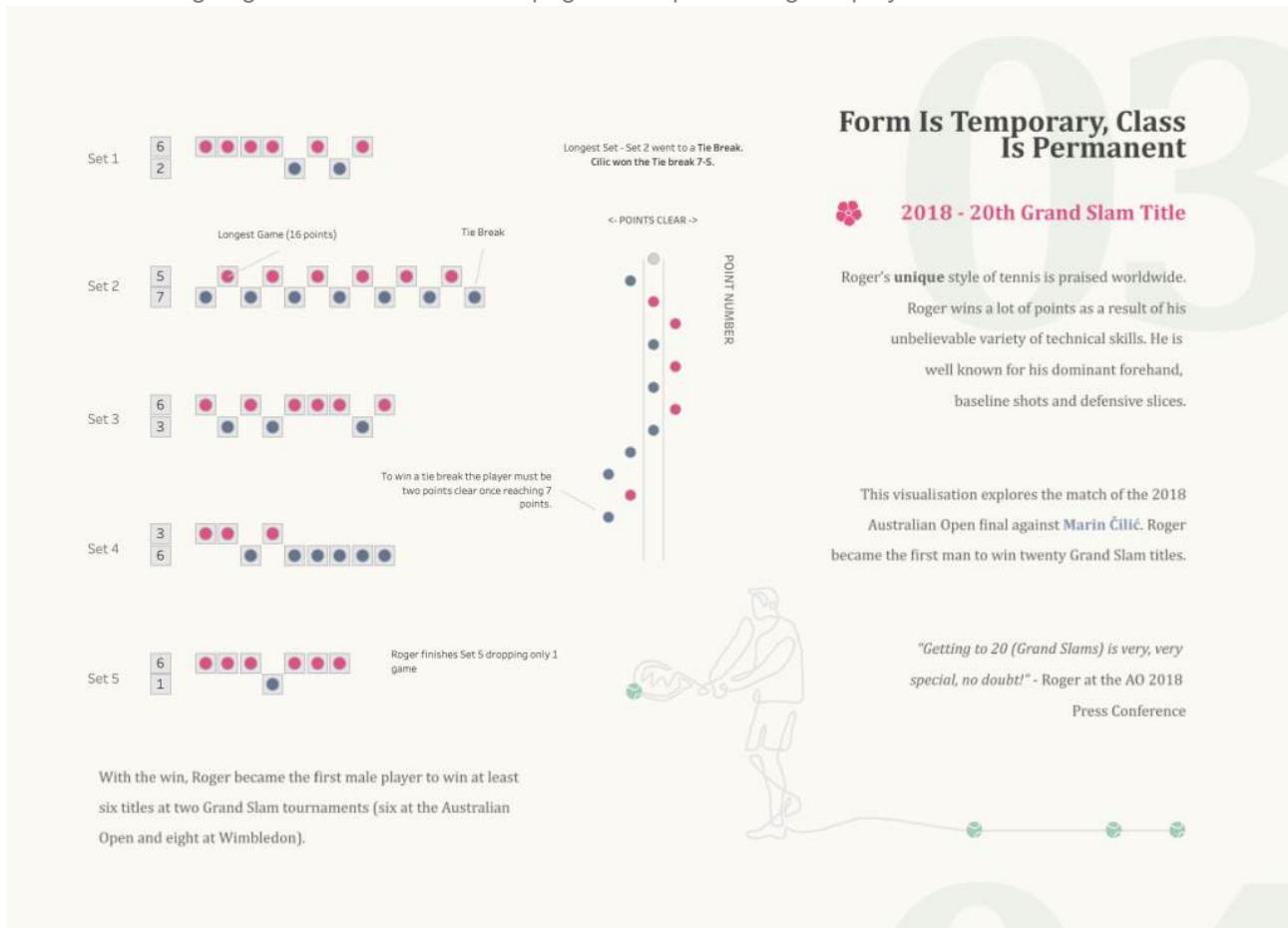
P1RGame Score

P1Score

I felt like the drawing of the players gave the piece a more fluid motion. The initial idea of having a tableau drawn image came from **Mariona Banyeres Migration visualisation** for the IronViz 2019.

Section Three

This was fairly simple to make and was just built straight from the original dataset. The complexity came from aligning it to the left side of the page whilst positioning the player and text round it.



Section Four

For Section 4, I have written a **separate blog** post completely on how to create this style of chart. The origination is credited to **Lisa Rapp**.

The only addition that was made was the timeline down the side. This is a vertical line chart between 2003 and 2021. I ended up rescaling the points to fit into the map layer to make an axis.

The year detail acts as a great axis for both the ATP world ranking and the more abstract shapes simultaneously. It was built by just having a constant x-axis, but an amended Y based on the date field of the line chart.

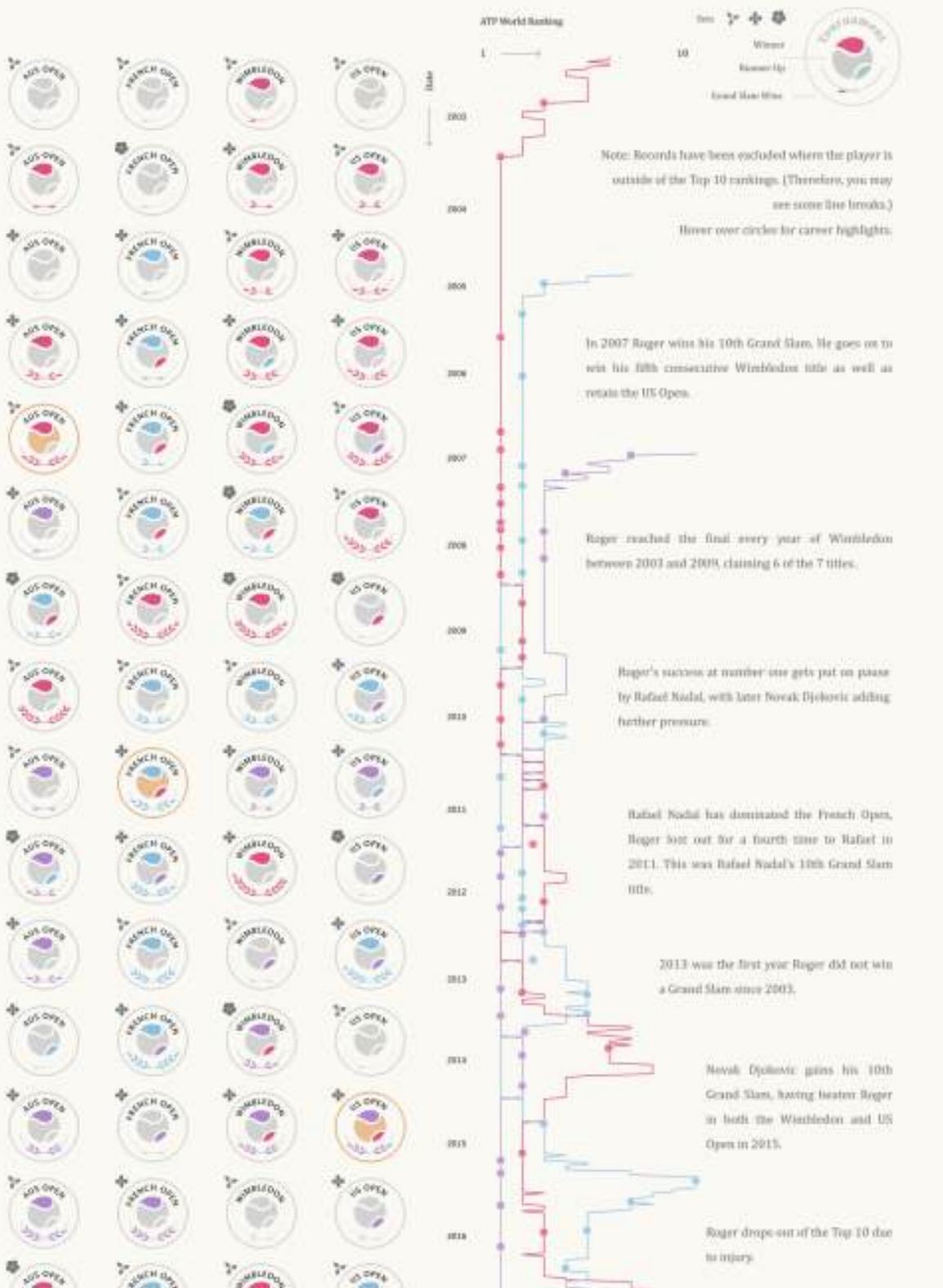
Head to Head

2003 - 2021 Respect Between Champions



Part of Roger's success is from showing all opponents equal respect. When I watch his press conferences I feel like Roger is one of the most charming and charismatic individuals there is. Roger continually praises his opponents and fans. They show equal amounts of respect and admiration in return.

Since his first Grand Slam back in 2003, **Roger Federer**, Rafael Nadal and Novak Djokovic having only missed 6 Grand Slam finals. Roger spent 319 weeks at number one. This visualisation shows the player rankings alongside Grand Slam tournament finals between 2003-2021.





Reflections

Humble In Victory, Gracious In Defeat

Now 24 years of age, I hope to mirror Roger's values whilst on my own life path. I believe in being **passionate, unique and the best version of myself.***

Roger's style, attitude and approach both on and off the court have made him one of the most recognised and respected personalities.

I'll still be in front of the telly watching in awe. Roll on **Wimbledon 2021**.

*CJ-Mayes.com

Anyway. I hope some of the resources listed help in future – I thoroughly enjoyed creating my IronVizFeeder for 2021. Congratulations again to everyone who got involved – I'd love to read stories about your own experience.

Happy to have seen my idol back playing in front of the crowd he loves at Wimbledon, enjoying every moment of it. That's what it's all about.

Any questions – get in touch on Twitter.

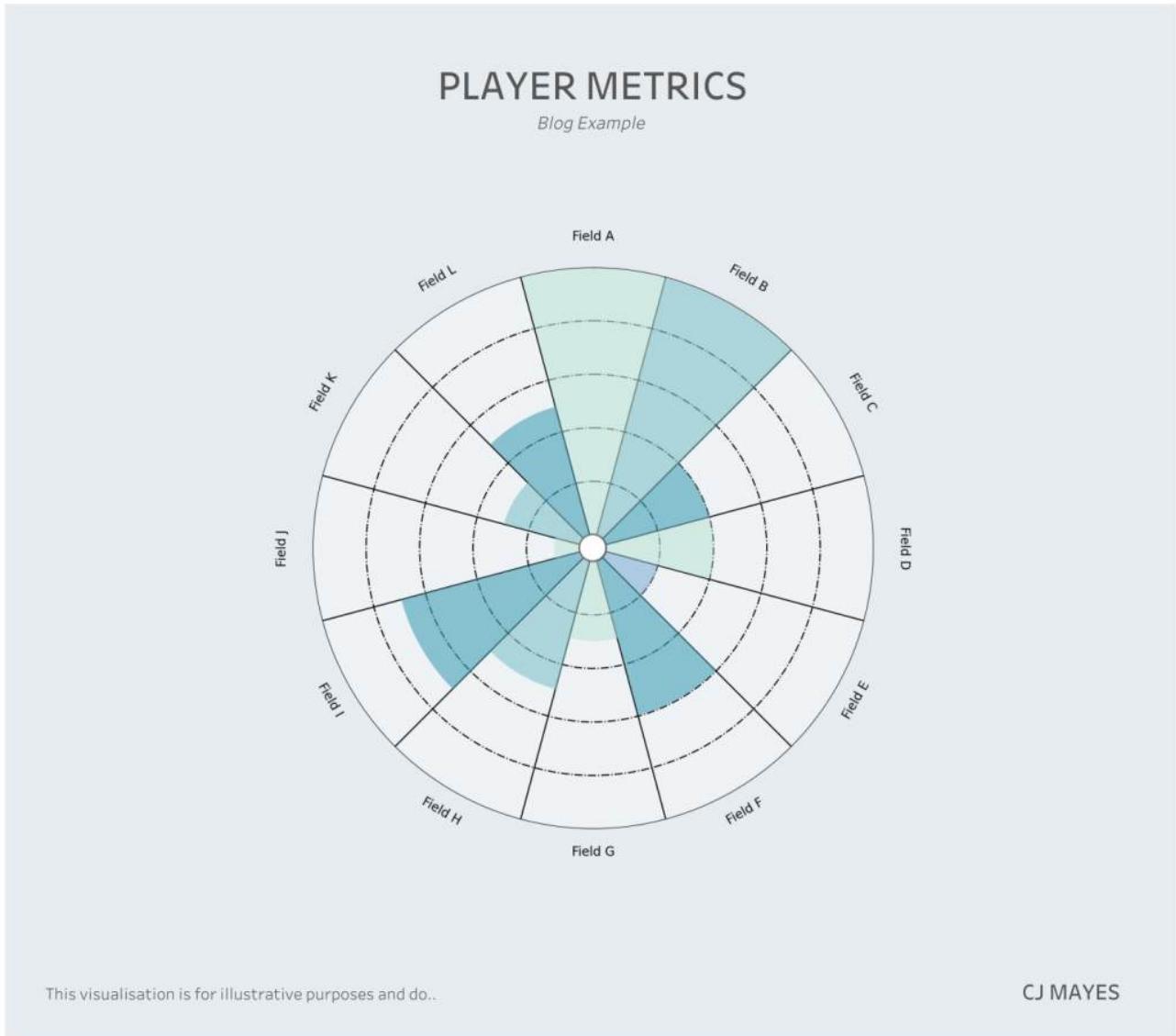
LOGGING OFF,

CJ

PLAYER METRICS

Hi All

A fun sports one this week. We will be looking to recreate the player metrics chart that you see a lot of the sports viz community make, especially for football (soccer). Typically these are made using python, but we will create the output in Tableau.



I can't and won't take any credit for this as it builds on the foundation of two fantastic data community members. The first is Anmol Durgapal, who can be found on Twitter [here](#). I'm hugely grateful for Anmol's help with the code I needed to create the blank chart in python. The original tutorial from Anmol can be found under [Basic Pizza Plot \(Percentiles\)](#).

Side note, Mplsoccer have a whole range of python [example tutorials](#) that you can work your way through if this is of interest!

The second, where the majority of the calculations come from is [Ruth A](#), who provides a chart template for a [coxcomb chart](#). I'll explain a few amendments to the calculations made later on.

THE PYTHON CODE (OPTIONAL)

```

46 lines (39 sloc) | 1.54 KB
Raw Blame ⌂ ⌄ ⌅

1 import matplotlib.pyplot as plt
2
3 from mplsoccer import PyPizza, add_image, FontManager
4
5 # You can add your own labels should you want
6 # parameter list
7 params = [
8     "Field A", "Field B", "Field C", "Field D", "Field E",
9     "Field F", "Field G", "Field H",
10    "Field I", "Field J", "Field K", "Field L"
11 ]
12
13 # parameter list
14 #params = [""]*12
15
16 # values for corresponding parameters
17 # Values can be found on fbref website (supplied by StatsBomb)
18
19 # To build the template we set the values to zero
20 values = [0]*12
21
22 # instantiate PyPizza class
23 baker = PyPizza(
24     params=params,                      # list of parameters
25     straight_line_color="#000000",        # color for straight lines
26     straight_line_lw=1,                  # linewidth for straight lines
27     last_circle_lw=1,                   # linewidth of last circle
28     other_circle_color="#000000",         # Inner circle dashed line color
29     other_circle_lw=1,                  # linewidth for other circles
30     other_circle_ls="-.-",              # linestyle for other circles
31     background_color="#000000"           # Add a background colour - match to background of Tableau viz
32 )
33
34 fig, ax = baker.make_pizza(
35     values,                            # list of values
36     figsize=(8,8),                    # adjust figsize according to your need
37     param_location=110,
38     kwargs_values=dict(alpha=0),
39     kwargs_slices=dict(
40         facecolor="white",  #color the background of the circle
41         zorder=2, linewidth=1
42     ),
43     color_blank_space="same",          # use same color to fill blank space
44     blank_alpha=0.4 # alpha for blank-space colors
45 )
46 plt.show() #Graph to save down

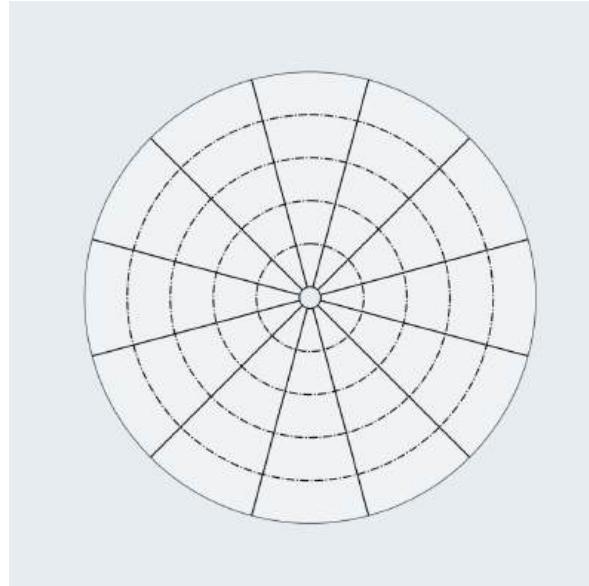
```

The code used for the tutorial can be found on Github I used PyCharm Community to run the code but feel free to use any preference of your own. We will be using the python code simply to create the background for our visualisation. If you would like to gloss over the python aspect.

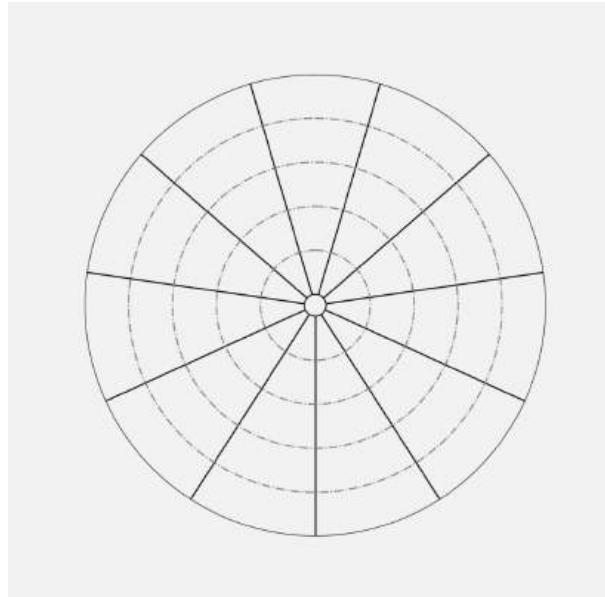
A couple of housekeeping notes for the code:

You may need to install matplotlib and the mplsoccer package.

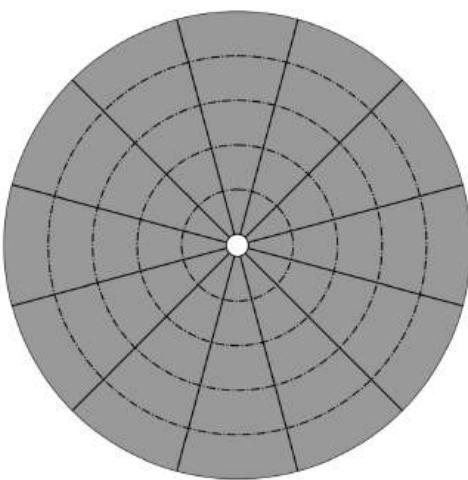
If you want your chart to have no labels you can use params = *12



If you want to amend the number of segments you can amend the params and values calculation, that currently has *12.



You can also amend the colour Hex Codes, based on what colour you want your viz background, circle background and circle lines.



I recommend keeping the figure size the same, as it will help with our build.

Once you've finalised these steps – run the code.

A graph should pop up. We will want to save this down in its current state (Ctrl + S), (Do not resize!), to use later as a background.

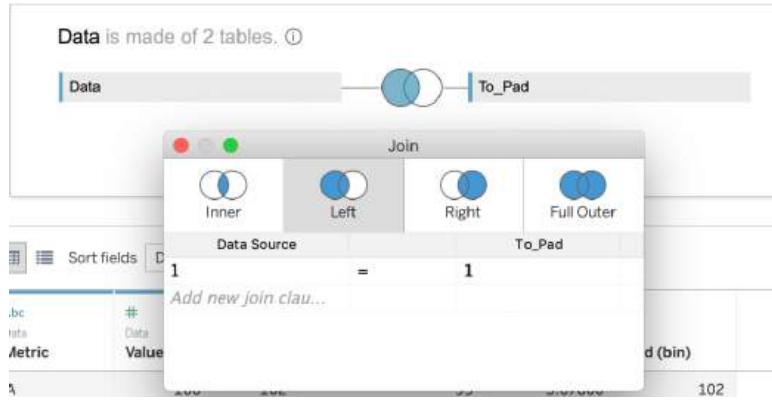
THE DATA

A copy of the template can be found on github or on my Tableau Public page following the links at the top of the page. We create a custom join between 1 and 1. Within the data you will want to amend the 'Data' Sheet.

Make the measure out of 100, and the metric names anything of your choosing. If you'd like to use football players stats, values can be found on [fbref website](#) (supplied by StatsBomb). For example here is England

legend, [Raheem Sterling's stats](#).

Leave To_Pad as it is, in short this helps us create each of the polygons using a bin, giving the curvature to the edges of our visualisation.



THE CALCULATIONS

I'm going to skip over most the calculations as we will be simply replacing the dataset. If you want to learn more about the building phase itself, check out this well detailed tableau tutorial by [AIEngineering](#). Alternatively if you want to build the visualisation from scratch, it follows the same methodology as [Ruth Amarteifio](#) in this youtube video.

Some calculations I have amended from Ruth's template and reasons why:

Category Angle – I've amended the number to -4.5 in the calculation. Reason being the value here will depend on the number of segment slices. You will need to adjust this value if you create a background with less/more segments. As it will rotate the categories forwards/backwards to fit.

(For example this will be -4 if you have 10 slices)

...Imagine the equivalent is : The scenario of trying to align your plastic wedges to the playing piece in the game trivial pursuit.

```
3a. Category Angle
Results are computed along Table (across).
//Segment position
([ia. Metric Index]-4.5)*(2*PI()/WINDOW_MAX([ia. Metric Index]))
```

The calculation is valid. 4 Dependencies Apply OK

Radius – I've completely amended this calculation to fit based on the sizing of the python chart export. What this calculation now does is takes the value from the dataset out of 1 and rescales it by 5.4 (The radius of the circle). I make a small adjustment of 0.27 to account for the middle section of the circle that isn't usually covered if creating the same graph in Python.

```
3b. Radius
//Calculation has been amended from previous to now take the value
//and rescale it to the images total of 5.4. The value adds 0.27 because
//the inner circle is not counted,
AVG([Value])/100*5.4)+0.27
```

The calculation is valid. 4 Dependencies Apply OK

X & Y – These both follow the same logic as in Ruth's tutorial. I've only made two minor amendments. The first is reversing the Y axis to allow my categories to go in the order I need, by putting a minus sign in front of the calculation. The second is by making small adjustments to where the visualisation sits in respect to a centre point.

THE BUILD (STEPS TO FOLLOW)

If you didn't want to try the tutorial, I have saved down a few backgrounds you can try out in the repository. Here is an example of me changing the current template to Raheem Sterling's metrics. Do note, If you'd like to understand more on what the metrics mean, please visit the website. They are solely used here for illustrative purposes.

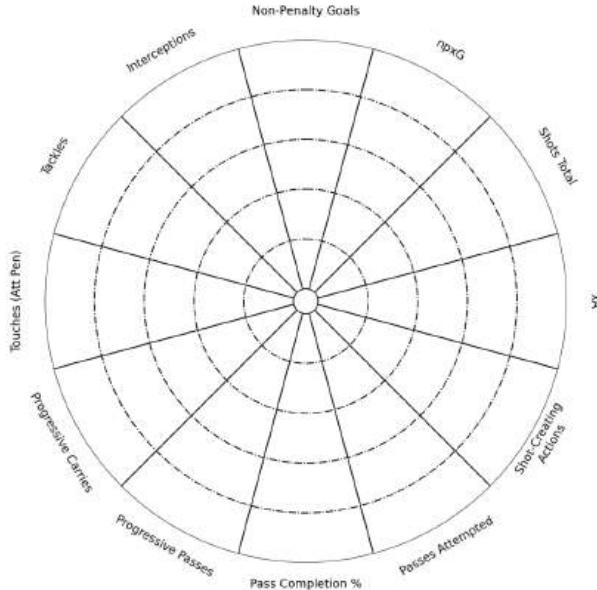
- 1.
- 2.

Download and open the [template from the top of the page](#).
Open Pycharm, Make amendments and Run the python code with the chosen field names and colours.

```

params = [
    "Non-Penalty Goals", "npxG", "Shots Total", "xA", "Shot-Creating \nActions",
    "Passes Attempted", "Pass Completion %", "Progressive Passes",
    "Progressive Carries", "Touches (Att Pen)", "Tackles", "Interceptions"
]

```



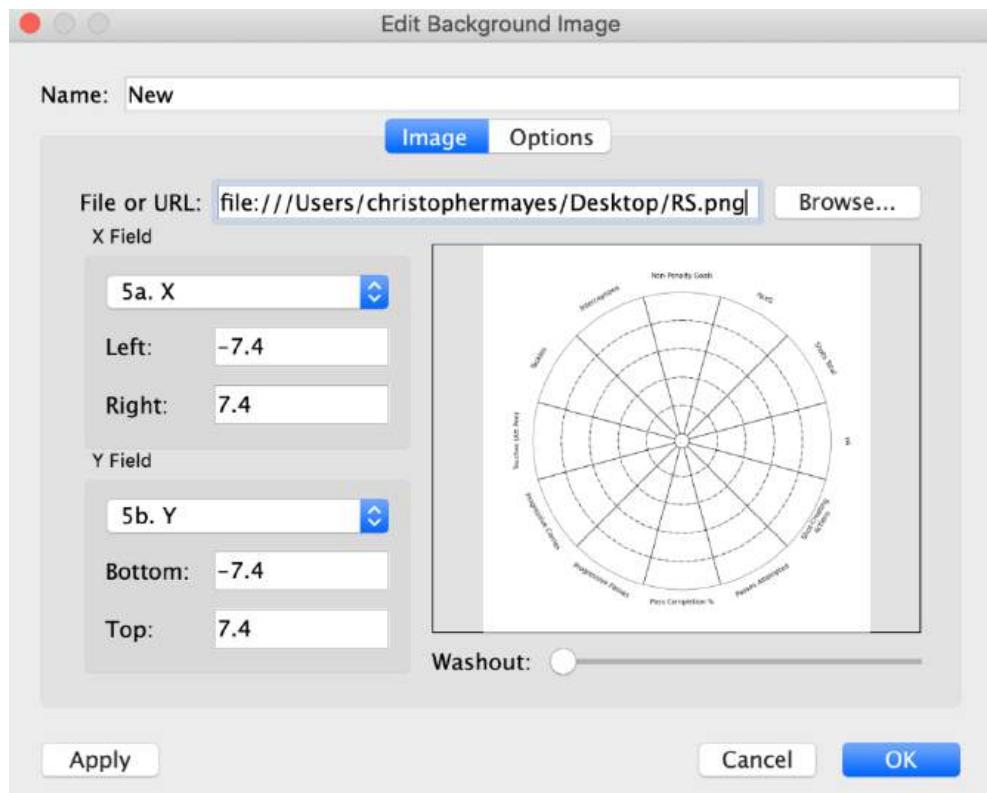
- 1.
- 2.

Save the output picture down to a local area.
Replace the dataset from [github](#) with your new dataset. I've taken the stats from [here](#).

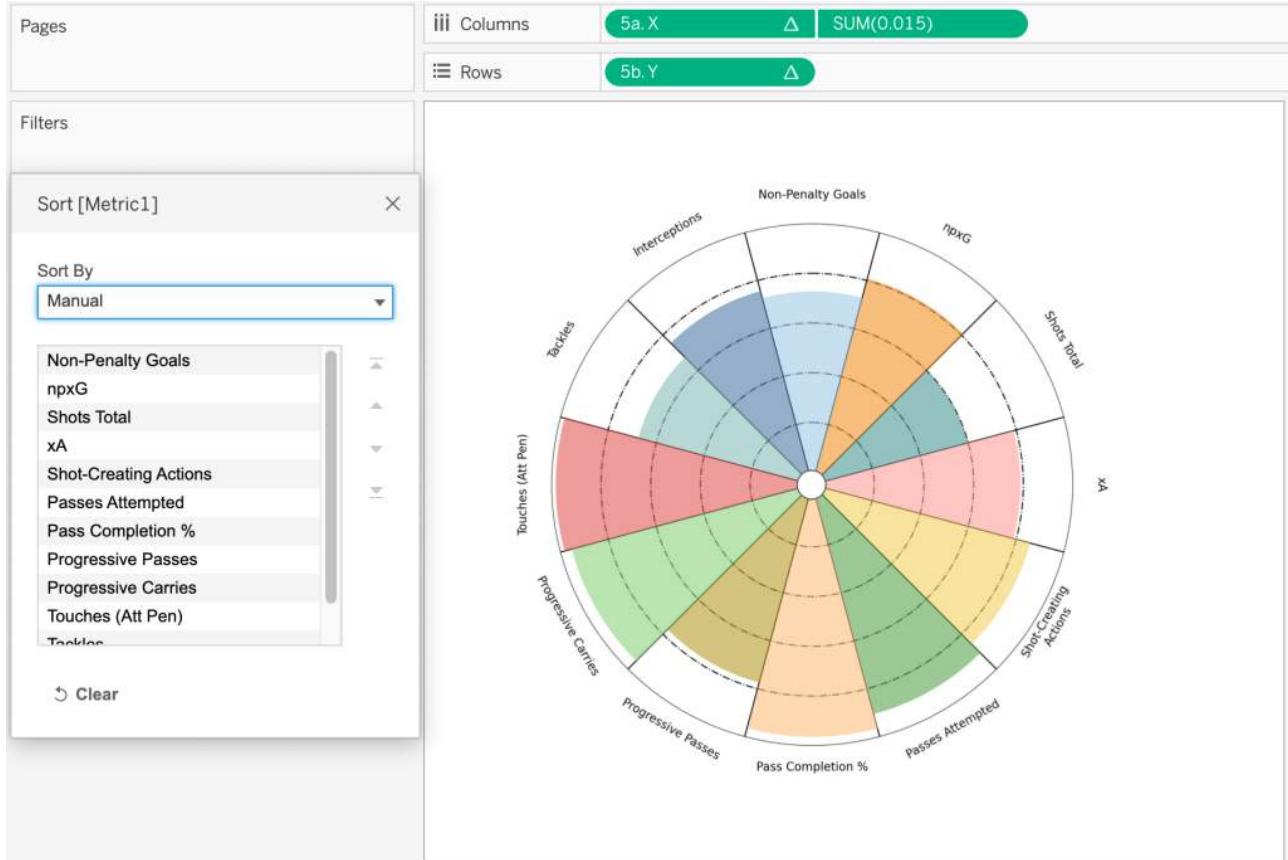
A	B
Metric	Value
Non-Penalty Goals	73
npxG	81
Shots Total	60
xA	79
Shot-Creating Action	86
Passes Attempted	91
Pass Completion %	97
Progressive Passes	78
Progressive Carries	96
Touches (Att Pen)	99
Tackles	68
Interceptions	76

- 1.
- 2.
- 3.
- 4.

Refresh the data if not automatic.
Open the chart sheet and click on the sheet.
Go to Maps – Background Images – datasetname.
Edit the chart to have the following components for X and Y. In Options, Leave lock aspect and always show viz both turned on.



6. Finally, Right click on the colours tab and go to sort. Make sure they are in the same order in the list clockwise as they are in your visualisation.



And there we have it. The final visualisation with the chart background snapped on.

HINTS, TRICKS AND HOUSEKEEPING

Make sure your max value is 100. If you have raw values create a new column in the original data and then use the value column as a percent of 100, and bring in the raw value as a tooltip.

If you want to use a different number of segments, you will want amend the above calculations of Category Angle.

The only other last thing to make sure is you save your background image down correctly. When the Python script runs, and the graph pops up. Hit (Ctrl + S) to save the file in its current figure dimensions. This will mean when we import it as a background into Tableau, everything is sized accordingly.

GOING FURTHER

Try playing around with different segment numbers.

Try replacing the circle in the middle with a shape of a players face.

Try adding in extra columns of detail into dataset for hover functionality.

As always, Let me know how you get on with this one. I can be reached on Twitter. A simple one in terms of data prep, but maybe a little tougher in terms of getting the background to snap on correctly.

LOGGING OFF,

CJ

GAME, SHAPE, MATCH

Hi All,

I've been a bit of a no-show recently. The Iron Viz Feeder took up a lot of time, coupled with moving job role next week – meant less time plugging away on writing blogs.

This blog will look to explore layering shape files! This will be a follow along tutorial. All resources can be found on github, from the top of the page. Please feel free to download a copy and recreate the visualisation yourself. It is aimed at beginners. If you get stuck, watch out for a future VizConnect, I plan on doing a quick demo on there in a few weeks time.

What will we be looking to recreate in Tableau? A simplified version of the end part of my IronViz feeder 2021.



What does the visualisation show?

The title 'Example one' was the title of the tennis tournament. The top half of the tennis ball was coloured on the winner of the chosen final. The bottom half of the tennis ball was coloured on the runner-up of the final.

I've previously mentioned credit goes to [Lisa Rapp](#) for this, where she used the method in her '**Viz Game of the Year**'. Please read it prior, it covers in such great details her design and preparation that we will be following in a similar method. Today we will be adding in a few little extra's on top.

CREATING YOUR SHAPE FILES.

We will be using the shape files that I've created already.

There are 6 separate shape files. Download the shapes files and take a look.

'Example 1', 'Example 2' and 'Example 3' will be the header banner.

The tennis ball is made up of three separate sections, because we want to colour them based on different components. These include 'Top Segment', 'Middle Segment' and 'Bottom Segment'.

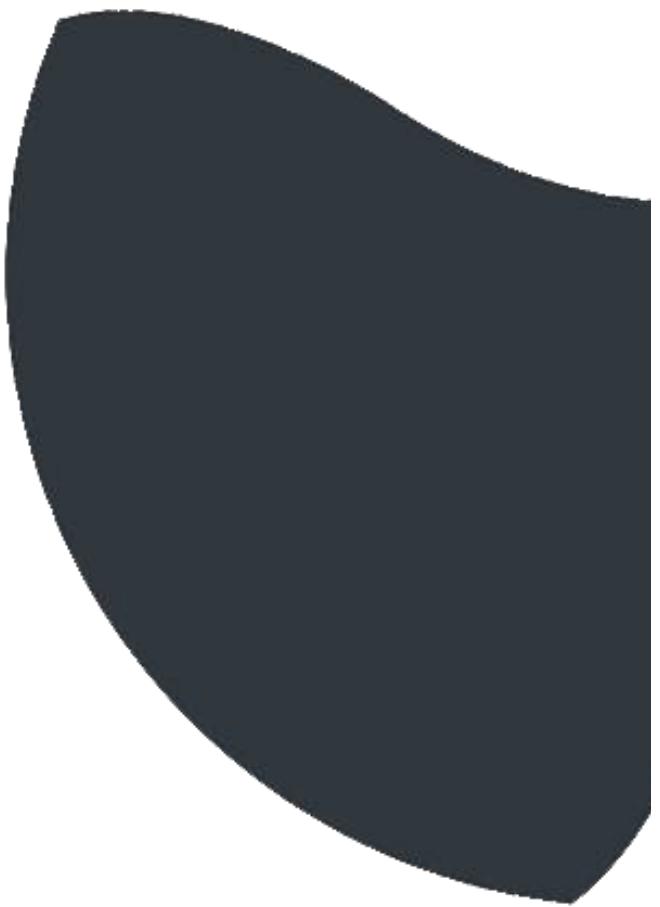
Here are the images all saved down separately.

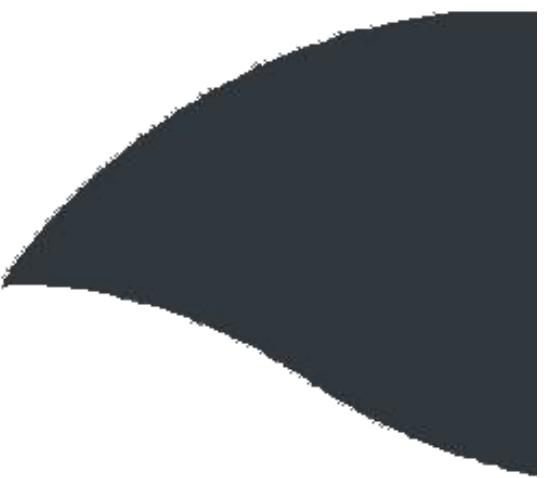


EXAMPLE

EXAMPI

EXAMPLI



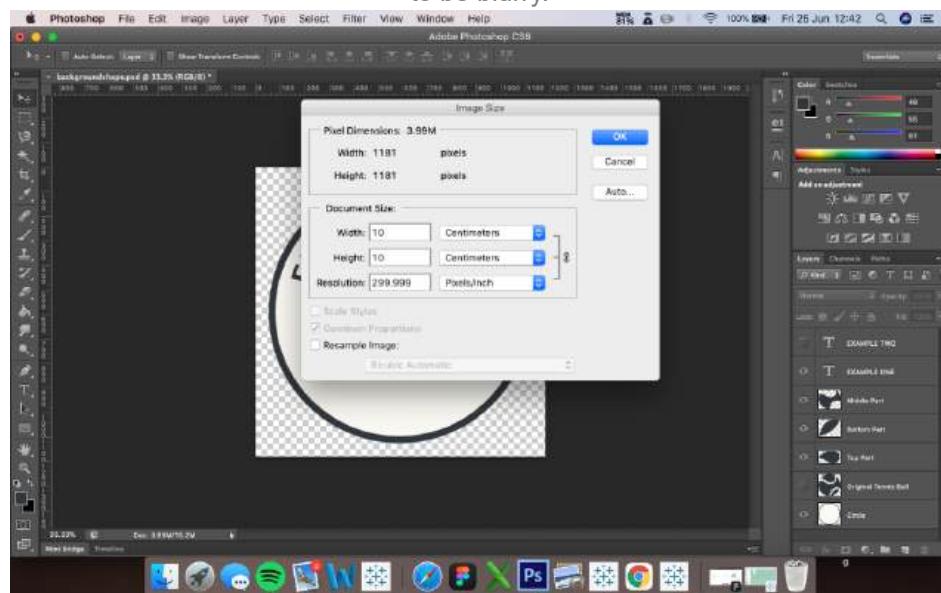


But what if you want to make your own?

You can use whatever tool you'd like to make these. Recommendations would probably be PowerPoint or an Adobe product. I chose an old version of Photoshop, but logic wise it is still the same. We want to save each section of the viz down in parts.

Tips for creating your own:

- 1) Depending on your layout I would recommend making your width and height of the sheet the same. For my build I created it all in a 10x10 grid. Try to save the images down at a high resolution in order for them not to be blurry.

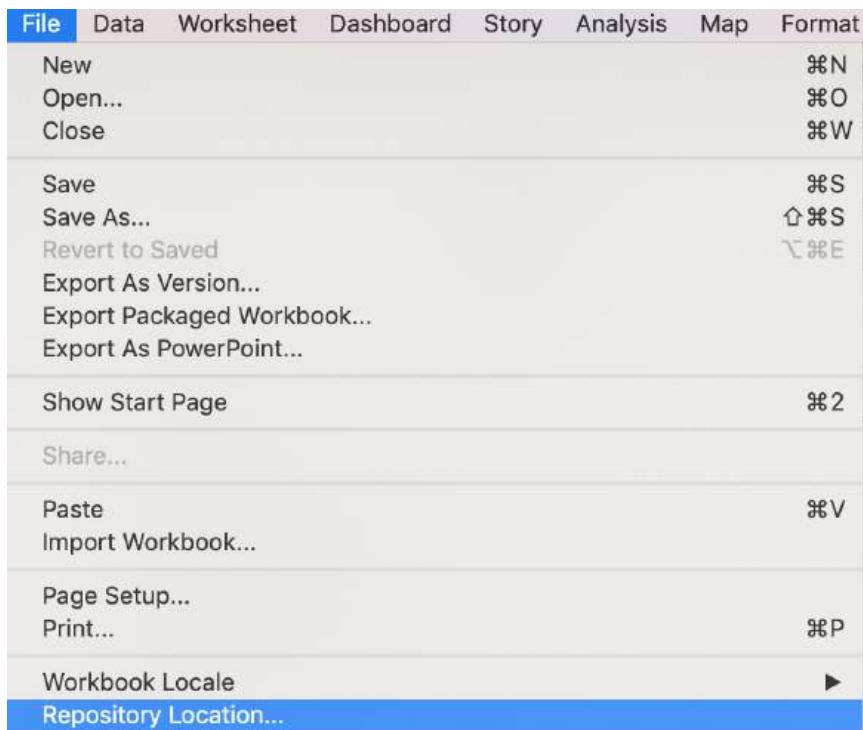


- 2) I made all the shapes the same flat colour to begin with. I was super excited to know that I could re-colour the flat icons in Tableau, meaning I actually needed to save less shape files down!
- 3) Keep everything in proportion when saving the images down, do not rescale them!
- 4) When you create the overall image, make it at least almost reach every corner/side of the square. We can re-adjust everything to become smaller in Tableau on the sizing tool later if needs be. We are better off having them too big than too small and blurry.

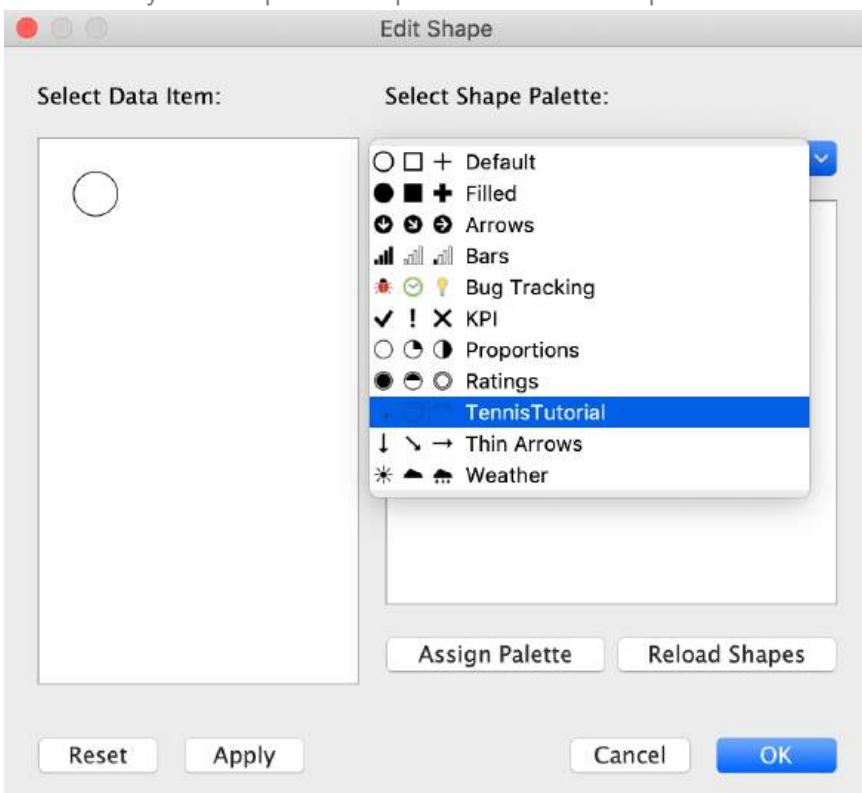
THE LOAD

Load the shape files into a folder.

To find where your tableau repository sits, go to file > Tableau Repository.



You will see I've created a folder in my Tableau Repository shape folder called TennisTutorial.
 Note: When you go to create shapes you may need to click reload the shapes. Sometimes Tableau will want you to reopen desktop to load the new shapes in.



Now we are all prepared!

THE DATA

	A	B	C	D	E	F
1	EXAMPLE	BASE X	BASE Y	YEAR	WINNER	RUNNER UP
2		1	0	1	2019	PLAYER 1
3		2	0	2	2020	PLAYER 3
4		3	0	3	2021	PLAYER 2

The data has been simplified to make it easier to understand.

EXAMPLE: This column isn't particularly needed, I just find it easier to create the level of detail easier with having a distinct column in the data.

BASE X / BASE Y: These are simple X,Y co-ordinates of where we want to build the visualisation

YEAR: Used to differentiate the shapes for the examples.

WINNER: Used to create the top part of the tennis ball shape and colour on.

RUNNER-UP: Used to create the bottom part of the tennis ball and colour on.

Things to note

If creating your own: When you plot your axis, think how much space you will want to give each element. For example my chart at (0,2) will expand roughly 0.4 each side of that mark leaving a 0.1 gap between it and the element to either the left or right. Spacing is fairly important. Having a set fixed axis grid really helps.

LOD: Each mark has a specific point, if you don't drag the correct dimensions onto detail then your points won't show in the correct place.

So far so good.

THE BUILD

Open Tableau and connect to the dataset TennisTutorial.

Data (TennisTutorial)

Connection: Live | Extract

Filters: 0 | Add

Data

Need more data?
Drag tables here to relate them. [Learn more](#)

Sort fields | Data source order | Show aliases | Show hidden fields | 3 rows

# Data Example	# Base X	# Base Y	# Data Year	Abc Data Winner	Abc Data Runner Up
1	0	1	2019	PLAYER 1	PLAYER 3
2	0	2	2020	PLAYER 3	PLAYER 2
3	0	3	2021	PLAYER 2	PLAYER 1

We need to make one calculation!

MP. Circle
MAKEPOINT(,,)

MP. Circle

MAKEPOINT([Base X], [Base Y])

The calculation is valid.

Apply OK

Explanation: It is the exact same as plotting an x and y co-ordinate. It just happens to be that we need multiple layers so use Tableau's map functionality to be able to add more layers to the marks card. You will see it generates longitude and latitude.

side note: I put MP at the start of all my makepoint layers as a naming convention.... *obviously* you don't have to do this bit! I just find it easier to filter in the search bar when I have created a lot of them!

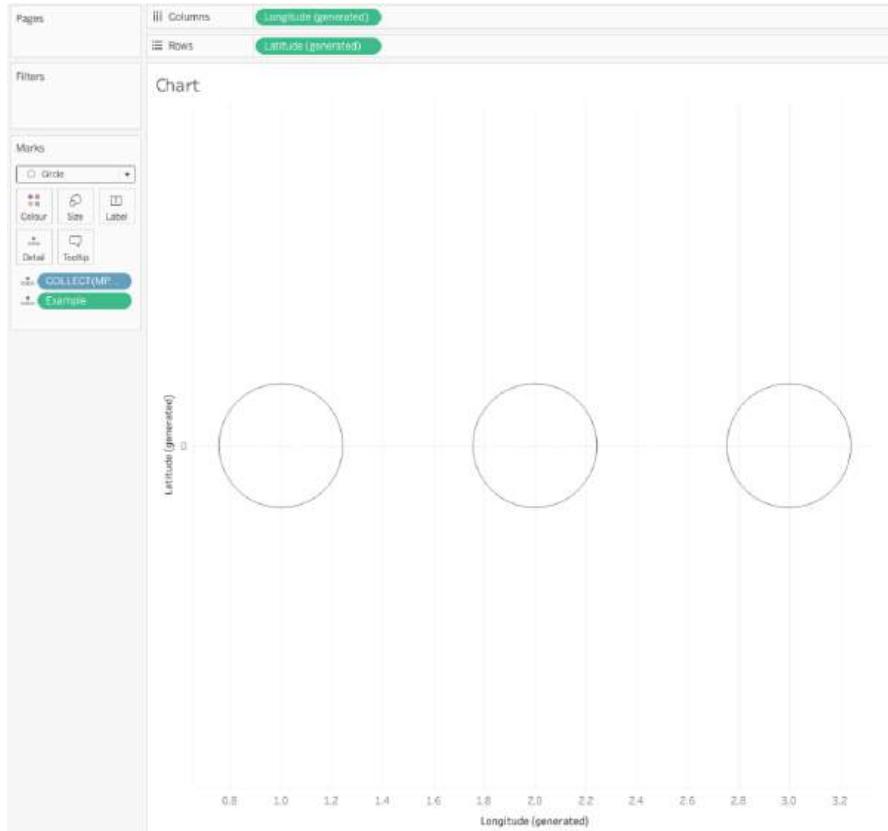
STEP 1. CREATE THE CIRCLE BACKGROUND

Double click the new calculation MP Circle bringing it to the sheet.

Turn the Mark to Circle.

Drag Example onto Detail.

Add a Border to the circle and make Opacity zero.



Note: When we add new layers to the marks card we will want to turn on the background map. When we build out our viz though, we turn them back off. Go to MAP > BACKGROUND MAP > NONE

This is the most important step. I repeat, when we add to the layers we turn the map on. My preference is to turn it off when I do the rest of the build! Therefore in the following few steps make sure you deviate between them. Also play around with your axis being fixed when map is turned to none!

STEP 2. CREATE THE TEXT

Add MP. Circle to the Marks card again. It will appear as MP. Circle (2) – You can rename these at your leisure if you double click on the box, for simplicity of order I have kept them all the same.



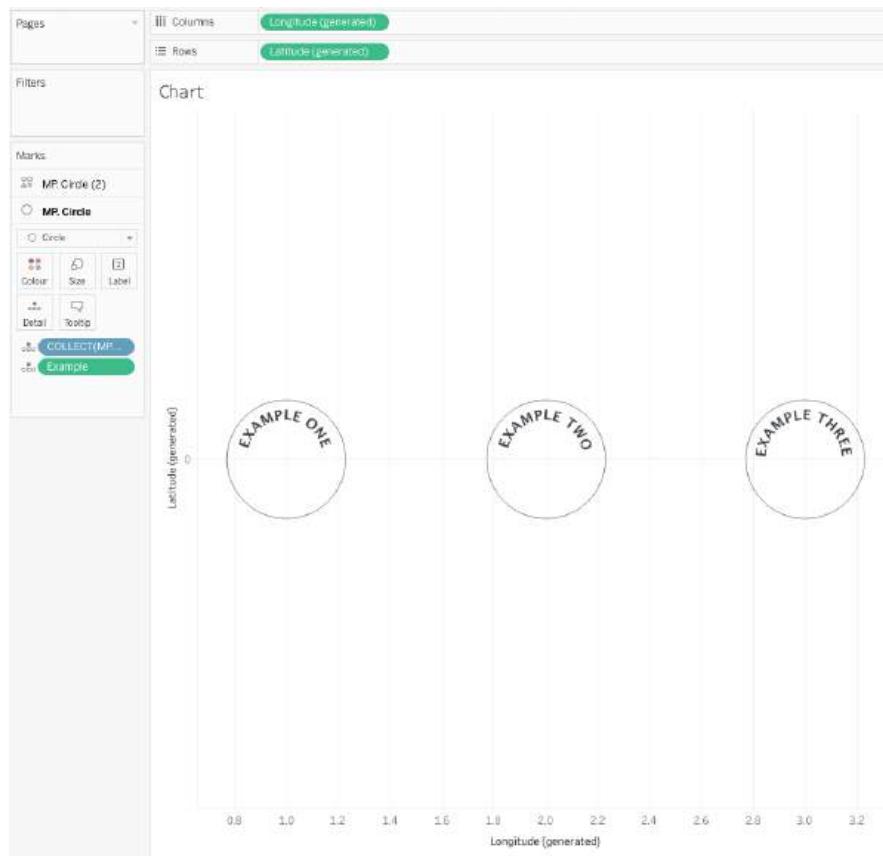
Turn it to a shape.

Drag Example to detail and make it a dimension.

Drag Year to shape.

Make each of the years a different example header.

Turn up the size to fit the circles.



STEP 3. CREATE THE TOP OF THE TENNIS BALL

Again, we want to add the same MP. Circle to the mark card.

Turn it to a shape.

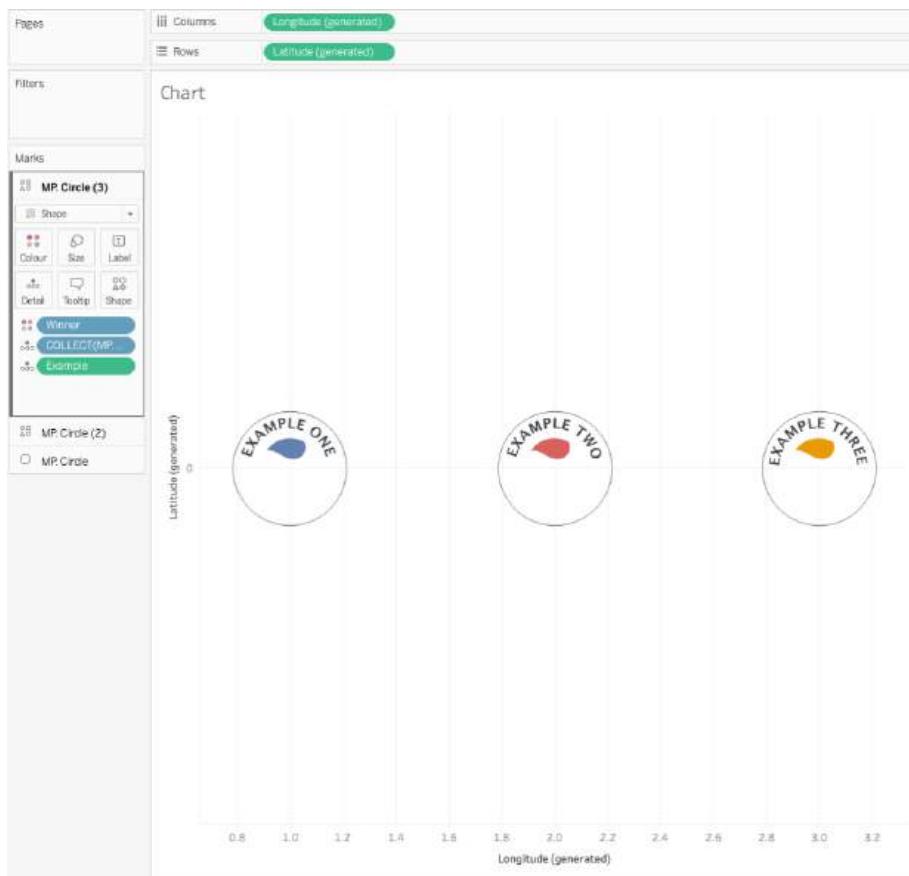
Select the shape that is the top half of the tennis ball.

Drag Example to detail and make it a dimension.

Drag Winner onto colour.

Turn up the size to fit the circles.

Side Note: I was surprised to see that you can re-colour the flat icons using the tableau colours!



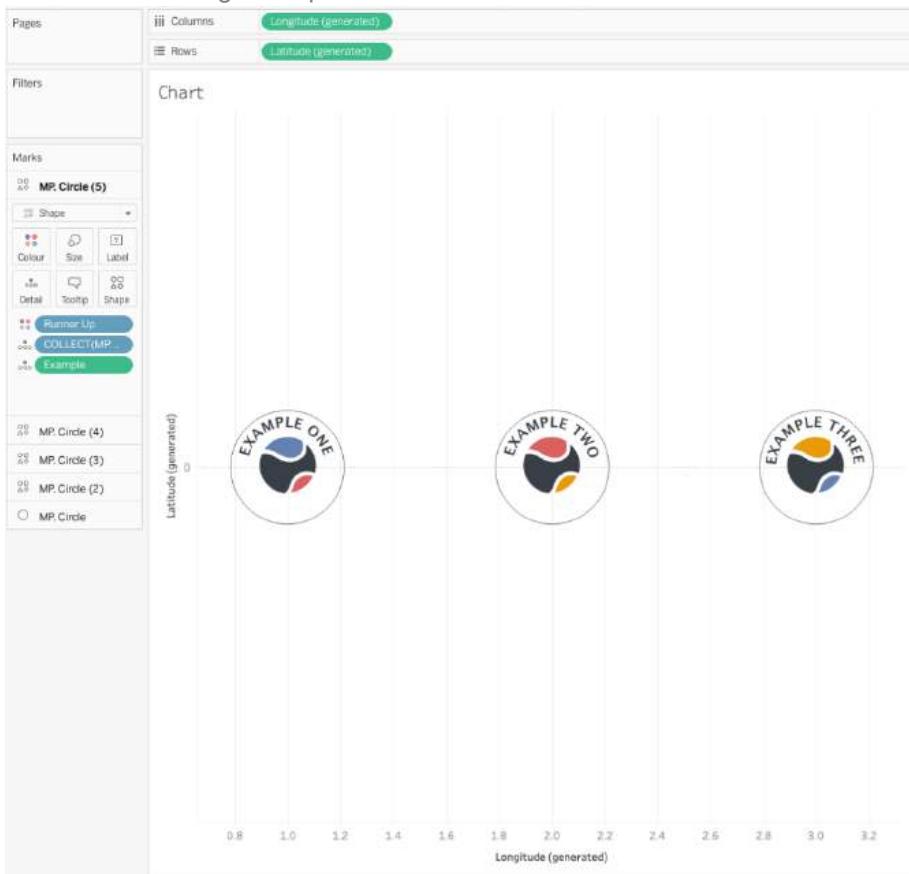
STEP 4. CREATE THE MIDDLE OF THE TENNIS BALL

Drag MP. Circle to the mark card.

Turn it to a shape.

Select the shape that is the middle of the tennis ball.

Drag Example to detail and make it a dimension.



STEP 5. CREATE THE BOTTOM OF THE TENNIS BALL

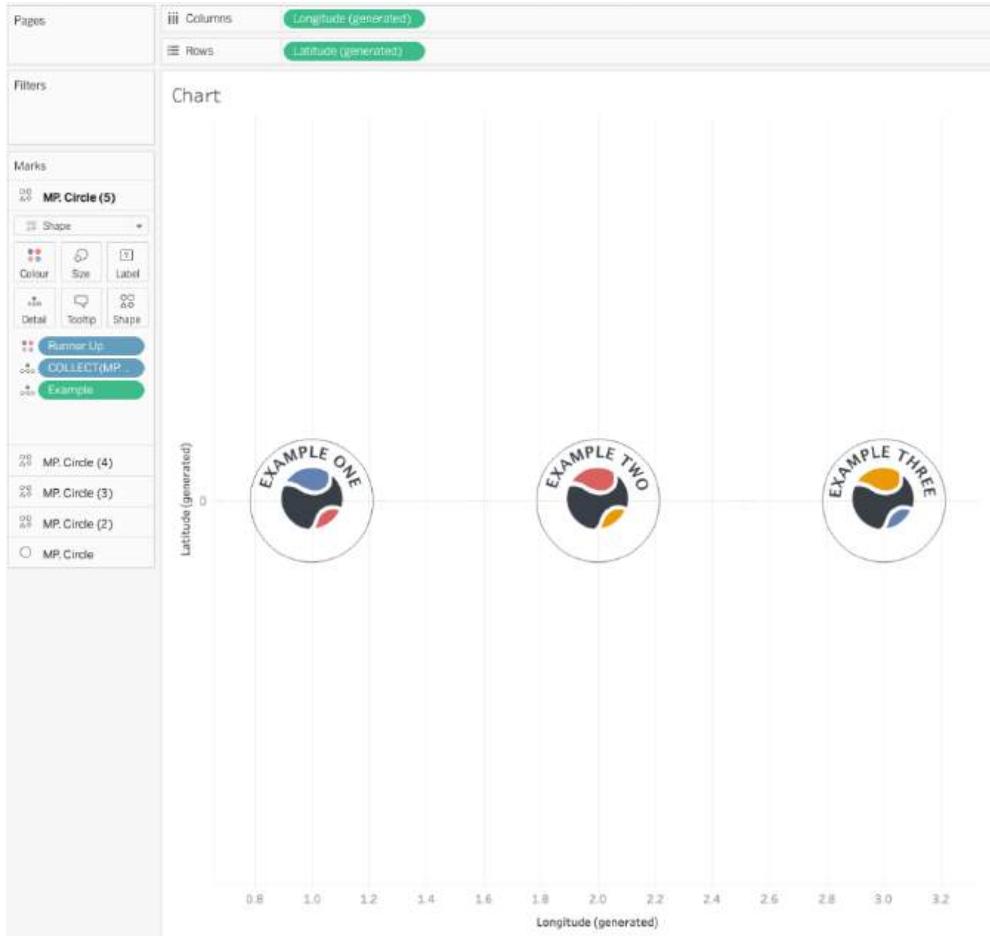
Drag MP. Circle to the mark card.

Turn it to a shape.

Select the shape that is the bottom of the tennis ball.

Drag runner-up onto colour.

Turn up the size to fit the circles.

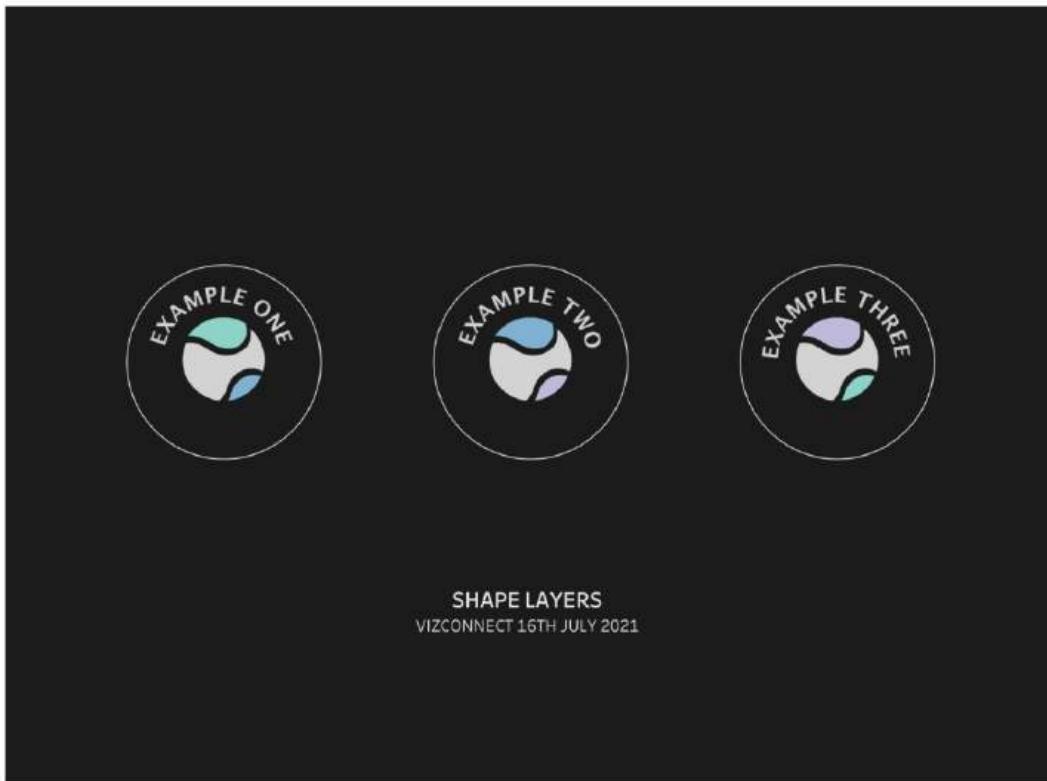


Last things to note is:

You can play around with axis sizing to rescale it to look nice in the sheet or dashboard.

- 1.
- 2) You can amend the colours. I think its fantastic that you can re-colour each part of the tennis ball as well as the text and circle.
- 3) If you wanted to add tooltips I would recommend placing the circle at the top of the marks card and adding the tooltips just once in this layer.
- 4) Amend the grid lines and hide the axis to clean up the visual.

There we have it – All finished.



A fairly simple tutorial with only one calculation needed!

The biggest positives of this method:

1. Being able to keep your dataset small helps performance. It keeps it simple and clean!
2. I believe custom shapes give more freedom for better designs.

The biggest negatives of this visualisation method:

1. If you create your custom shapes using points rather than shapes you have the ability to tooltip each section with a different tooltip. With this method you're most likely going to have to overlay a clear shape/circle with the details in!
2. If you want larger designs rather than small multiple type looks, you may face problems with image quality. In which case I would recommend trying to go down the polygon route. Check out my UEFA Viz blog for more.

How to take it further?

1. You could look to create your 'shapes' as polygons drawn in tableau.
2. You could look to create your points along a custom shape (Much like Lisa did with her Viz Game of the Year) I've seen a few bendy timeline tutorials that could come of use! Check out this one by the [Flerlage twins](#). I think this adds greater variation to the typical grid method.
3. You could look to use a variety of abstract shapes. For example check out the following graphic by the communication specialist [Francesca Mercurio](#). I just loved this type of concept. I came across Francesca on her Instagram, but do check out her [behance](#) page. Also check out one of my favourite designers to follow [Federica Fragapane](#). I'd be a huge fan if we can integrate this type of design more into Tableau work.

I hope this mini step-by-step guide is useful; hopefully you can apply the logic to your own vizzes and designs. If anyone has any questions, give me a shout. You can reach out to me on [Twitter](#), or [LinkedIn](#).

LOGGING OFF.

CJ

LEARNING TABLEAU: THE UNCONVENTIONAL WAY WITH OLUSHOLA OLOJO

Welcome to the June edition of "What's Good?".

I am delighted to be able to invite Olushola Olojo, (Shola) to the June edition of "What's Good?". Shola has been producing some truly fantastic dashboard as of late! Some of my favourites include the **Superstore Dashboard: Executive Overview**, **Business Dashboard: Sales Performance**, **Healthcare Dashboard: Emergency Room** and **Angela Davis**.

SALES PERFORMANCE



TOTAL SALES

£36.7M

Avg. Sales:

£254.2

TOTAL QUANTITY

231,389

Avg. Quantity:

1.6

SALES BY REGION

London

Midland

North West

South

South East

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec



SALES BY PRODUCT GROUP

Washing Machine £25.4M

Refrigerator £18.9M

Oven £1.3M

Microwave £1.0M

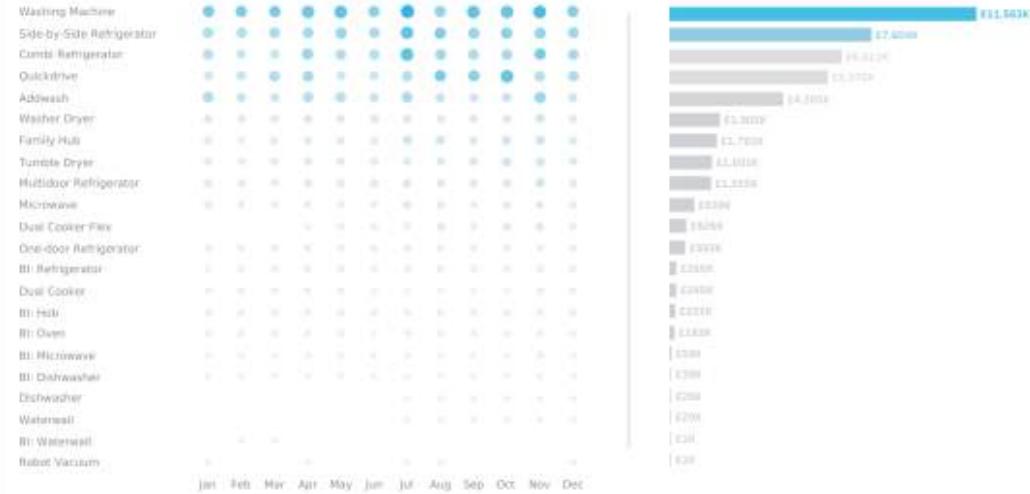
Dishwasher £1.1M

Vacuum £0.8M

TOP PRODUCTS: MONTHLY BREAKDOWN



SALES BY PRODUCT SUB-CATEGORY



TOP PROMOTER BY SALES

Angela £1,288K

Aysha £1,211K

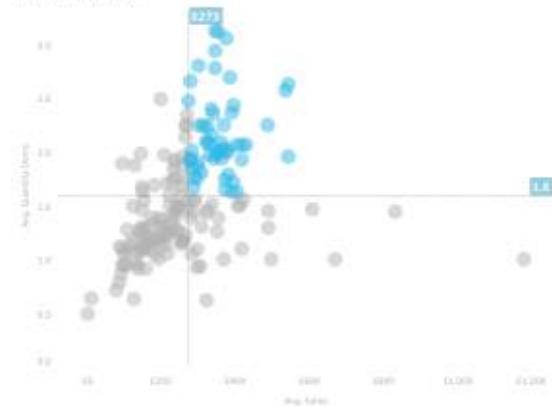
Rimza £1,048K

Parvez £798K

Fareen £778K

Talib £748K

CONVERSION RATE



Majorem Analytics, LLC

[Sales Overview](#) > [Dashboard](#)



Current Year

\$733,215

+20.4% vs. PY

Technology \$271,731

Office Supplies \$246,097

Furniture \$215,387

Overview

Order Details

Download PDF

November remains a strong month for Company X.

Total sales in 2020 was **\$733,215** compared to **\$609,206** the previous year



Information

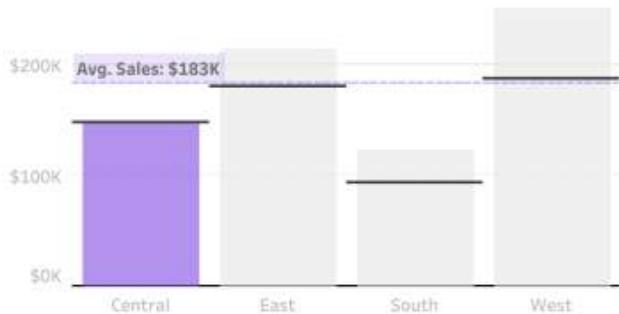
Author: Olushola Olojo

Company: Majorem.id

Date: Apr 6, 2021

Data Source: Sample Superstore

The West continues to be the best performing Region. Central failed to surpass last years total sales.



"more than a number"



RWFD EMERGENCY ROOM DASHBOARD



March 2020

2020 March

Sun	Mon	Tue	Wed	Thu	Fri	Sat
●	●	●	●	●	●	●
●	●	●	●	●	●	●
●	●	●	●	●	●	●
●	●	●	●	●	●	●
●	●	●	●	●	●	●
●	●	●	●	●	●	●

PATIENTS

506



AVG. WAIT TIME

35.9 min

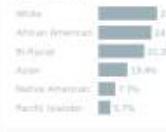


AVG. SAT SCORE

5.3/10



ADMISSIONS BY RACE



ID

Day of Date

Department

Patient

Gender

Race

Age

Admitted

629-49-3223	10/05/2020	Orthopedics	Marie, W.	Female	White	22	True
618-78-0056	10/05/2020	General Practice	Robert, J.	Male	Black	37	True
454-28-0121	10/05/2020	None	David, L.	Male	White	42	True
454-91-0429	10/05/2020	None	Michelle, S.	Female	Black	25	True
202-02-1235	10/05/2020	None	Michael, Z.	Female	White	22	False
363-04-4232	10/05/2020	None	Sarah, T.	Male	White	30	False
221-79-0048	10/05/2020	Orthopedics	Agent, W.	Female	Native American	38	True
275-89-0324	10/05/2020	General Practice	Samantha, R.	Male	Asian	28	True

ANGELA DAVIS

THE ACTIVIST QUEEN

1970

August 15th, 1970, the FBI issued a federal warrant for the arrest of Angela Davis. Davis was a fugitive wanted for kidnapping and murder.

ABOUT

With an Activist-Scholar career spanning more than 50 years, Angela Yvonne Davis (January 26, 1944) will undoubtedly go down in history as one of the most influential pioneers of her generation.

Davis galvanized her community through her public speaking engagements.

She expressed her opposition to the Vietnam War, racism, sexism, and the prison-industrial complex, and her support of gay rights and other social justice movements.

As a professor at UCLA, Davis fell out of favor with the administration due to her ties. Davis was charged with aiding the botched escape attempt of imprisoned Black Radical George Jackson and served roughly 18 months in jail before her acquittal in 1972.

Today, Davis is a Distinguished Professor Emerita at the University of California, Santa Cruz, and has authored several books.

"She walked in with her Afro, devastated the prosecution and walked away free"

- Van Jones, 13th

ANGELA



DAVIS



APPEARANCE

Interview	8
Documentary	3
Speaker	2
Film	1

BOOKS

- Women, Race, and Class (1981)
- Blues Legacies and Black Feminism: Gertrude Ma Rainey, Bessie Smith, and Billie Holiday (1998)
- Are Prisons Obsolete? (2003)
- Abolition Democracy: Beyond Empire, Prisons, and Torture (2004)
- The Meaning of Freedom: And Other Difficult Dialogues (2012)

Design: Olushola Olojo | Source: Wikipedia & History...

A huge congratulations is in order, as you will find Shola (as of 24/05/21) on the Tableau Public Featured Authors page, along some other incredible talent.



Olushola Olojo

Lagos, Nigeria

31 vizzes 231 followers 42 following

Shola is an insights manager at Samsung Electronics UK. Beginning his Tableau Public journey in October 2020, he valued the embracive culture of the [#DataFam](#) community, and the tremendous support system Tableau offers to new users. By coupling a unique storytelling element in his [Medium](#) blogs and visualizations, Shola explores how data can help drive social change in Africa. He asserts that the [#Viz5](#) initiative highly resonates with him as it calls to the forefront key social issues impacting the continent. Before working with data, he was an athlete and competed at the UK Championships and Olympic Trials. Connect with Shola on [Twitter](#) and [LinkedIn](#).

✓ Following

[View Profile](#)

What I appreciate hugely about Shola is his ability to bring his own unique style to his creations. With this in mind, the June edition is on “Learning Tableau: The Unconventional Way”. Shola will look to cover his end to end productionised thought process from data searching, to communication, to design elements. In our initial discussions I was so pleased to hear the emphasis Shola made on both personal progression, expressing himself through visualization and his thought process behind conveying a theme within his dashboard designs.

Without further ado, Shola, over to you.

Learning Tableau

S: So you want to learn Tableau?

Don't worry, this isn't going to be like those pamphlets you pick up at your local chemist. At least, I hope not.

As with most superhero's origin story, mine began on Udemy with Kirill Eremenko and the **SuperDataScience** team. Joke aside, I never imagined a \$10 course would catapult me through this seemingly limitless doorway of data visualization.

When learning Tableau, learn the basics.

Delving into anything new, you must understand your foundations. In my case, I spent months watching online tutorials, attending webinars, and exploring public workbooks from some of the best authors around. It was three months of complete immersion. An arduous period, littered with unfinished projects. Thankfully, my dogged nature did not allow me to let up/ Perseverance led me to a place where I can confidently harness the power of Tableau and produce some truly compelling visualizations.

Fair warning, I do not delude myself into thinking I'm some kind of expert. There is no such thing.

“The moment you think you know everything, you know very little”

I take comfort in the knowledge that **Kevin Flerlage** also keeps a Google search tab open for looking up Table Calculations. I too periodically revisit all of my beginner's courses on Tableau. Never get bored of the basics as it's the vantage point to endless possibility. Only then will you be able to map out a feasible progression path.

But learning the basics isn't very unconventional? It actually proposes the exact opposite.

You're absolutely right. It's worth remembering that there is nothing new under the sun.

Sure, Tableau releases new updates monthly but at its core, it's merely a vehicle to ascertain insights. You're taking raw data, attempting to identify trends/patterns, and communicating this information to your audience.

As highlighted before, learning Tableau is relatively straightforward. However, developing the capacity to understand key elements structured around its use requires the adoption of a unique perspective.

Browsing through Twitter a few months ago, I came across an interesting tweet from Tableau Zen Master, **Luke Stanke**, Partner at Tessellation.

Speaking in verbatim, Luke tweeted something along the lines of;

"I'm here for all the resumes that say I spent 35 hours a week wrangling data. I'm not there for the endless list of cool things done with clean data"

If the perceived beacon of aristocracies in our Tableau community drives home the significance of data wrangling, wouldn't you agree that it's worth lending an ear to this area?

A common rule of thumbs is that data processing swallows approximately 65 — 70% of your time as an Analyst. That's more than two-thirds of the time spent extracting, munging through, and mapping data. As much as I love jumping into a pit full of sand, I'd foolish to think I could break the world record from a static position. To achieve a mark of around 15+metres into the sand, I would need to bound down the runway from a mark of over 40 meters. A good jump is allied by an even better approach.

The same principle applies when using Tableau. Good visualizations are contingent upon having well-structured, uniformed data.

Start on the Right Track

Let's tap into one of my memorable projects, ***The Complete Directory: U.S. College & Universities***, where I was challenged by one of the UK's leading college recruitment agencies to revamp their existing Tableau dashboard.

With obsolete data reaching as far back as 2012, the immediate focus was geared towards locating current, information. Feel free to bookmark the ***National Center for Education Statistics*** for all your post-secondary data needs.

Typical data-wrangling procedures include;

1. Loading the CSV into Jupyter Notebook
2. Removing Inconsistent Column Names

Rename Columns

```
In [398]: df1 = df1.rename( columns = {"value": "Demographic Count",
                                         "variable" : "Race & Ethnicity"
                                         })
df1.head()
```

Out[398]:

	UnitID	Year	Total Students (Men)	Total Students (Women)	Race & Ethnicity	Demographic Count
0	100654	2017	2429.0	3572.0	Asian	17.0
1	100654	2018	2381.0	3725.0	Asian	16.0
2	100663	2017	8108.0	12794.0	Asian	1180.0
3	100663	2018	8363.0	13560.0	Asian	1305.0
4	100690	2017	263.0	407.0	Asian	7.0

3. Identifying NULL Values

4. Changing Data Type

Melt Columns						
In [13]: df1 = df1.melt(id_vars=['UnitID', 'Institution', 'City', 'State Code']) df1.head()						
Out[13]:						
	UnitID	Institution	City	State Code	variable	value
0	177834	A T Still University of Health Sciences	Kirksville	MO	Sector	2
1	222178	Abilene Christian University	Abilene	TX	Sector	2
2	138558	Abraham Baldwin Agricultural College	Tifton	GA	Sector	1
3	488031	Abraham Lincoln University	Glendale	CA	Sector	3
4	172866	Academy College	Bloomington	MN	Sector	3

5. Omitting Duplicate Rows.

Daniel Chen hosts an insightful tutorial on [YouTube](#), that takes you through the fundamentals of data manipulation using Python.

The completed visualization garnered a fair amount of positive feedback from the #DataFam community, with messages congratulating me for putting together such a beautifully crafted dashboard.

It even went as far as to earn me my very first VOTD nomination.

A clear job well done!

Unknowing to the eye, however, was the three days spent combing through slabs of data to mitigate any ambiguity and ensure the information extracted was suitable for visualizing.

Recount the analogy of The Graceful Swan.

We're spoilt with an abundance of great initiatives within our Tableau community. I am always keen to steer beginners looking to get started in Tableau to partake in these weekly challenges.

What I'm not an advocate of is solely exposing yourself to squeaky clean datasets found on [Kaggle](#) and [data.world](#). By doing this, you negate yourself from the valuable learning opportunity nested in finding, scraping, and cleaning your own data.

You might counter and say that this subject is outside your pay bracket. In fact, your organization already has an established team tasked with dealing with all this data-cleaning malarkey.

Now imagine just how valuable you become to your team when you buttressed your exceptional visualization skills with the capacity to offer sound recommendations on how best to structure data for insights.

Learn Tableau by learning how to process data.

Learn Design

Dovetailing from data processing, we enter into undoubtedly my favorite aspect of building a dashboard, the design!

Pioneered by the likes of [Judit Bekker & Tamás Varga](#), the integration of UI/UX elements into the creations of dashboards is very much what the cool kids are doing nowadays on Tableau.

Let's not forget about that chap, [CJ Mayes](#), who has an uncanny ability to marry what seems to take the appearance of a space vortex with data.

Learning how to utilize design tools, albeit Figma, Adobe Illustrator, or Powerpoint is a surefire way to achieve a polished, modern finish to your dashboards.

Sweat The Small Stuff

What isn't taught on most online Tableau tutorials, is attention-to-detail. A common trait that marks some of the best visual designers.

You've got to sweat the small stuff.

Competing as an NCAA Division I athlete taught me this in spades. I have vivid recollections of lining up against the Top 47 athletes in the nation at the Regional Championship.

Survive and advance. You have three attempts with the Top 12 progressing to the big dance in Eugene, Oregon.

In a game of inches, how do you distinguish between 48 carbon copies when factors such as speed, power, and size are held relatively constant across the board.

Attention-to-detail.

More often than not, it was those athletes who prioritized their diet, recovery, and sleep that was conditioned enough to withstand the heat and progress through to the finals.

I draw stark parallelism between my formative years as an athlete and my current works in Tableau. Paying close attention to design details rooted in typography, purposeful use of colors, white space, and micro-interaction features will give your visuals the kick it needs.

My Tidbits

It's always interesting to compare how my designed aesthetics has evolved over the course of months. Currently, I'm riding the minimalist train to design dashboards teeming with information but simple enough for the viewer to digest.



Here are my tidbits for achieving a minimal finish on your dashboard

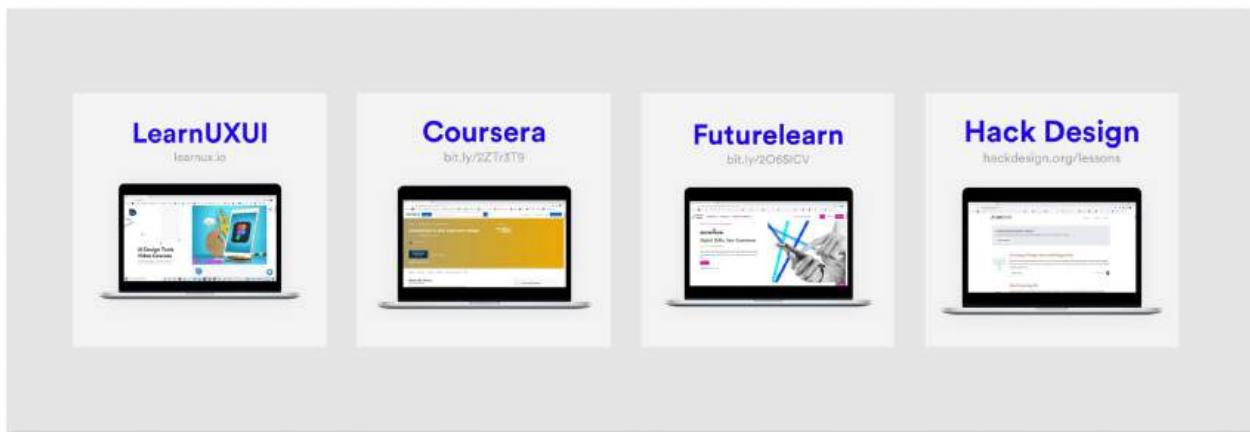
- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

White Space: Be generous with the space between elements.
Colors: Use shades of black and white in your design
Typeface: Avoid quirky fonts, use a clean *Sans Serif* font instead. Remember, there is a reason as to why *Tableau Book* is the default font choice.
Images: Avoid busy images, use a .png with a transparent background.
Icons: Keep your icons consistent with the colors used throughout your dashboard.
FONTS: Mentioning this again to drive it home. Keep your font to a minimum. Use different weights of the same font
Alignment: Avoid misalignment in your design. They're easy to spot and distract the viewer.

Design is becoming prevalent in the Tableau space. You only need to look at the submissions of the latest cohorts at **The Information Lab** to determine just how rapidly the landscape is changing.

Evolve with it.

Check out these sites for free UI UX courses, courtesy of Arpit Patel.



Pull your dashboards out of the dark ages and dot your Tableau portfolio with some eye-candy.

Learn Tableau by learning how to design.

C: With this in mind, has there been any recent dashboards in the community that you think particularly stood out?

"We come packaged with the tools within, all we need is to be inspired"

A momentary pause for reflection on my Tableau journey came over me this bank holiday weekend. Ignited by a tweet from Tableau imploring the Data Fam community to think about who has inspired them thus far.

Here are some authors from who I source some design inspiration.

Josh Hughes

For starters, I'm a huge fan of anything chocolate and drizzled in caramel so forgive me for wanting to pull this viz off the screen. I'd throw Josh in the minimalist bracket with his chart choices and subtle use of colours. In this particular viz, Josh demonstrated immense creativity to use a chocolate bar packaging as a canvas. Reading further about the thought process behind the selection of his colour palettes on the February edition of 'What's Good?' speaks volumes to his skills as a designer.

Cocoa Beans

Ellen Blackburn

There exist a huge gulf between dashboards designed for Tableau Public and practical dashboards used in a corporate setting. Ellen's portfolio does an amazing job of bridging that gap by showcasing some of the best business-style dashboards around. What really stood out to me was her mastery of tiled containers and her intuitive use of colours to create uniformity throughout her vizzes.

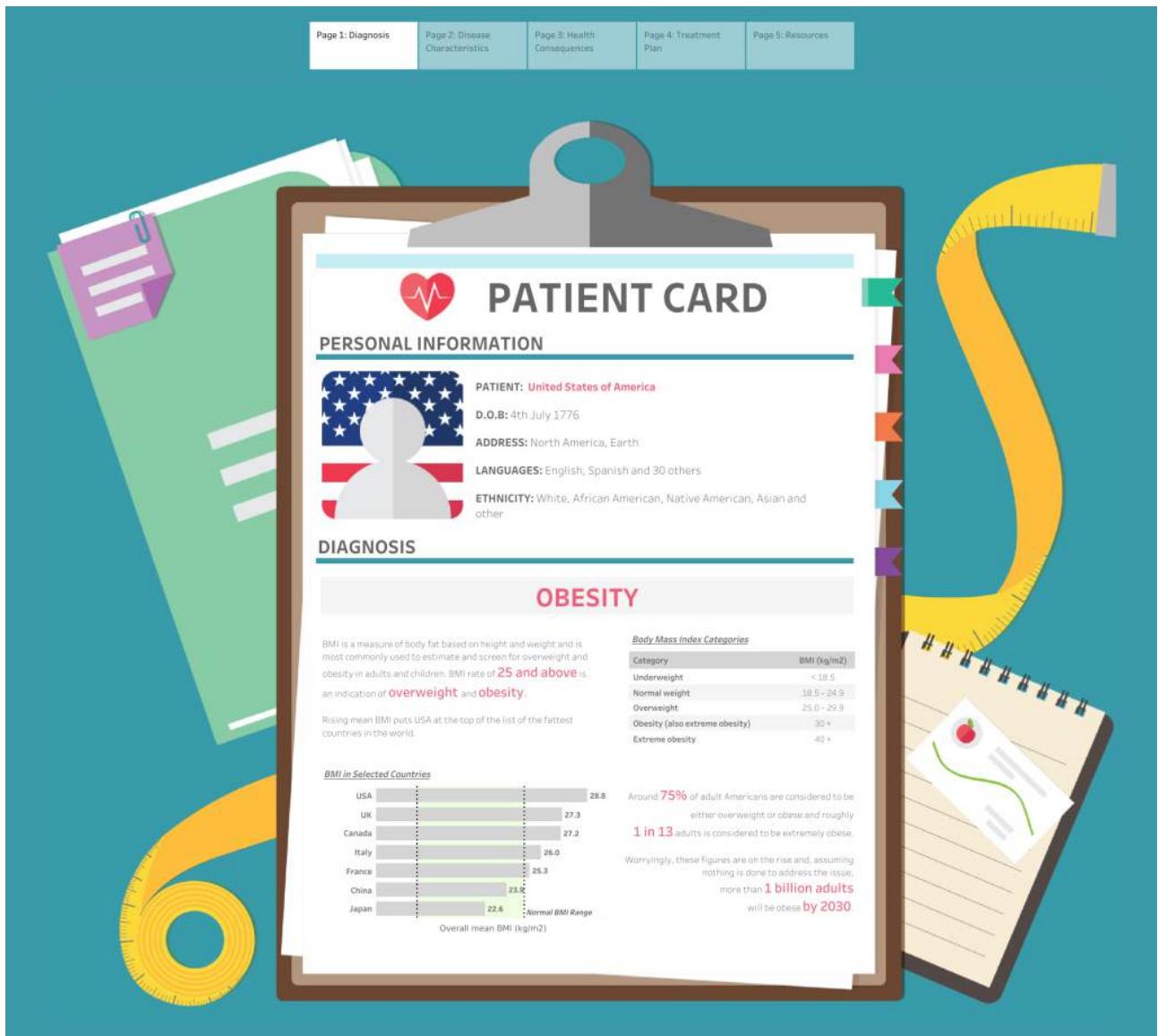
Demo Insurance Dashboard

Kasia Gasiewska-Holc

The latest cohort of Tableau Public Featured Author brought me to Kasia's profile. Browsing through her page, I had to check a few times that I was still on the Tableau Public server. There is no way this was done using Tableau, right? The imagination behind her '**Dwight Schrute's Computer**' visualization blew me away.

Great designs are often married with out-of-the-box thinking, and Kasia certainly employs this in her work.

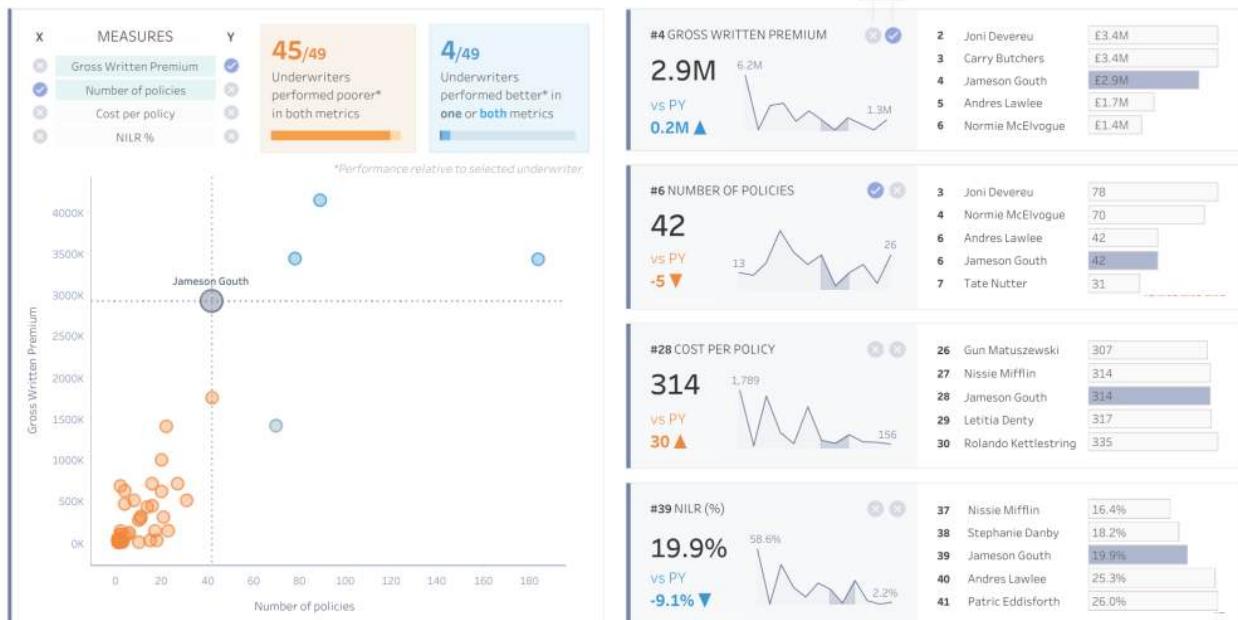
Obesity in the USA



INSURANCE | Underwriter Performance | 2019 Q3

▶ Selected Underwriter: Jameson Gouth

Settings



Designed by: @ellenblackburn | Data: Mockaroo



LEARN WRITING

So you've gathered the data and beautified your dashboard. What's next?

The utility of communication in the data visualization world is so self-evident that it can pass without question — yet it's so often neglected!

Lest we forget that the whole purpose behind Tableau and any other visualization tool, for that matter, is to communicate insights to your audience in a succinct, intuitive manner.

Do you know write? Truly, read and write!

I often say to myself, If I'm ever graced with the opportunity to go back to school, I'll be gunning for a Masters in English or Social Psychology — sod Data Analytics.

What has that got to do with Tableau?

It's a shifting landscape. Gone are the days of Analysts being tucked away in a dark room, with their headphones in punching away at the keyboard. With a strengthening candidate pool, Analysts are not only expected to produce insightful visualization but have the dexterity to articulately convey this story to executives.

Data-storytelling.

Happy Medium

Granted I've fallen off the horse a tad due to an increase in workload, but creating a **Medium** account last year and churning out content was the greatest step towards enhancing my communication skills.

Writing is formalized thinking.

The more I wrote, the more precise I became with my speech. This clarity began seeping into other areas of my work.

As opposed to chucking all sorts of objects onto my dashboard, I became extremely selective with my chart choices. My anecdotal texts that often provide some context to my visuals were concise, minimizing any ambiguity.

I knew EXACTLY what story I wanted to tell. Upon reflection, this might explain why I have recently ventured down the minimalist route in my visualizations.

A large proportion of my time as an Insights Manager is spent writing proof of concepts to higher-ups, deciphering through business strategies, and transcribing performance evaluations to my team. Sounds a little more than building a few dashboards or reports, doesn't it?

As a young wolf still climbing the hill, I pay close attention to what those at the top are doing.

Notice that the vast majority of Tableau Zen Masters, Ambassadors, and Featured Authors all have running blogs to document their journey and relate to their wider community.

You don't have to start a blog but learn how to write!

"The pen is mightier than the sword"

I know this is a trite idiom but really flesh it out. Discover the power of your words and convey your visualization clearly.

Learn Tableau by learning how to write.

Finally, learn Tableau by doing and FAILING.

I cringe at my early attempts at trying to use tiled containers for a business dashboard — I almost got kicked off the project.

You're going to have to faff up a few dashboards before you get comfortable. Lean towards this knowledge.

"Throw yourself in the deep end, and swim to the shallow."

Find your passion project — something that really moves you. In most instances, there will be existing literature on your subject.

Challenge yourself by building a web scraper to curate your own dataset. Pay close attention to detail as you beautify your work. Write about your journey, and watch your path becomes clear.

This is by no means an exhaustive list, but it's a start.

Whilst putting together this piece for CJ's blog, I kept recalling a phrase uttered to me by the Two-Time U.S. Olympian, Kenta Bell. I was fortunate enough to have a brief stint training under his tutelage in Nashville, Tennessee.

"Do you want to be great? Then learn to do the common things, uncommonly well."

Learn Tableau the unconventional way. Thank you for having me!

CJ Round-up:

A couple points specifically really resonated with me that I want to re-emphasize in a much less eloquent way than Shola has originally put.

The first is Shola mentions three months of complete immersion. To me, there is no one size fits all when learning Tableau. Only by downloading, reviewing, 'stealing' and deconstructing visualisations do you improve on different components which make up the visualisation. **Steve Wexler** highlights the idea of "paying it forward" in a recent **Tableau praise post**. Let's create, share and improve together.

Secondly, Shola mentions how learning these things in tandem is how to improve. I want to add to this by saying diversifying your skillset outside of Tableau (and data concepts in general) is a way of improving your Tableau skills.

I recently finished reading Steven Barlett's (Social Chain CEO) book where he mentions how he was voted number 1 leading figure in social media marketing. He admits that looking at his skill stack there were people better than him at specific skills. He iterates how to become the best in your industry you do not need to become the best at any one aspect, you just need to be very good at a variety of complementary skills. *"If you are willing to step outside of your zone of comfort into territories that someone like you doesn't usually explore, you too can build a skill stack capably of changing your life, eclipsing your industry and potentially,*

even changing the world. You can become the best at something, without being the best at anything”
Lastly, I want to say thank you to Shola for his contribution. I was delighted that he said yes to wanting to feature on the blog. He has managed to capture so many important points in one, looking at the power of data, design and writing both together and separately.

I think I am going to print Shola's design tips and stick them up on the wall. I am loving the segment on don't sweat the small stuff and how he draws on his sporting success as a reference point.

If you have any questions or comments for Shola he can be found on [Twitter](#), [Medium](#) and [Tableau Public](#).

LOGGING OFF.

CJ

UNDERSTAT DATA IN TABLEAU #SPORTSVIZSUNDAY

This post covers an optional introduction to python to get hold of soccer data through Understat, as well as how to load the data into Tableau and map the shots on a pitch. Some example datasets have been created for those that want to just solely create the Tableau elements. A fun one for #SportsVizSunday folk!

SCRAPING DATA FROM UNDERSTAT

(PYTHON DEVELOPMENT DASHBOARD)

- Aaron Wan-Bissaka 1 - 0 17'
- Marcus Rashford 2 - 0 24'
- 33' 3 - 0 Jan Bednarek
- Edinson Cavani 4 - 0 38'
- Anthony Martial 5 - 0 68'
- Scott McTominay 6 - 0 70'
- Bruno Fernandes 7 - 0 86'
- Anthony Martial 8 - 0 89'
- Daniel James 9 - 0 92'

Dashboard to understand web scraping of Understat matches, and applying the shot locations into Tableau

Small amendments were made to [McKay Johns](#) python tutorial 'How to scrape Understat for football data in Python with requests and BeautifulSoup' and [Sagnik Das](#) 'Tableau Guide #1: Making Shot Maps'

MANCHESTER UNITED

9-0

SOUTHAMPTON

Manchester United achieved a 9-0 win over Southampton on the 2nd February 2021. This visualisation looks to replicate the graph found at <https://understat.com/match/14651>. Note, shots are recorded for each team and not split by half.

CJ MAYES

Hello!

Unlike previous blog posts where I cover off thought processes behind ideas I am hoping this tutorial will be a bit more substantial in terms of following along to create your own.

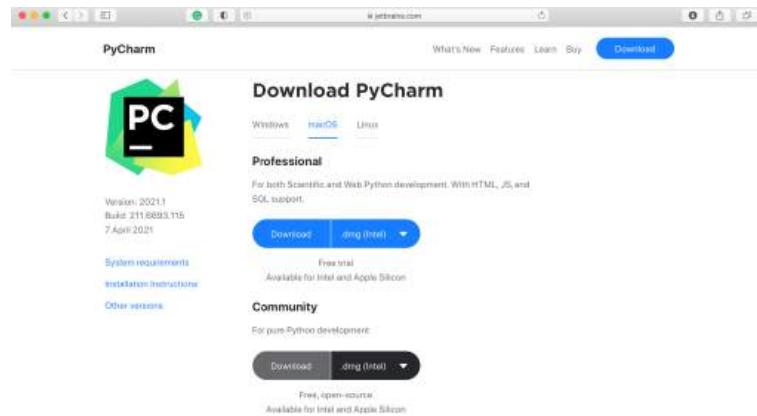
It is has been on my goals for the year to get more familiar with python and it's usability. I am grateful that I am surrounded by encouragement from our team at work, those doing the #100DaysofCode course in the wider data community, as well as following some stars in the sports community. You may recently have seen Mckay Johns, on the most recent "What's Good?" blog, or the headway [Alexander Varlamov](#) is making in his various sports tutorials.

If you'd rather not use python and skip straight to the datasets I've created then skip forward to the Tableau part in the bottom half of the blog!

The datasets can be find on my local Github repo, from the top of the page. They can be found in the Datasets Season 2019:20 folder. You will see the League Player data csv export includes an aggregated view of every players stats in the chosen league for the 2019/20 season, covering details such as number of

games played, total cards and number of goals scored. The code then takes these players and finds every single shot they took within the league in that season, under the file Player shot data csv These files are split by league, and are also for the season 2019/20.

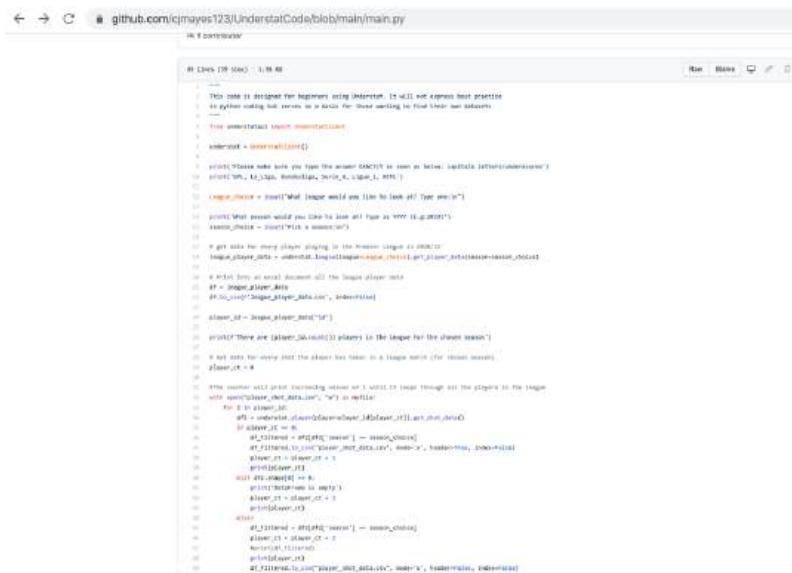
PYTHON



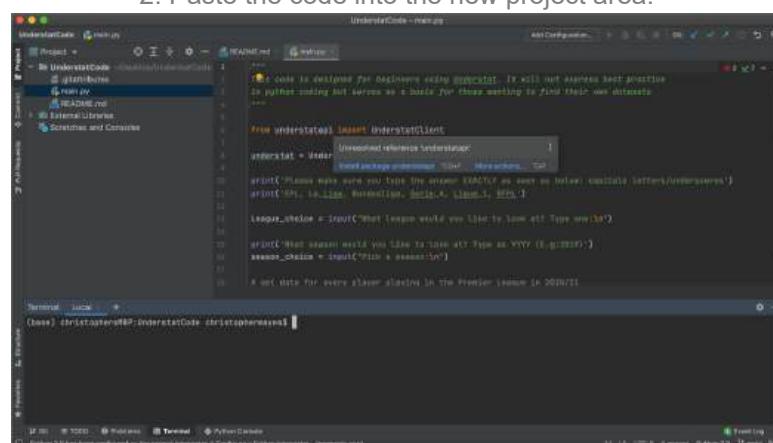
I have chosen to use PyCharm to run the code in but it's up to you. You can download Pycharm Community from the link, [here](#).

The code can be found in the GITHUB repo in the main.py file.

It will look like the below. I tried to make it both user friendly and easy to understand for anyone just starting out.



1. Create a new project and copy the code from the repo.
 2. Paste the code into the new project area.



3. You will initially see that `understatapi` in line 6 above has a redline under it. This is because it is a package we do not initially have. Hover over it and click `install package understatapi`.

If this doesn't work. Locate the terminal at the bottom of the page and write "pip install understatapi"

```
Terminal: Local: ~ +  
Collecting urllib3<1.27,>=1.21.1  
  Using cached urllib3-1.26.4-py2.py3-none-any.whl (155 kB)  
Using legacy 'setup.py install' for urllib3, which package 'wheel' is not installed.  
Installing collected packages: six, urllib3, pytz, python-dateutil, numpy, idna, charsetet, certifi, selenium, requests, pandas, understatapi  
  Running setup.py install for urllib3 ... done  
Successfully installed certifi-2020.12.5 chardet-4.0.0 idna-2.10.2 numpy-1.20.2 pandas-1.2.4 python-dateutil-2.8.1 pytz-2021.1 requests-2.28.1 selenium-5.14.0  
six-1.15.0 understatapi-0.4.1 urllib3-1.26.4  
tvmwv (base) christophersM&P:~ christophersmeyers$
```

You will see the red line disappear once the package has installed.

(Update 27/04: Mo Wootten kindly offered to do some testing prior to release and pointed out there's a dependency in the understatsapi package for numpy > 1.2 which meant that initially he couldn't successfully install it (it comes up with an error about numpy.typing))

To get round this you will need to update your numpy package or install the ‘typing-extensions’ package

before the understatapi. ***import numpy.typing***

Thanks Mo!)

Now all we have to do is....

CLICK RUN (and follow the terminal steps (see point 5))

What does the code do?

```
1  
2 from understatapi import UnderstatClient  
3  
4 understat = UnderstatClient()
```

We are tapping into the understatapi, if you hover over the word it gives you some more details as to what is included in the package.

```
6 print('Please make sure you type the answer EXACTLY as seen as below: capitals letters/underscores')
7 print('EPL, La_Liga, Bundesliga, Serie_A, Ligue_1, RFPL')
8
9 league_choice = input("What league would you like to look at? Type one:\n")
10
11 print('What season would you like to look at? Type as YYYY (E.g:2019)')
12 season_choice = input("Pick a season:\n")
```

The first two are print statements. You will see them pop up in the terminal.

5. You will want to click into the terminal and write your response choosing from the options. Why not try “EPL” and “2019” to start.

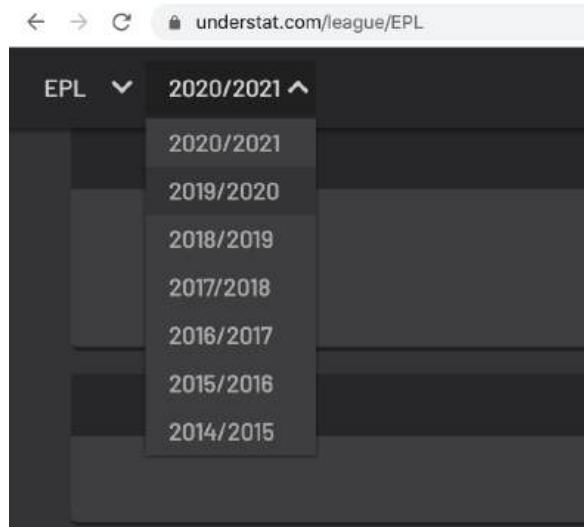
The screenshot shows the PyCharm IDE interface with the following details:

- Project Tree:** Shows the project structure under "UnderstatCode".
- Code Editor:** Displays a Python script named "main.py". The code imports the UnderstatClient from the understatapi module and uses it to fetch player data for the Premier League in the 2020/21 season.
- Run Tab:** Shows the command run in the terminal: "/Users/christophermayes/Desktop/UnderstatCode/venv/bin/python /Users/christophermayes/Desktop/UnderstatCode/main.py". The output of the script is displayed in the terminal window, asking for league choice and season choice, and then listing the available leagues and seasons.

The code saves your text input and saves it as the choice made.

```
/Users/christophermayes/Desktop/UnderstatCode/venv/bin/python /Users/christophermayes/Desktop/UnderstatCode/main.py
Please make sure you type the answer EXACTLY as seen as below: capitals letters/underscores
EPL, La_Liga, Bundesliga, Serie_A, Ligue_1, RFPL
What league would you like to look at? Type one:
EPL
What season would you like to look at? Type as YYYY (E.g:2019)
Pick a season:
2019 |
```

We later refer to these choices, so it is vital you spell the league name and year correctly otherwise the code fails. To have a better knowledge of what seasons are available make sure to check out the [understat.com](https://understat.com/league/EPL) site! For example here is EPL's choices years. We type in 2019 to get season 2019/2020.



6. What happens next?

```
# Print into an excel document all the league player data
df = league_player_data
df.to_csv(r'league_player_data.csv', index=False)

player_id = league_player_data["id"]
teams = league_player_data["team_title"]
myset = set(teams)

print(f'There are {player_id.count()} players in the league for the chosen season')
```

We find all the league player data. Here it refers to our chosen league and season.

Next we look to export this data into a CSV. The index set to false removes a row counter column that is unneeded.

We reassign the naming convention of the ID's within the dataset to player_id.

After this I take from the league_player_data all the team names. I create a set (a distinct version of the list).

This is because I will want to refer to it later within the loop.

We then print a message for simplicity stating how many players are in the chosen league, in the count statement.

```
What season would you like to look at? Type as YYYY (E.g:2019)
Pick a season:
2019
There are 515 players in the league for the chosen season
```

(At this point we have reached the league_player_data.csv) stage.

We will next look at the for loop statement. The code will automatically go on to start printing numbers up to the total count, 515 in this instance. I have done this because, if you're anything like me, you're super impatient and want to check the code is running. Once the number hits the total count it will stop and say "Process finished with exit code".

```

main.py
1 # Get data for every shot the player has taken in a league match (for chosen season)
2 player_ct = 0
3 #The counter will print increasing values of 1 until it loops through all the players in the league
4 with open('player_shot_data.csv', "w") as myfile:
5     for i in player_id:
6         df2 = understat.player(player=player_id[player_ct]).get_shot_data()
7         if player_ct == 0:
8             df2['filtered'] = df2[df2['season'] == season_choice]
9             df3 = df_filtered.loc[df_filtered['h_team'].isin(myset)]
10            df3.to_csv("player_shot_data.csv", mode='a', header=True, index=False)
11            player_ct = player_ct + 1
12            print(player_ct)
13        elif df2.shape[0] == 0:
14            print('DataFrame is empty')
15            player_ct = player_ct + 1
16            print(player_ct)
17        else:
18            df2['filtered'] = df2[df2['season'] == season_choice]
19            df3 = df_filtered.loc[df_filtered['h_team'].isin(myset)]
20            player_ct = player_ct + 1
21            print(player_ct)
22            df3.to_csv("player_shot_data.csv", mode='a', header=False, index=False)

with open("player_shot_data.csv... > for i in player_id > elif df2.shape[0] == 0

```

un: main

```

DataFrame is empty
513
514
515

Process finished with exit code 0

```

I create a counter starting on 0 for the number of players. We will loop through each of the players (515) in the EPL to retrieve their goals as part of the get_shot_data() function and print these in a new csv called player_shot_data.csv

```

main.py
1 # Get data for every shot the player has taken in a league match (for chosen season)
2 player_ct = 0
3 #The counter will print increasing values of 1 until it loops through all the players in the league
4 with open('player_shot_data.csv', "w") as myfile:
5     for i in player_id:
6         df2 = understat.player(player=player_id[player_ct]).get_shot_data()
7         if player_ct == 0:
8             df2['filtered'] = df2[df2['season'] == season_choice]
9             df3 = df_filtered.loc[df_filtered['h_team'].isin(myset)]
10            df3.to_csv("player_shot_data.csv", mode='a', header=True, index=False)
11            player_ct = player_ct + 1
12            print(player_ct)
13        elif df2.shape[0] == 0:
14            print('DataFrame is empty')
15            player_ct = player_ct + 1
16            print(player_ct)
17        else:
18            df2['filtered'] = df2[df2['season'] == season_choice]
19            df3 = df_filtered.loc[df_filtered['h_team'].isin(myset)]
20            player_ct = player_ct + 1
21            print(player_ct)
22            df3.to_csv("player_shot_data.csv", mode='a', header=False, index=False)

with open("player_shot_data.csv... > for i in player_id > elif df2.shape[0] == 0

```

un: main

```

DataFrame is empty
513
514
515

Process finished with exit code 0

```

Explanation*:

The code Opens the file if it exists in write mode, if it does not exist it therefore creates it. I have written it this way so the file overwrites itself each time.

For every single player within the list of 515 id's do the following:

Find the player count number in the list (which will be increasing by 1 each time) and find all their shot location data.

Filter all the chosen players shot data to the chosen season_choice, without this we would record every single shot that player has made for all seasons! We then want to add 1 to the player count as on the next loop it will take the next player and find all the shot data for that player.

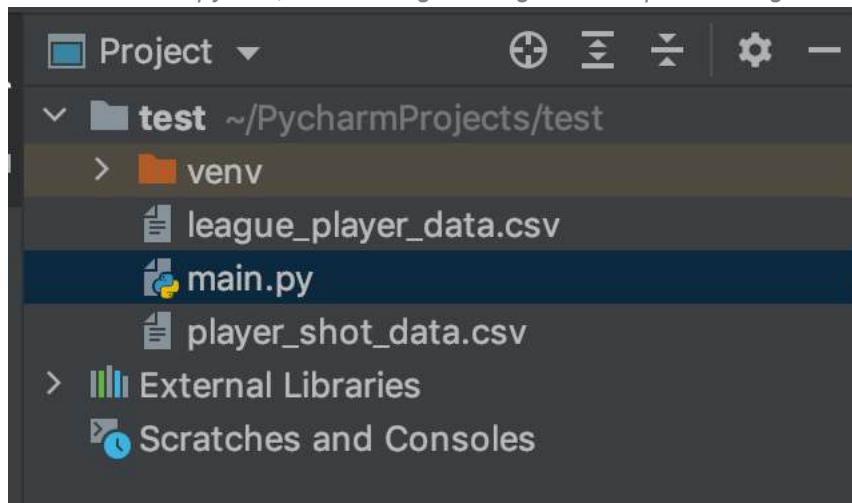
line 'df3 = ...' looks to filter the shot data to teams where the h_team is in the set of teams we created from the previous dataset. If we didn't have this filter on we would end up with shots from players who may have transferred out of / or into the premier league mid season! Therefore we filter to shots where the players were in games from the 20 teams in the EPL.

We print the number of times we have done the loop (because I am being impatient). Append this data we collect to the excel document for player_shot_data (mode=a)

If it is the first time running, include the header for the column names.

Finally the last thing to cover is the elif statement. I added this in because the code would fail if the player actually had no shot data for the chosen season. What this statement does, is if there is no data to retrieve, it will print that the data frame is empty for that person and continue onto the next player. Not everyone can score goals after all!

**Do note, I have this may not be the most efficient code, but I am hoping it is somewhat understandable for those that are new to python, or want to give it a go with no prior coding knowledge.*



Once you have looped through all the players you will see your csv's appear in the top left! They will be in the folder path of your main.py, wherever you created your project path. For me this is under my Macbook home and then PyCharmProjects folder. You can do a search in your finder if you are struggling to locate the folder path. I'd recommend opening them in excel rather than in PyCharm.... it looks prettier.

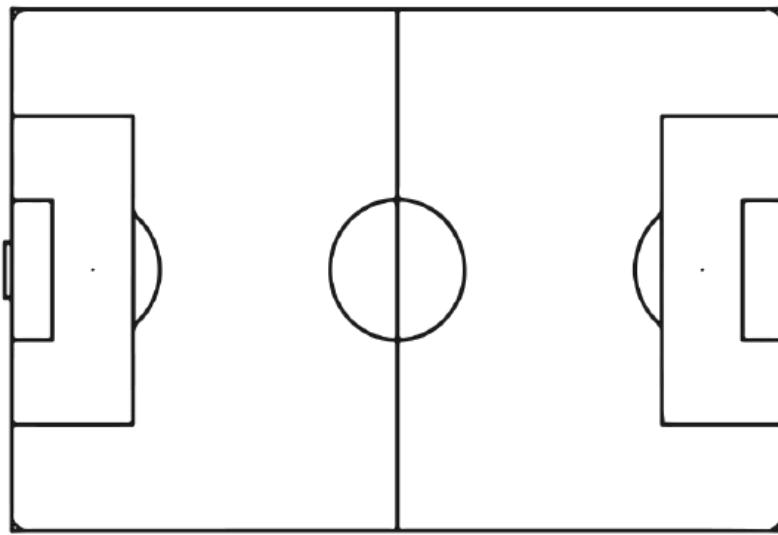
player_shot_data.csv

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	id	minute	result	X	Y	xG	player	h_a	player_id	situation	season	shotType	match_id	h_team	a_team	h_goals	a_goals	date	player_assist
2	311184	76	MissedShots	0.91400002	0.70300003	0.04894193	Jamie Vardy	a	755	OpenPlay	2019	LeftFoot	11661	Chelsea	Leicester	1	1 #####	James Madd	
3	312501	16	MissedShots	0.93900002	0.46900002	0.08149232	Jamie Vardy	a	755	OpenPlay	2019	Head	11665	Sheffield Uni	Leicester	1	2 #####	Youri Tielem	
4	312505	37	Goal	0.91099998	0.63200003	0.31542429	Jamie Vardy	a	755	OpenPlay	2019	LeftFoot	11665	Sheffield Uni	Leicester	1	2 #####	James Madd	
5	315830	11	Goal	0.77200003	0.71800003	0.13221164	Jamie Vardy	h	755	OpenPlay	2019	RightFoot	11677	Leicester	Bournemouth	3	1 #####	Ben Chilwell	
6	315835	25	SavedShot	0.80699997	0.249	0.02008084	Jamie Vardy	h	755	OpenPlay	2019	RightFoot	11677	Leicester	Bournemouth	3	1 #####	Ricardo Pere	
7	315845	72	Goal	0.91400002	0.46700003	0.67199987	0.07703759	Jamie Vardy	h	755	OpenPlay	2019	LeftFoot	11677	Leicester	Bournemouth	3	1 #####	Youri Tielem
8	320206	27	BlockedShot	0.92900002	0.67199987	0.07703759	Jamie Vardy	h	755	OpenPlay	2019	LeftFoot	11694	Leicester	Tottenham	2	1 #####	Ayoye PAG	
9	320217	56	SavedShot	0.91199997	0.61	0.07043719	Jamie Vardy	h	755	OpenPlay	2019	LeftFoot	11694	Leicester	Tottenham	2	1 #####		
10	320221	72	MissedShots	0.90300003	0.31200001	0.11650483	Jamie Vardy	h	755	OpenPlay	2019	RightFoot	11694	Leicester	Tottenham	2	1 #####	James Madd	
11	323409	41	MissedShots	0.905	0.555	0.10922936	Jamie Vardy	h	755	OpenPlay	2019	Head	11710	Leicester	Newcastle U	5	0 #####	Youri Tielem	
12	323441	49	MissedShots	0.90699997	0.50700001	0.056861	Jamie Vardy	h	755	OpenPlay	2019	Head	11710	Leicester	Newcastle U	5	0 #####	Ben Chilwell	
13	323442	53	Goal	0.93900003	0.70800003	0.05923431	Jamie Vardy	h	755	OpenPlay	2019	LeftFoot	11710	Leicester	Newcastle U	5	0 #####	Harvey Barne	
14	323444	63	Goal	0.97099998	0.64099998	0.58140068	Jamie Vardy	h	755	OpenPlay	2019	Head	11710	Leicester	Newcastle U	5	0 #####	Marc Albright	
15	325645	38	MissedShots	0.93900002	0.69400002	0.05492632	Jamie Vardy	h	755	OpenPlay	2019	LeftFoot	11728	Leicester	Burnley	2	1 #####	James Madd	
16	325647	44	Goal	0.93300003	0.49400002	0.06349708	Jamie Vardy	h	755	OpenPlay	2019	Head	11728	Leicester	Burnley	2	1 #####	Harvey Barne	
17	326840	32	MissedShots	0.73800003	0.54599998	0.04692338	Jamie Vardy	a	755	OpenPlay	2019	RightFoot	11740	Southampton	Leicester	0	9 #####		
18	326847	44	Goal	0.89699997	0.55700001	0.49707955	Jamie Vardy	a	755	OpenPlay	2019	RightFoot	11740	Southampton	Leicester	0	9 #####		
19	326848	47	SavedShot	0.85599998	0.62099998	0.07849772	Jamie Vardy	a	755	OpenPlay	2019	LeftFoot	11740	Southampton	Leicester	0	9 #####		
20	326851	57	Goal	0.95199997	0.51200001	0.59685922	Jamie Vardy	a	755	OpenPlay	2019	Head	11740	Southampton	Leicester	0	9 #####	Ben Chilwell	
21	326861	93	Goal	0.885	0.5	0.76116884	Jamie Vardy	a	755	Penalty	2019	RightFoot	11740	Southampton	Leicester	0	9 #####		
22	327945	17	SavedShot	0.95199997	0.66	0.11538535	Jamie Vardy	a	755	OpenPlay	2019	RightFoot	11747	Crystal Palace	Leicester	0	2 #####	James Madd	
23	327966	87	Goal	0.88	0.53900002	0.12301023	Jamie Vardy	a	755	OpenPlay	2019	LeftFoot	11747	Crystal Palace	Leicester	0	2 #####	Demarai Gra	
24	330837	7	BlockedShot	0.825	0.68400002	0.03112355	Jamie Vardy	h	755	OpenPlay	2019	RightFoot	11762	Leicester	Arsenal	2	0 #####		
25	330855	67	Goal	0.88599998	0.56900002	0.35650005	Jamie Vardy	h	755	OpenPlay	2019	RightFoot	11762	Leicester	Arsenal	2	0 #####	Youri Tielem	
26	330856	71	SavedShot	0.88400002	0.34200001	0.28150854	Jamie Vardy	h	755	OpenPlay	2019	RightFoot	11762	Leicester	Arsenal	2	0 #####	Demarai Gra	
27	332231	6	SavedShot	0.91599998	0.545	0.1134864	Jamie Vardy	a	755	SetPiece	2019	Head	11765	Brighton	Leicester	0	2 #####	Ben Chilwell	
28	332232	7	MissedShots	0.955	0.39700001	0.04986054	Jamie Vardy	a	755	FromCorner	2019	Head	11765	Brighton	Leicester	0	2 #####	James Madd	
29	332239	45	MissedShots	0.88900002	0.35799999	0.30539471	Jamie Vardy	a	755	OpenPlay	2019	RightFoot	11765	Brighton	Leicester	0	2 #####	James Madd	
30	332244	65	SavedShot	0.90300003	0.54900002	0.46134433	Jamie Vardy	a	755	OpenPlay	2019	LeftFoot	11765	Brighton	Leicester	0	2 #####	Ben Chilwell	
31	332249	81	Goal	0.885	0.5	0.76116884	Jamie Vardy	a	755	Penalty	2019	RightFoot	11765	Brighton	Leicester	0	2 #####		
32	332251	89	SavedShot	0.99099998	0.65900002	0.07480992	Jamie Vardy	a	755	OpenPlay	2019	LeftFoot	11766	Brighton	Leicester	0	2 #####	James Madd	
33	334469	30	MissedShots	0.85400002	0.48700001	0.06065222	Jamie Vardy	h	755	OpenPlay	2019	LeftFoot	11775	Leicester	Everton	2	1 #####	Ben Chilwell	
34	334471	47	BlockedShot	0.88	0.45400002	0.07363998	Jamie Vardy	h	755	SetPiece	2019	LeftFoot	11775	Leicester	Everton	2	1 #####	Ben Chilwell	

league_player_data.csv

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	id	player_name	games	time	goals	xG	assists	xA	shots	key_passes	yellow_cards	red_cards	position	team_title	npg	npxG	xGChain	xBulldup	
2	755	Jamie Vardy	35	3034	23.09305373	5.636829756	89	32	3	0	FS	Leicester	19	15.0976931	21.0266073	1.72434067			
3	318	Pierre-Emeri	36	3143	22.16352631	3.449248692	93	26	3	1	FM S	Arsenal	20	14.830359	19.964282	5.33965747			
4	986	Danny Ings	38	2836	22.156597172	2.284905809	93	35	3	0	FM S	Southampton	21	14.1373795	18.4880315	5.01593813			
5	618	Raheem Ster	33	2678	20.19799065	1.70858628	100	48	5	0	FM S	Manchester	20	18.2775687	31.4420103	10.185974			
6	1250	Mohamed Si	34	2904	19.20663187	10.872604252	132	60	1	0	FS	Liverpool	16	18.3798121	31.3741979	8.42502685			
7	647	Harry Kane	29	2595	18.13706766	2.11700631	82	27	4	0	F	Tottenham	16	11.7747651	16.8546159	3.05130131			
8	838	Sadio Mané	35	2761	18.145774829	7.723569348	77	59	3	0	FM S	Liverpool	18	14.5774829	25.0732052	6.767014			
9	553	Anthony Mai	32	2672	17.13404948	6.461877665	80	30	1	0	FS	Manchester	17	12.4793261	20.4095632	6.35781747			
10	556	Marcus Rash	31	2673	17.19503276	7.545717287	95	33	3	0	FM	Manchester	11	13.4144137	20.2447978	5.90657304			
11	4105	Raúl Jimé	38	3269	17.16510798	6.722694084	117	48	3	0	FS	Wolverham	13	13.4661226	22.5602395	5.70953264			
12	619	Sergio Agü	24	1462	16.5575003	3.292020883	76	19	1	0	FS	Manchester	14	13.2740307	16.878254	2.64476176			
13	702	Tammy Abra	34	2233	15.18082016	3.291304816	88	21	2	0	FS	Chelsea	15	18.0828016	19.8419198	1.54615089			
14	447	Kevin De Bru	35	2818	14.810642784	20.26307069	100	133	3	0	MF S	Manchester	12	6.58409016	37.7983107	19.2448237			
15	4466	Chris Wood	32	2462	14.72362015	1.470969609	65	22	1	0	FS	Burnley	13	16.4650327	12.6426509	2.45541092			
16	5543	Gabriel Jesus	34	2022	14.210152013	7.359885826	101	32	3	0	FS	Manchester	14	20.2540324	27.6522339	7.18130974			
17	5555	Dominic Calv	36	2639	13.16098429	1.33622483	85	15	9	0	FS	Everton	13	16.1098429	17.2124995	3.89676442			
18	6026	Richardson	36	3100	13.94826629	3.666813438	89	34	8	0	FM	Everton	13	9.84296629	16.4597498	5.19830647			
19	453	Son Heung-	30	2511	11.970170487	10.672172709	81	41	0	2	FM S	Tottenham	11	8.940535918	18.8000117	6.51401296			
20	750	Riyad Mahre	33	1938	11.64965568	9.110598491	74	60	0	0	FM S	Manchester	10	7.88848682	27.7655299	13.285809			
21	7696	Teemu Pukki	36	2908	11.15243451	3.61901542	80	30	3	0	FS	Norwich	9	10.0020704	14.7514658	2.38644243			
22	531	Michail Anto	24	1767	10.13495492	3.392194538	68	26	3	0	FM S	West Ham	9	12.4883803	13.9597074	2.77015558			
23	574	Troy Deeney	27	2253	10.115891938	2.373570302	45	29	3	0	FS	Watford	5	7.02218071	11.6324635	3.3349575			
24	3277	Alexandre La	30	1890	10.8664648	4.34229092	52	24	8	0	FS	Arsenal	10	8.6646482	12.0613017	2.50563462			
25	3621	Neal Maupay	37	2782	10.135584533	2.50613138	96	25	3	0	FS	Brighton	9	12.0362056	13.855043	3.48361691			
26	7490	Mason Gree	31	1304	10.33878573														

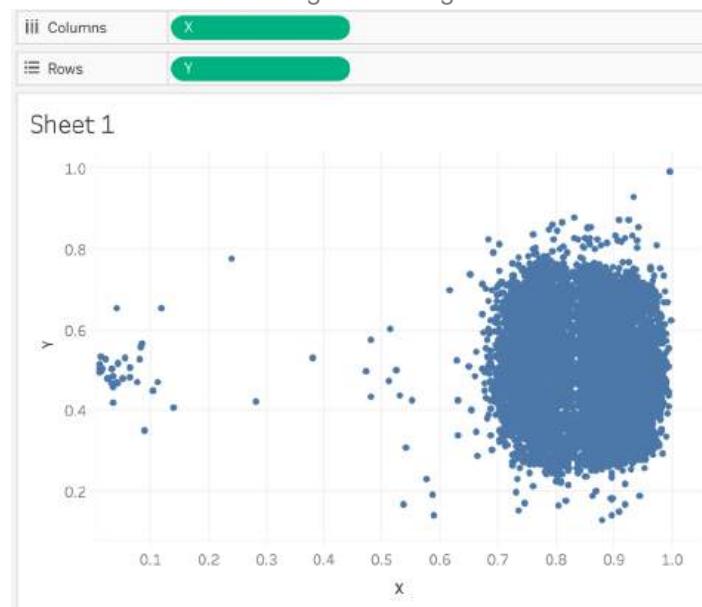
We will be replicating a lot of what we see here before taking it one step further. He helpfully also shares access to the pitch template we will use. You can find a copy in the repo. Or save the one from below. Feel free to edit the colours of the pitch to whatever you like.



We have the X and Y co-ordinates from the player_shot_data.csv James Smith rightly states that the most important things to take note of are the co-ordinates of the pitch template and to make sure it syncs with the background image. The other important thing will be to make sure our co-ordinates are the right way round so the players shot is on the correct side of the pitch!

We shall go through an example.

1. Connect to your player_shot_data.csv dataset, I will be using the EPL 2019 example from the python tutorial above.
2. We will need to scale the points from between 0 and 1 to the new scale of 120 and 80, ready for the background image.



Create two new calculated fields. One with X values multiplied by 120 and another calculated field Y where you multiply your Y values by 80.

X New

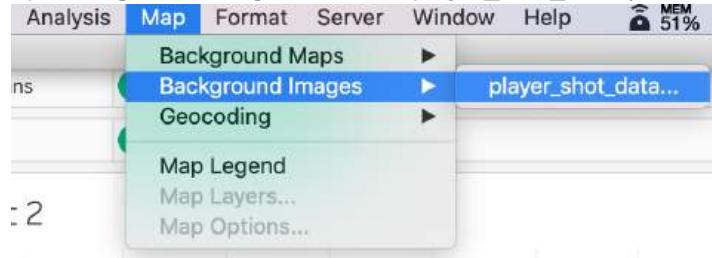
*120

Y New

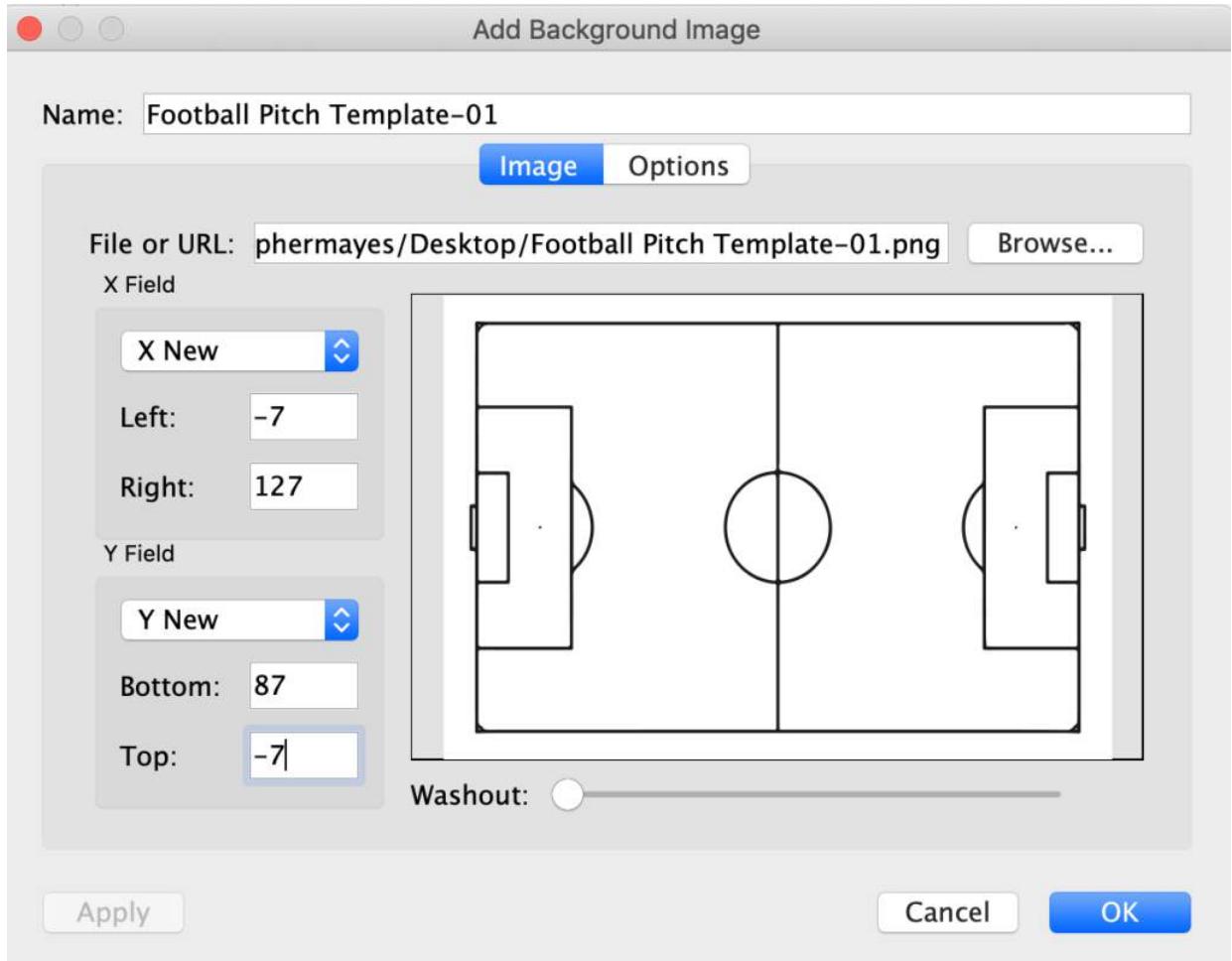
*80

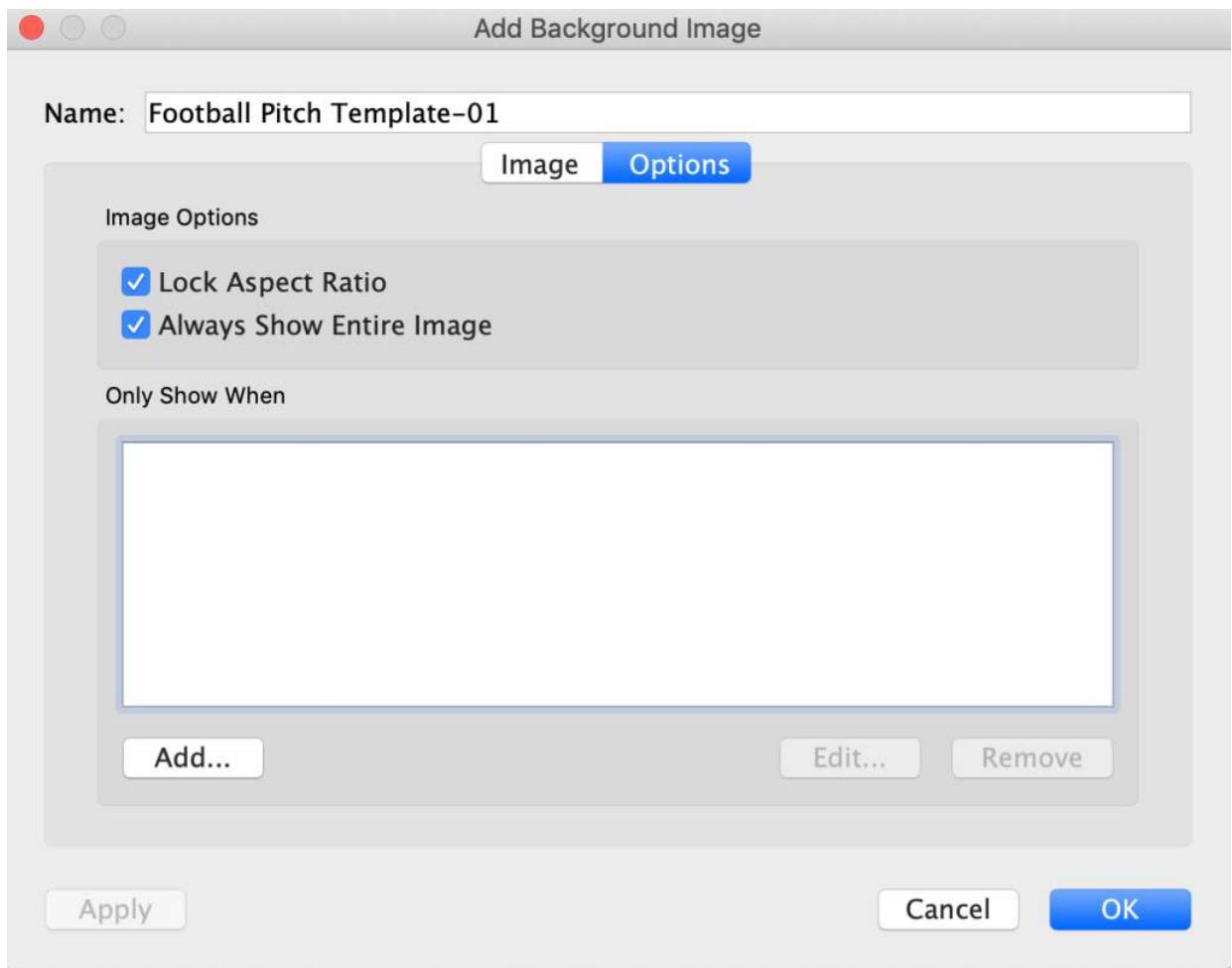
3. Plot these new values as Dimensions. We can then add the background pitch image in.

4. Go to Map, Background Images and click player_shot_data (The data source).



5. Locate your pitch background image and set the co-ordinates as below. I also like to lock the aspect ratio and always show entire image.





6. Fix the axis as below.

Edit Axis [X New]

X

General

Tick Marks

Range

- Automatic
- Uniform axis range for all rows or columns
- Independent axis ranges for each row or column
- Fixed

Fixed start

-7

Fixed end

127

Scale

- Reversed
- Logarithmic
- Positive
- Symmetric

Axis Titles

Title

X New

Subtitle

Subtitle

Automatic

 Reset

Edit Axis [Y New]

X

General

Tick Marks

Range

- Automatic
- Uniform axis range for all rows or columns
- Independent axis ranges for each row or column
- Fixed

Fixed start

-7

Fixed end

87

Scale

- Reversed
- Logarithmic
- Positive
- Symmetric

Axis Titles

Title

Y New

Subtitle

Subtitle

Automatic

 **Reset**

7. The last thing I like to do is turn off the map layer zoom ability in. Map – Map Options, Untick the Allow Pan and Zoom. You will want to do this both on your dashboard and sheet.

Map Options

X

Allow Pan and Zoom

Show View Toolbar

8. Currently we have our dataset shots all on one side. But what if we want to take a look at a specific match and split the shots by team?

Lets take a user case of of Leicesters 9-0 win over Southampton from the EPL season 2019.

If we go on Understat this is what we will see.

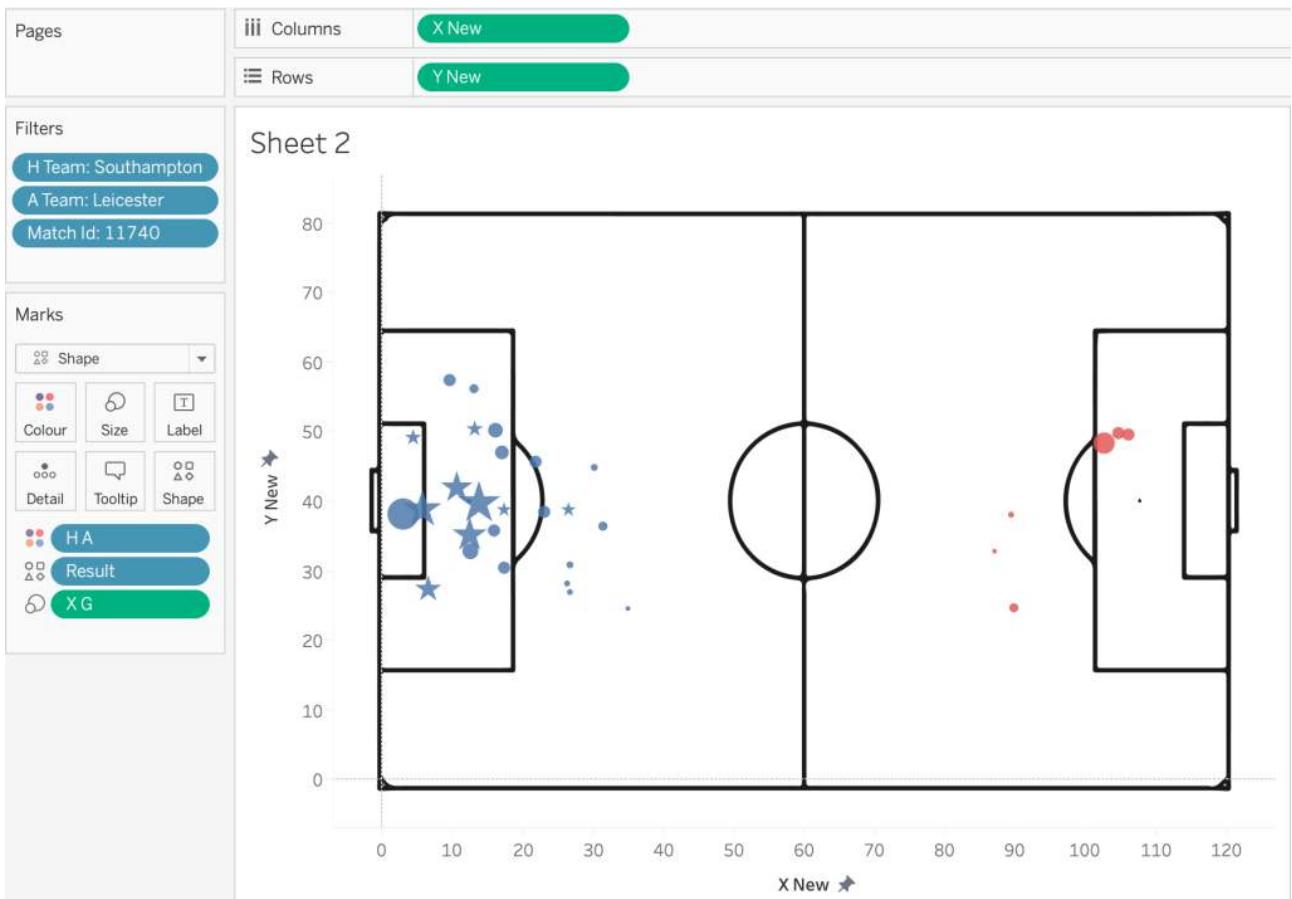


If we find match 11740 and drag it onto filter we will filter down to all the shots within this specific game. We now want to update our previous X and Y calculations to split the teams shots in half but making sure the shot is from the correct part of the pitch. (Quick note: The match ID can be seen in the original website URL <https://understat.com/match/11740>)

```
X New  
if = 'a' then  
-(*120)+120  
ELSEIF ='h' then  
*120  
END
```

Explanation: We want the away shots on the left, the direction that they are shooting. We want our home teams shots on the right, again the direction they are shooting. (If you'd want these shots actually split by half, e.g time you will need to change these calculations.) For now we are replicating the Understat website.

```
Y New  
if = 'a' then  
-(*80)+80  
ELSEIF ='h' then  
*80  
END
```



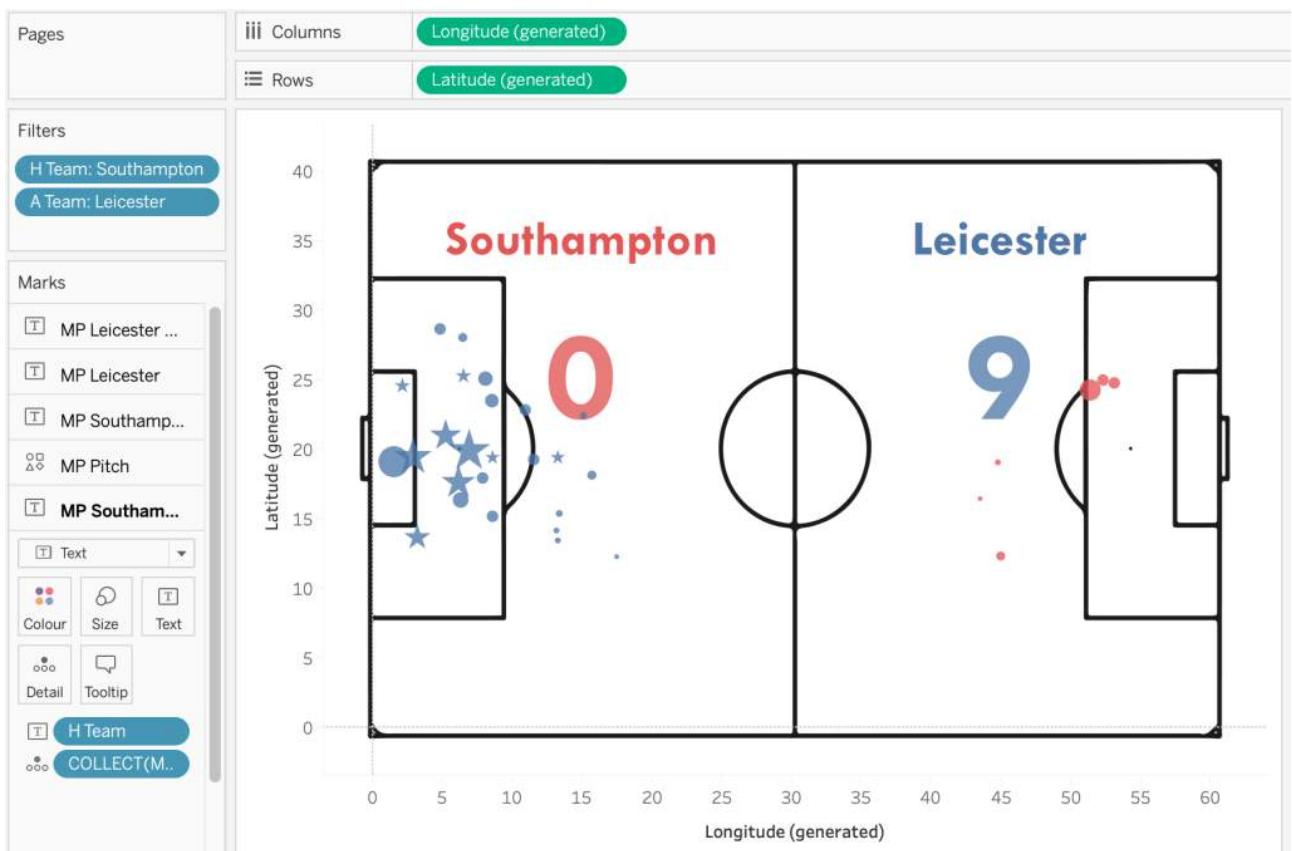
Similar to Understats website, The sizing is on expected Goals and the stars represent the Goals, whilst circles represent other chances. The colouring is based on the team.

Layers.

Can we take this one step further with map layers? Absolutely.

If you have read previous blogs of mine you may have come across a few visualisations where I have utilised layers.

A Map ranges from -90 to 90 for latitude and -180 to 180 for longitude. This means we can still use our previous X and Y co-ordinates from above.



To create this we need the following calculations:

MP Pitch

MAKEPOINT([Y New], [X New])

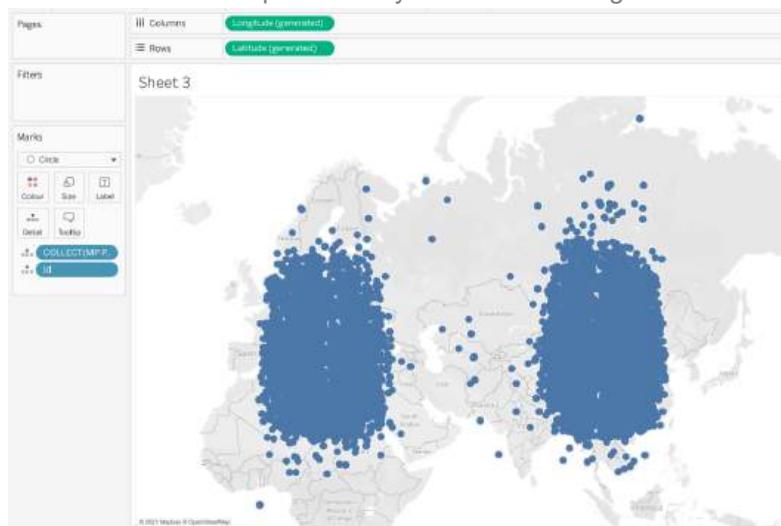
The calculation is valid.

1 Dependency

Apply OK

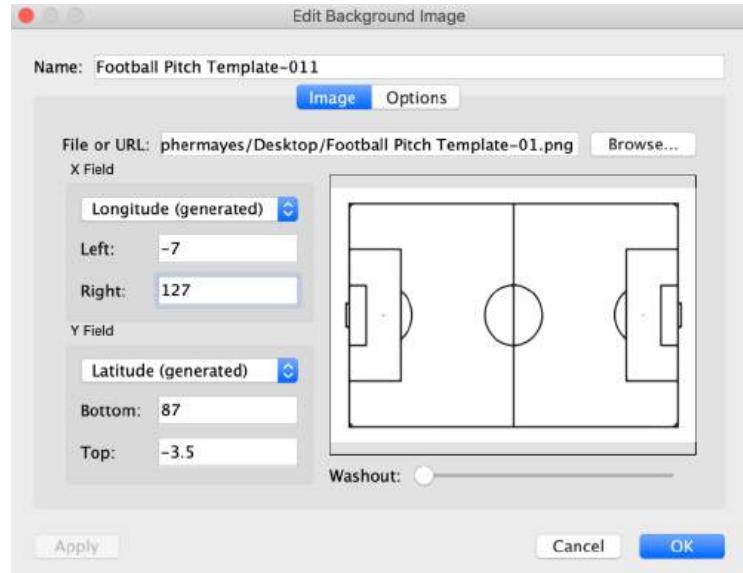
Double Click MP Pitch, to set the longitude and latitude. Drag ID onto detail.

Explanation: The LOD for each shot requires these dragged onto detail. At the moment you will see the shots plotted on an actual map and it may be a bit confusing but stick with it!

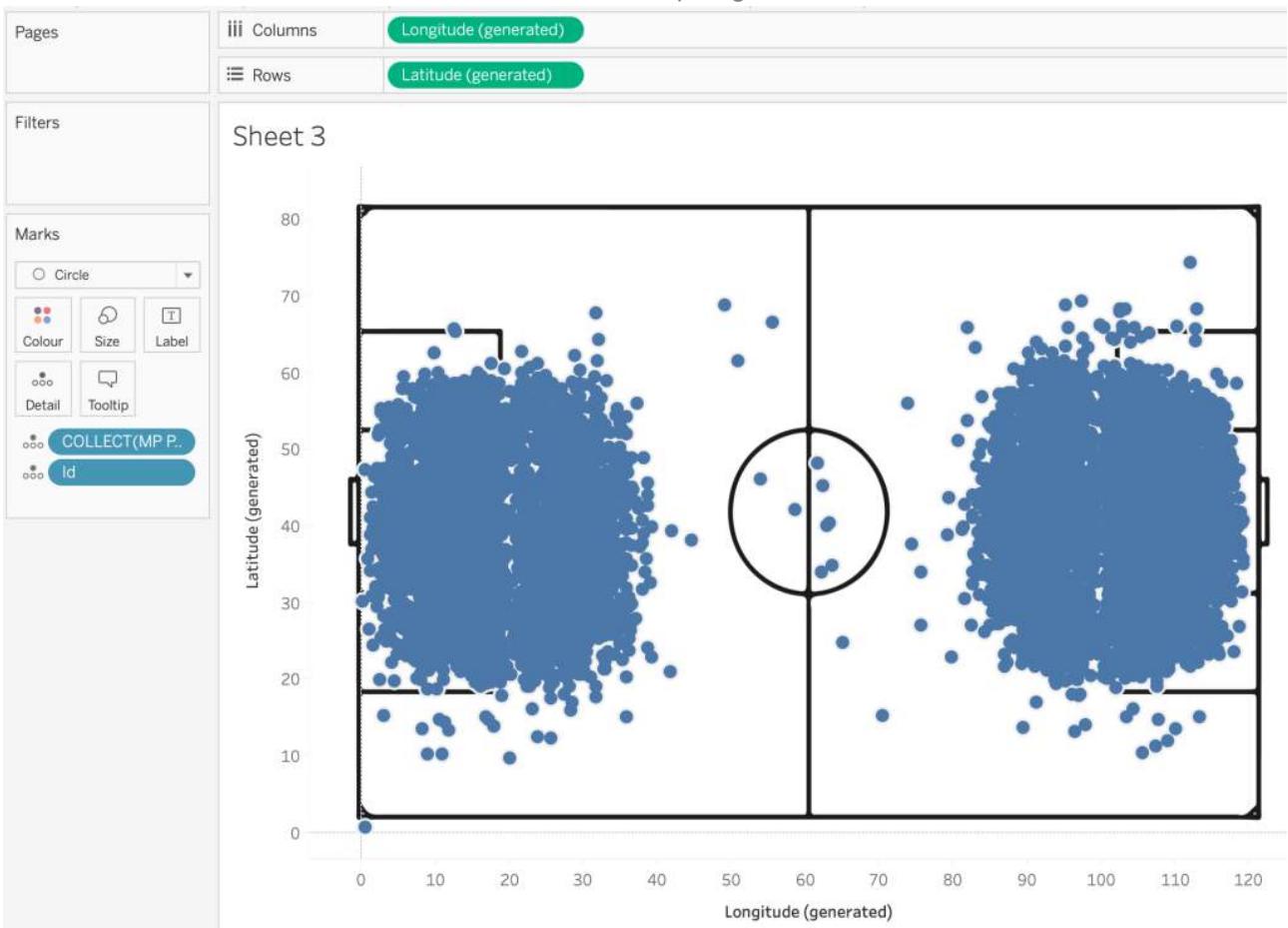


We then need to recreate our background image similar to before.

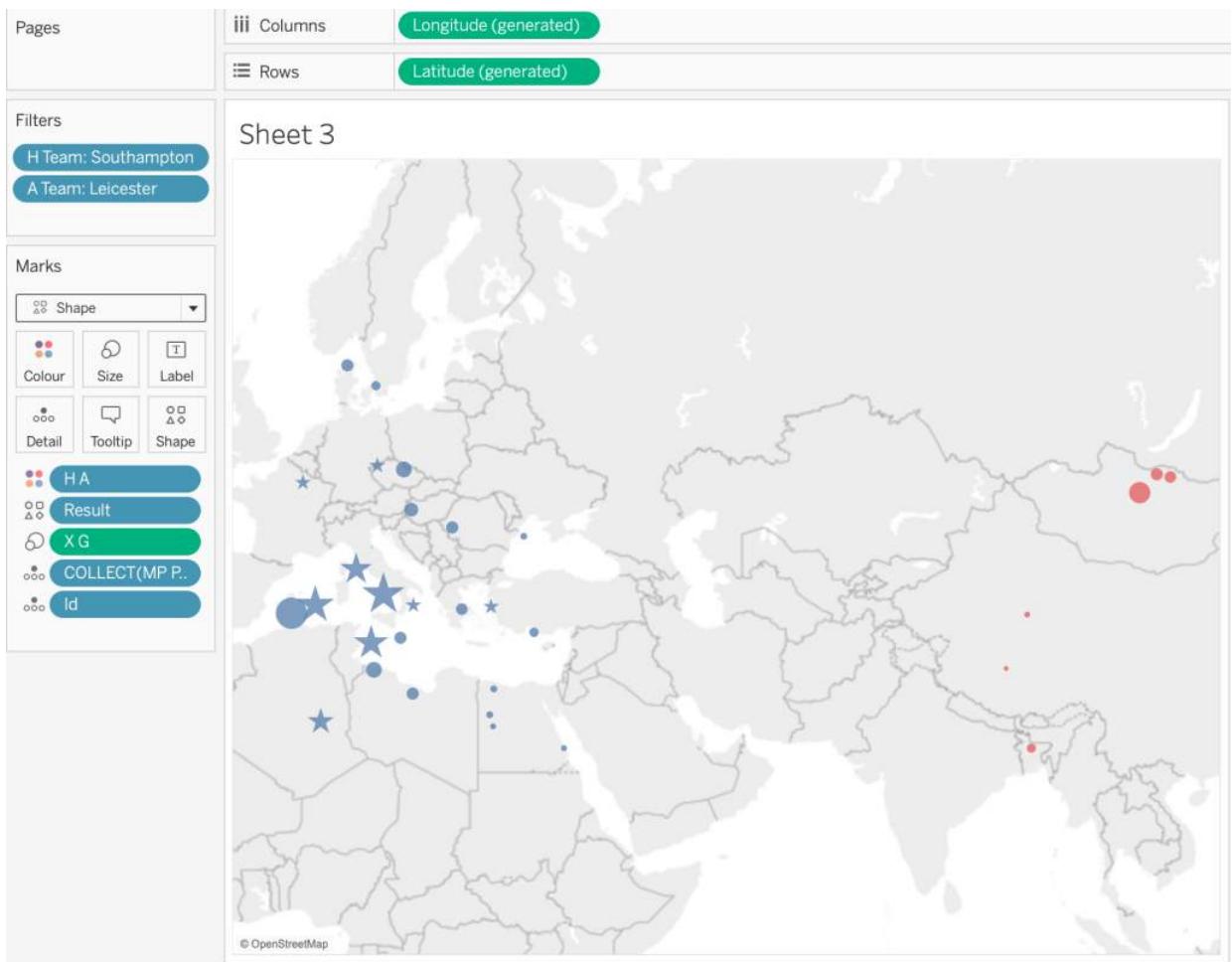
Make sure to note that our X Field and Y field are now referring to the Longitude and Latitude generated instead of our previous X&Y mappings! This is super important to get the background to show.



If you turn the background map to none you will see the pitch reappear. We need the background map turned on however to add more map layers! So if you do turn it off to check its working make sure to turn it back to one, for example light.



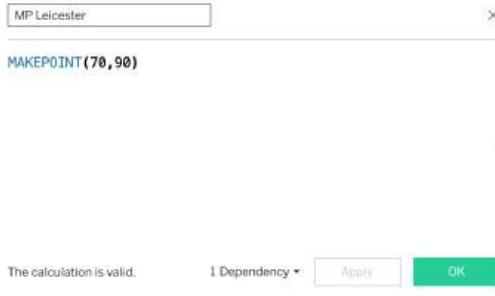
Next I will add the filters we had previously for the Leicester – Southampton game. Theoretically we are now at the same stage as before, but are now in a position to add new layers.





I want to next make some title calculations and the score and add them as new map layers.

MP Leicester
MAKEPOINT(70,90)

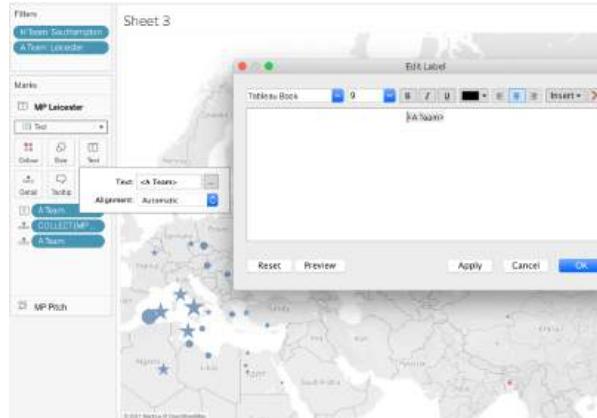


Explanation: Making a point at the respective co-ordinate. Which we will fill with a text value.

MP Southampton
MAKEPOINT(70,30)



Explanation: Same as above. My tip here would be to drag the team name onto detail, then edit the text either with your own text or using the field name as shown below. Amend sizing and colour to your pleasure.



MP Leicester Goals
MAKEPOINT(50,90)

MP Leicester Goals X
MAKEPOINT(50,90)

The calculation is valid. 1 Dependency Apply OK

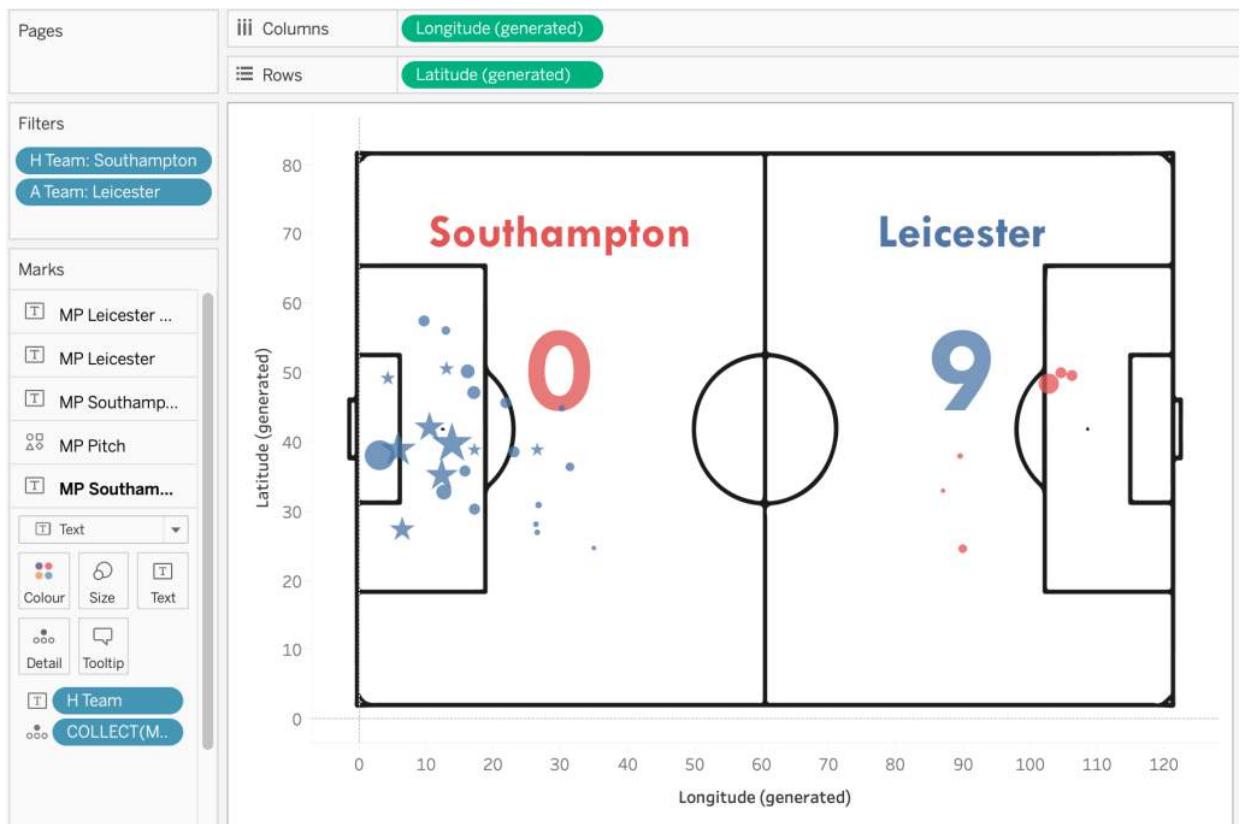
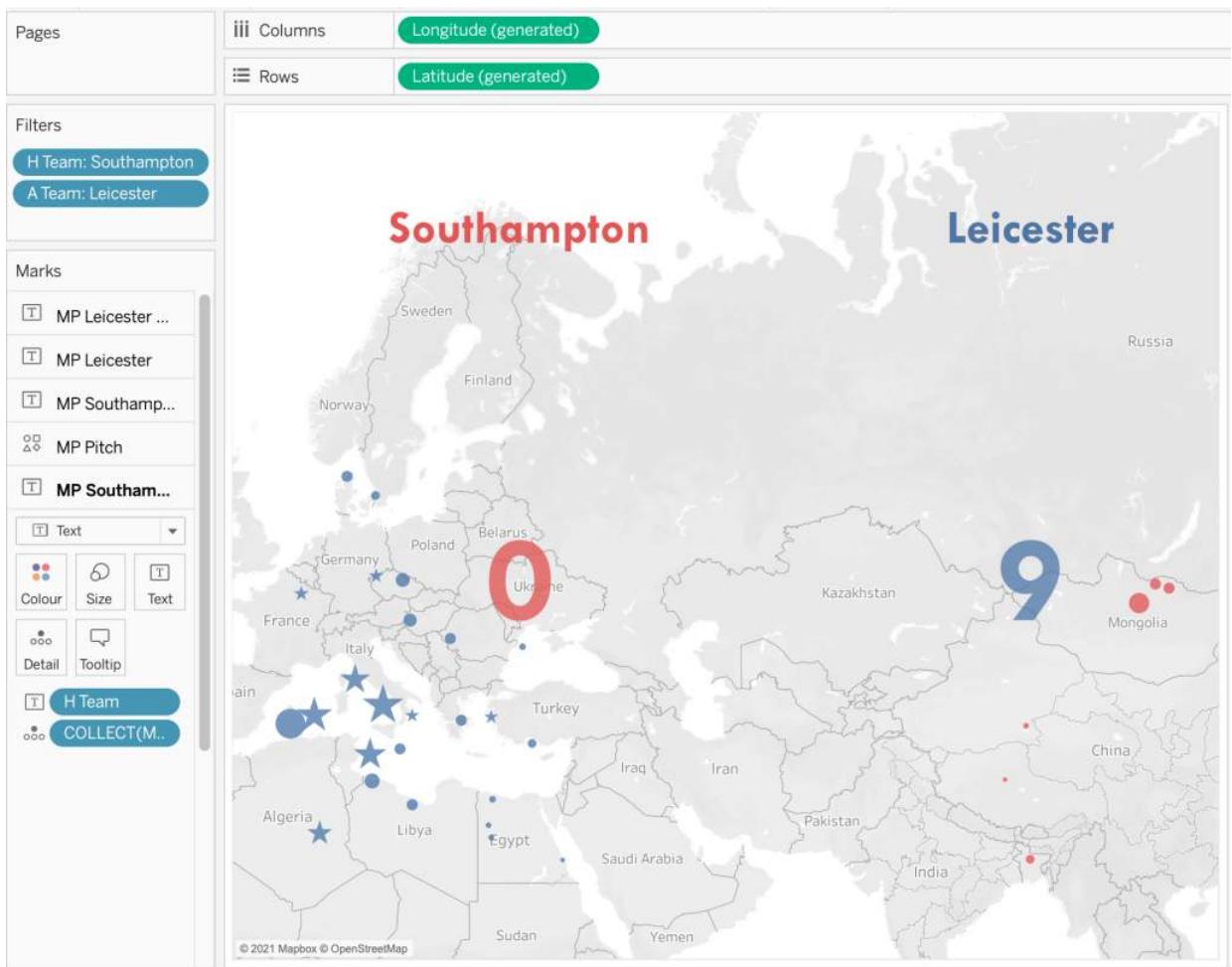
Explanation: Making a point at the respective co-ordinate. A tip would be when you edit the colour of the text remove the halo to get rid of the grey background.

MP Southampton Goals
MAKEPOINT(50,30)

MP Southampton Goals X
MAKEPOINT(50,30)

The calculation is valid. 1 Dependency Apply OK

Explanation: Making a point at the respective co-ordinate. Which we will fill with a text value. Once you have added them all you can switch your map layer back off and it will show the final results.

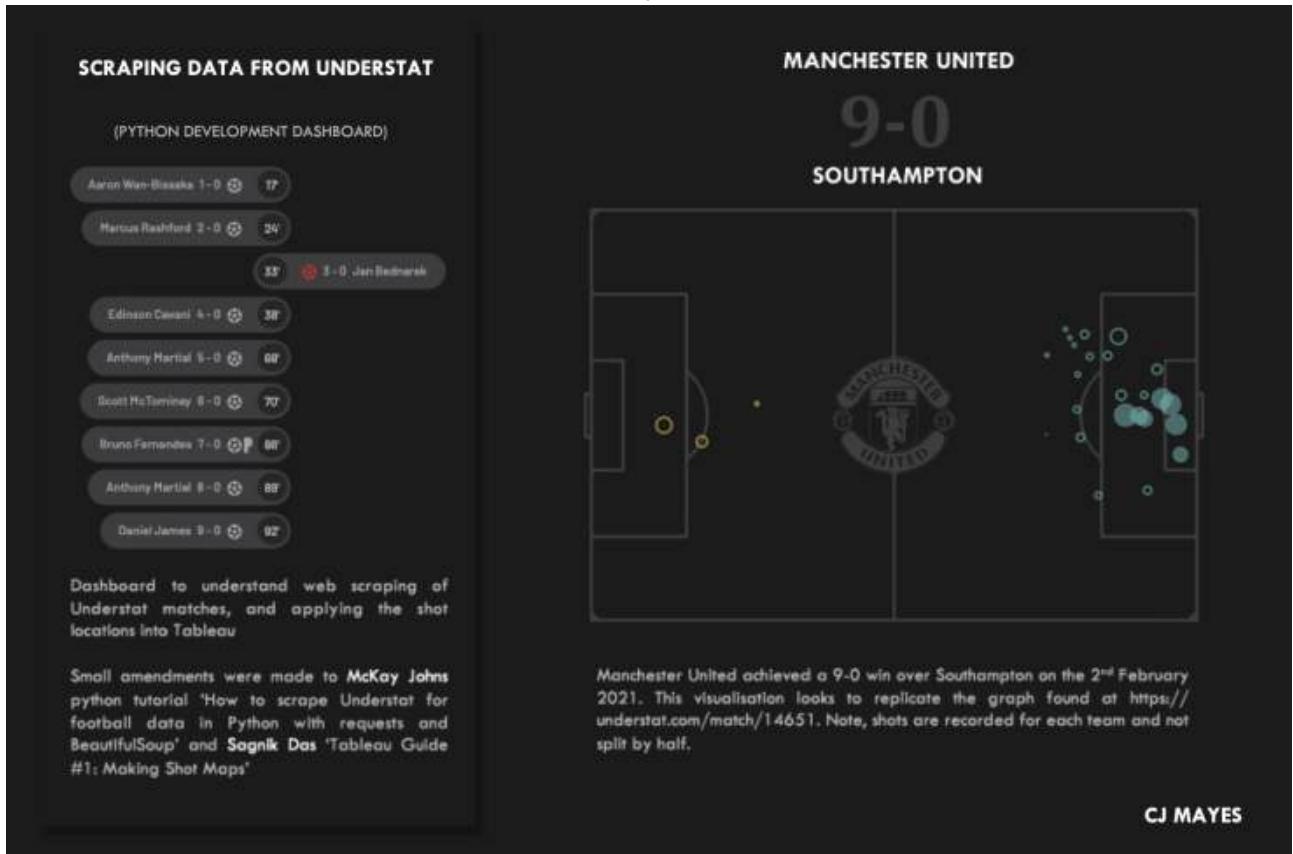


And there we have it. There's obviously a lot more that can be done with this in terms of making it aesthetically pleasing but hopefully this gives the basis to build your own shot maps.

If you fancy doing something different why not take a single players shot data for the entire season? Or, create small multiples plotted of each of the games for a team, throughout the season? That would be quite nifty given then amendments in calculations needed to split the pitches out.

Here's a dashboard I made from a match this season (2020/21) before writing the blog, that feels a little more 'me'. Oddly enough, also a 9-0 result against Southampton. It can be viewed on my Tableau Public.

I've appended the above tutorial to the workbook at the top of the page "Scraping Football Data Development".



As always, if you have any questions please reach out to me on [Twitter](#), or [Linkedin](#). Super enjoyed the learning process with this one so I am chuffed to be able to share it with you. Shout out Mckay Johns, Sagnik Das, and James Smith who all have awesome Python/Tableau content that inspired this blog.

Lastly, thanks to those that offered to do some testing on my tutorial. Especially [Mo Wootten](#) and [Alberto Oraá](#).

Logging OFF.
CJ

ANOTHER RED CARD TO BEST PRACTICE

This blog looks to cover at a high level how I pieced the visualisation together, as well as resources in the community that I learnt on. It will contain my usual waffle, a few pro's and con's I found on the way, and hopefully give some insight as to the way my brain operates. Please feel free to download a copy of the workbook if you'd like to understand how it was made!

Hello.

Thanks for joining me for another blog.

Some of you may have seen my UEFA Champions League visualisation posted on Tableau Public, seen through the link at the top of the page. To save you a click, here it is again!

UEFA CHAMPIONS LEAGUE



THIS VISUALISATION LOOKS TO EXPLORE THE WINNERS OF THE UEFA CHAMPIONS LEAGUE COMPETITION (PREVIOUSLY NAMED THE EUROPEAN CUP) SINCE BEING ESTABLISHED IN THE 1955-56 SEASON. A TOTAL OF 22 CLUBS HAVE WON THE COMPETITION SINCE BEING FORMED. REAL MADRID CURRENTLY HOLDS THE RECORD FOR THE MOST VICTORIES (13). THEY HAVE ALSO WON THE COMPETITION THE MOST CONSECUTIVE TIMES (1956 TO 1960).



PURPOSE

The first thing to highlight is that for this visualisation I wanted to focus primarily on the design. I was going

for a ‘print’ type visualisation. The second focus point was on wanting to make the visualisation solely using the tools only on Tableau. I.e. only using the existing Tableau shape files as well as through having to create polygons and utilising data densification to get the rest of my desired effect. With most my visualisations on my page I want to try something new that I haven’t before, be it through design, chart type or calculations. (This is my excuse at least as to why some visualisations might not always be deemed the acme of beauty.) Tableau Public, to me, is such a fantastic way of documenting learning and progression, showing my way of thinking through visuals, as well as being a chance to explore different techniques. All whilst interacting with the community. Much like these blogs, I suppose.

INSPIRATION & RESOURCES

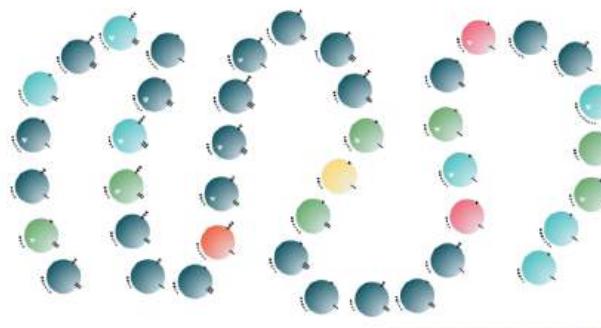
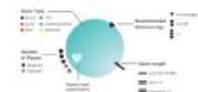
Before we dive in, here are some of the initial inspirations and resources I used and how they impacted my way of thinking.

Lisa Rapp

Lisa produced this stunning ‘**Game of the Year**’ visualisation seen below. I couldn’t wait to download it to see how she constructed it. She has blogged about her design, [here](#). Thanks for sharing these insights with us. I would say Lisa’s was the main inspiration behind wanting to create my visualisation, so thank you.

SPIEL DES JAHRES | GAME OF THE YEAR

Spiel des Jahres (engl.: ‘Game of the Year’) is a prestigious German board game award established in 1978. The winner is chosen by a jury based on criteria such as game concept, rule structure, layout and design. Receiving the award can really boost a game’s popularity and make any board game a household name. This viz explores all 42 past winners from 1978 to 2020.



Data: Wikipedia | Design by Lisa Rapp (LisaRappAnalytics) | Created for SteinQuest

In Lisa’s visualisation she cleverly uses a layering technique of different shape files to create her desired effect. The best part is she overlays a circle shape over the top for a well designed tooltip.

Lisa hugely influenced my choice to create lines at the top of each circle for number of goals, as well as decide on using a shape within the centre. I really like how she offsets the heart in her visualisation to add a personal touch of the games she has played before.

In truth, Lisa’s is great. I have no reasoning as to not following the same build methodology other than I wanted to see if it could be done through no Tableau-only tools. Lisa’s dashboard hugely also benefits from not having to have copious amounts of data densification (Jump to methodology and charts to understand why!)

Simon Rowe

I’ve previously mentioned how impressed I was with Simons recent Lacrosse visualisation, but for those that missed it in previous blogs check it out, [here](#).

Simon was kind enough to have a chat with me about column and row dividers. When making new visualisations I tend to mock-up some fake data first. I do this really just so I can get to experiment with the build quicker. I ended up making the chart for just one year (season) before applying it for the full dataset.

My main discussion with Simon surrounded how he used a row and column calculation to split them out. There were three options that sprung to mind. As a prerequisite, I was building everything around (0,0) so knew it was a matter of shifting further seasons either to the right or down.

Option 1: Simons method rightly splits out the grid using column and row calculations. He explains it in great detail in his own blog, [here](#).

Option 2 (Chosen): I tend to find [Ryan Sleeper’s blog](#) is a great starting basis for creating small multiples in Tableau. I ended up creating my grid using these calculations. I then exported the X and Y co-ordinates to then fit into my original dataset. Check out the methodology to understand why.

Option 3: In a previous petal visualisation when making the MAKEPOINT() function I ended up just wrapping the movements in X and Y in a case statement. For example if it's the next season, add 1 to the X to shift it across. (This would have been very time consuming for 60+ finals especially considering I would have to do it to the Y calculations too) These X & Y co-ordinates were used as a base.

I'll let you form your own opinion on what the best method is. My data prep was *nasty*, so I'm in no place to comment.

James Smith

James is well-renowned for making sports data look beautiful. I had a chat with him a month or so ago when he published some new Grand Slam visualisations in his [Etsy shop](#). Check out Rafael Nadal's dominance in the French Open, [here](#).

I loved the idea of the tennis balls wrapping around the winner for total wins in the tournament! I think it is now fairly obvious why I added in the stars for number of wins by the year. This is where the concept came from.

With any external tools out the question I was left with some trusty sin and cosine functions and parameter actions to bunch the stars in a radial format.



Toan Hoang

Everyone knows Toan produces some of the most easy to use **templates** and tutorials in the community. I am forever grateful for his blogs as they are one of the main reasons I started.

This visualization is no exception. So, which one inspired me?

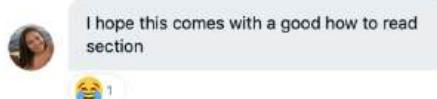
It's not easy to tell straight away without downloading the workbook. It is actually his Half-Circle Chart tutorial. Check it out, [here](#). Should I wish to, my workbook is easily resizable on team.



It saddens me slightly that anyone that didn't download the workbook will think these are PI charts, they are in fact polygons. Little do they know they are 180 points each side joined up. Realistically as I don't utilise them, maybe creating polygons wasn't the right method to go down. Although, I am hoping maybe something in the future I can use this neat little trick.

I ended up steering away from this methodology.. mainly because Real Madrid winning so much meant the stars got in the way ... shame.

Autumn Battani

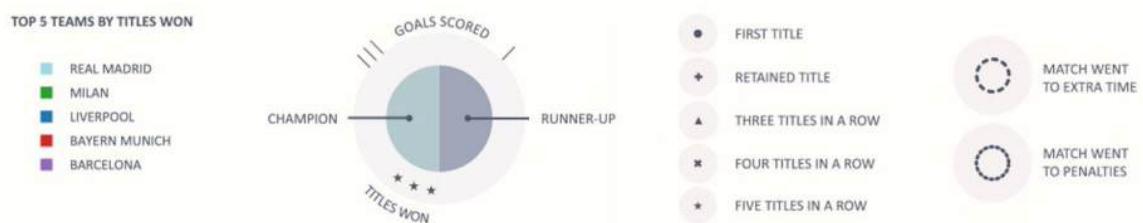


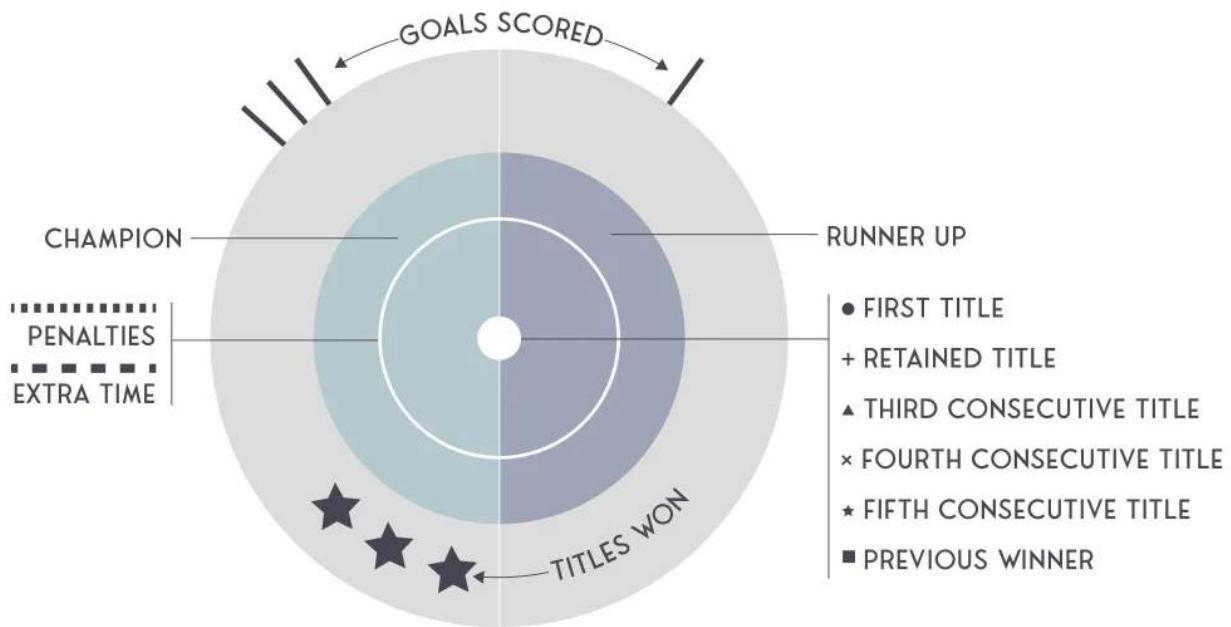
Last, but not least. A massive thank you goes to Autumn. Above is her reaction to when I first explained what my next visualisation looked like. Turns out it comes with a great how to read section!

I want to mention I didn't actually ask Autumn (*to start with*) to help me out, it really is just a true testimony to her loving character and nature to give genuine advice, tips. She has shown great pride in wanting to help others in the community out.

Autumn has a clear talent for design, if you've been following any of her recent posts, I'm sure you'd agree. I am so pleased she put the cherry on top for my visualisation. I think the key is so easily understandable thanks to her efforts.

If you'd like to see what she took from 0 to 100 check out the before and after pics.





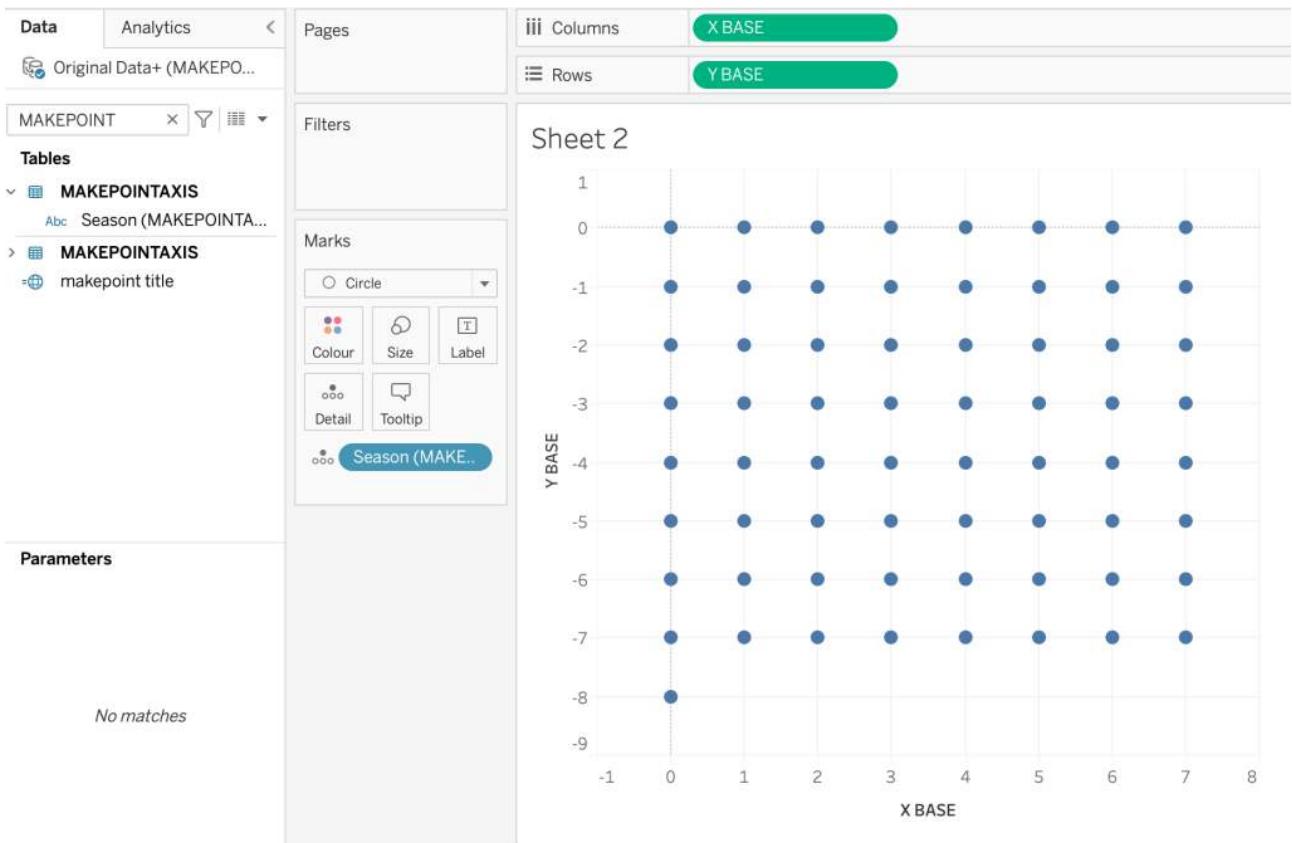
Finally to round up this section.

I want to say a thank you to **Anthony Pulley** and **Amar Singh** who both offered words of advice early before posting my visualisation. I hugely respect their opinions and hearing their feedback is a great way to consolidate my own thoughts to a point where I am happy to share with the wider world. (#TeamLloyds – Woo)

CHART EXPLANATION

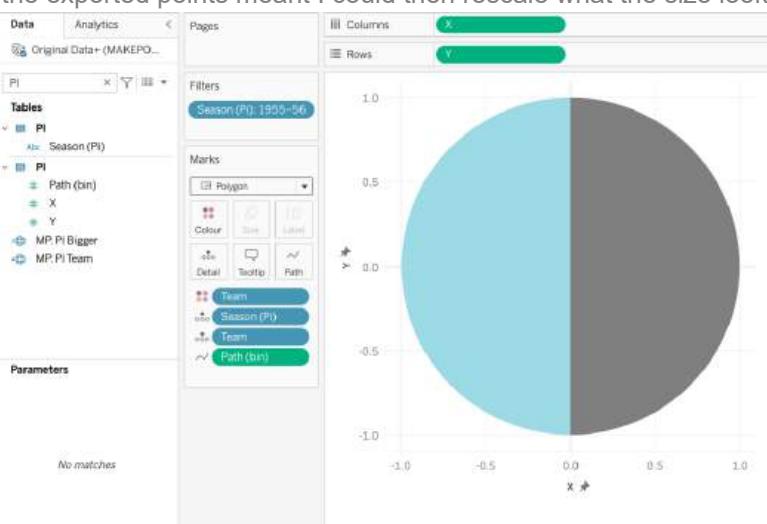
I will briefly give some ad lib as to how I created each section of my visualisation. I won't go too in depth for the sake of this not being a novel. Attached are some print-screens of building each part of the visualisation separately.

The Axis



Teams

The above tutorial from Toan will get you most the way. I ended up building the entire visualisation using his tutorial. His co-ordinates fitted perfectly for what I needed so I didn't even need to rescale the visualisation points hugely. I exported the path values and then joined them in separately to my dataset. It was then a case of just rebuilding within my visualisation but offsetting each team based on the season. The beauty of taking the exported points meant I could then rescale what the size looked like!

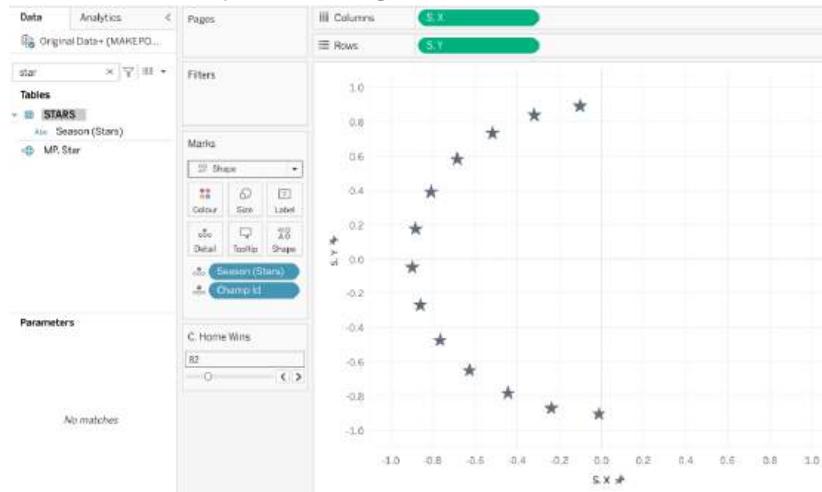


A couple individuals rightly mentioned the team semi circle colours don't match the kit colours for the team. I ended up assigning a palette I liked to make the visualisation more aesthetically pleasing. Turns out most teams wear red, blue or white. I am more than happy if people want to download and re-colour the viz!

Stars

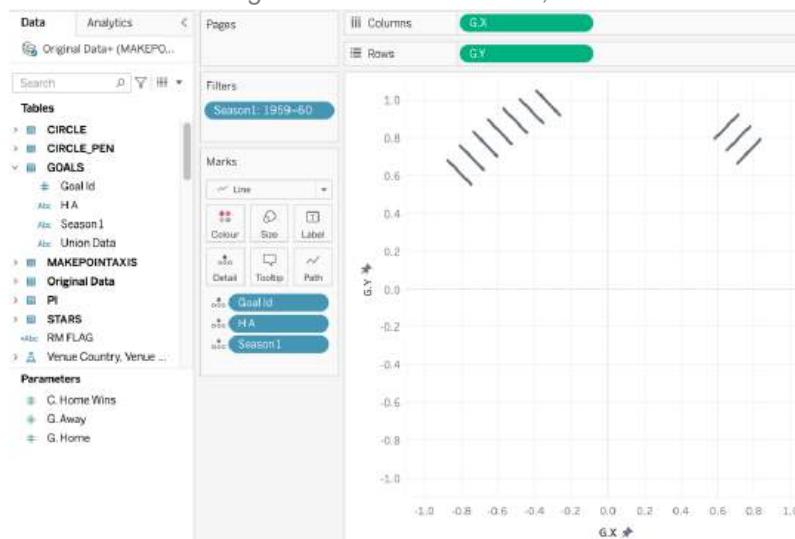
The stars have their own dataset. For each year, I joined in the equivalent number of rows. For example Real Madrid winning the title for the first year joins once. When they win the second year, I end up joining in two new rows to the main dataset.

Not to plug my own website... BUT sometimes I forget how I make my circles, *like I don't make enough of them?* I revisited my **tennis radial graph visualisation** run through to copy out my rank, angle, sin and cos functions to making the stars go round in a circle. An added parameter is used to rotate them round the circle as well as squish them together into one half of the visual.



Goals

Again, a lot more data densification went on here. I ended up creating two points for each goal. Each goal has a point slightly more inwards point than another on the same X,Y trajectory from the centre point (0,0). It is then a case of joining them together with a line! I created the goals for the winner and runner up separately as to be able to move them to the top of the circle more easily using parameters. I reflected on my previous blog post of creating a radial comet graph. The only thing that is different between them is that I didn't add a sizing to the line! Check it out, [here](#).

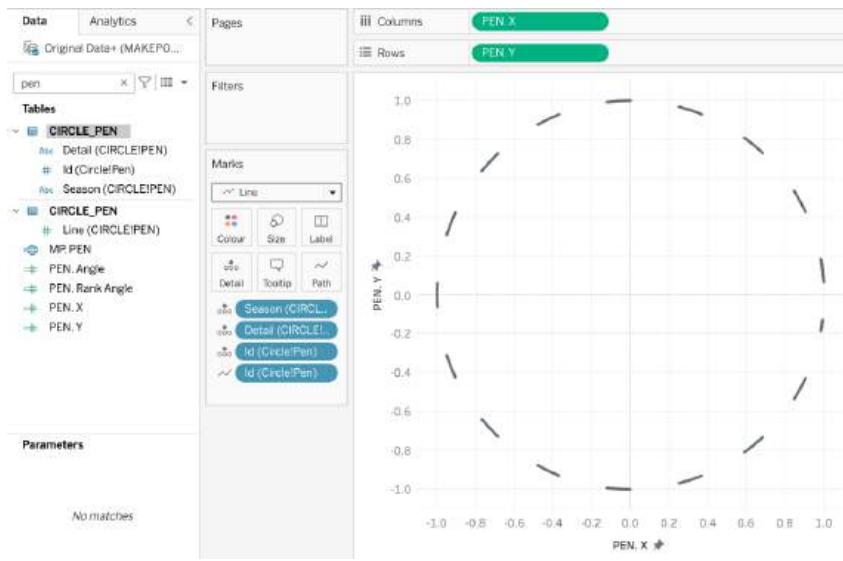


Penalties

I ended up creating a circle that was 100 points going round. The difference between the datasets is how I join the dots up. The following print screen of the data should help. Again, this will follow a similar pattern to previous for circles creating a rank, an angle, the spacing between them, and then co-ordinating which dots to join lines between!

ID	Line	Detail	Season
1		1 A	1957–58
2		2 A	1957–58
3		3 A	1957–58
4		4 A	1957–58
5		5 A	1957–58
11	1	B	1957–58
12	2	B	1957–58
13	3	B	1957–58
14	4	B	1957–58
15	5	B	1957–58
21	1	C	1957–58
22	2	C	1957–58
23	3	C	1957–58
24	4	C	1957–58

A	B	C	D
ID	Line	Detail	Season
1		1 A	1983–84
2		2 A	1983–84
3		3 A	1983–84
7	1	B	1983–84
8	2	B	1983–84
9	3	B	1983–84
13	1	C	1983–84
14	2	C	1983–84
15	3	C	1983–84



Makepoint

Finally with everything made, it is a case of gluing the datasets together as well as creating A LOT of MAKEPOINT() functions based on our final X and Y calculations.

You can see that I actually build all my initial charts around (0,0) and then adjust the make points to add on my column and row amounts to space each final out! Typically each graph was made between -1 to 1 on both the x axis and y axis and then rescaled to the appropriate size.

MP.PEN

Makepoint([PEN.Y]*0.13+[Y BASE], [PEN.X]*0.13+[X BASE])

The calculation is valid.

2 Dependencies ▾

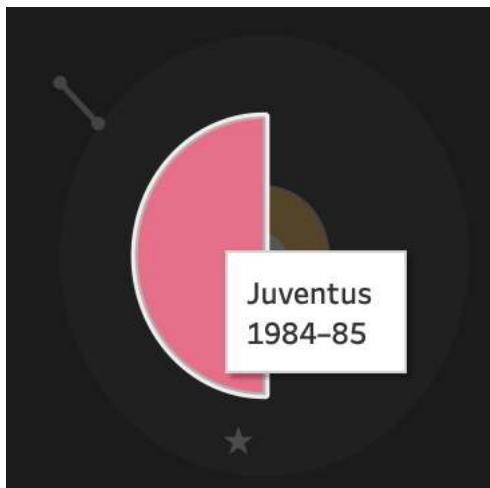
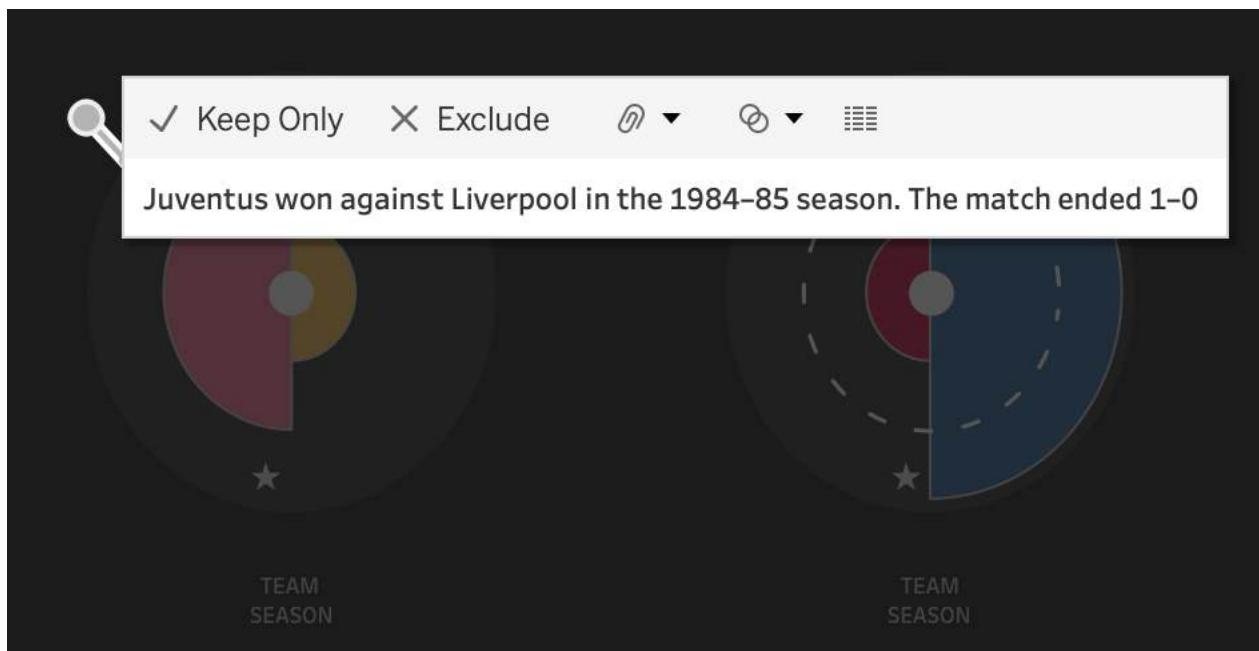
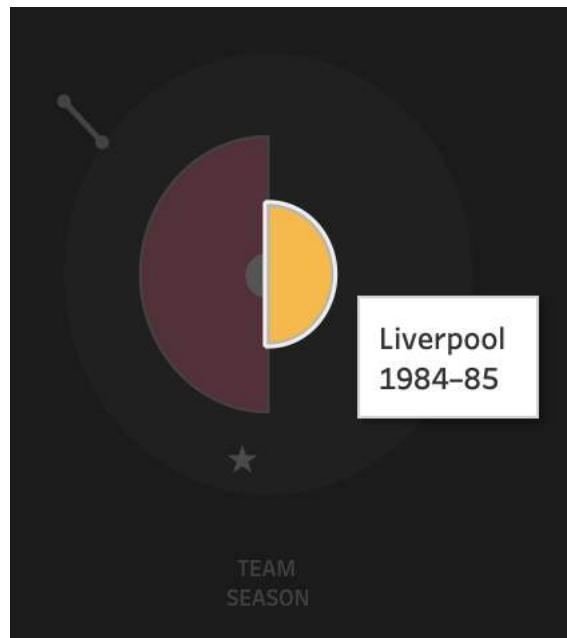
For example: The above plots my X and Y co-ordinates for my penalty circles.... The *0.13 is simply a resizing factor for the circles. Check out the below example where I make the dashed circles larger. Finally I must adjust each of the locations of my penalties by the base. I.e Make sure the penalty circles are moved to the right column and row!



What I particularly do like about the visualisation is that I can create separate tooltips based on what you hover over, and the order of the layers.

Example below.





DATA AND METHODOLOGY

The very original dataset was taken from Wikipedia. I tend to use a Wikipedia table to CSV converter to quickly copy and paste my data before sense checking it and making a few tidy-up's to any dodgy formatting.

I find this far quicker than doing anything fancy with looking at source code, or trying to copy and paste straight off the site.

Convert Wiki Tables to CSV

Enter the URL of the Wiki page containing the table(s). Press "Convert" and copy the result to your clipboard or download the table as CSV file. Works with Wikipedia.org and other Wiki projects.

Input

Page URL
e.g. https://en.wikipedia.org/wiki/Lists_of_earthquakes

Options
 Trim cells
 Remove line breaks in cells

"Bet I could do it in 64"

One of the main downsides to my visualisation is undoubtedly the amount of data densification that sits within it. I've gone from a 64-row winners table to a table with millions of rows.

Each team is 180 points for the half circle, each star is an extra row per star for that season row, each Goal is two rows, and the penalties are 100 dots, as are the extra-time markers.... This really adds up.



Above is the 7 dataset tabs I stitched together.

I could have made a lot of the elements using custom shapes but I enjoyed the challenge behind creating this. Tableau Public aren't quite the fan given it fails to render a few times and the thumbnail on my profile doesn't always show. I may go revisit this at some time simply because it is ruining my colour theme (or lack of).



As to not finish on a sour note, I am actually super pleased with the reception this visualisation got. I personally believe it's one of my best visualisations yet! It was definitely one of the most fun to build. Thank you so much to everyone who reached out in admiration – it means the world to me the support and feedback.

I am so grateful to be surrounded by such talent in the community.

If anyone has any questions, give me a shout. You can reach out to me on [Twitter](#), or [Linkedin](#).

Logging OFF.

CJ

Each month will have a tailored theme.

I am so pleased to invite Mckay Johns to the blog for the May edition of "What's Good?" This month's topic is slightly different to the usual Tableau content. It will be on python and sports! I'll add in a few Tableau gems in a follow up blog, next week.

Mckay has been driving the sports community with an awesome array of youtube tutorials. From starting 10 months ago on **Youtube**, he now has over 1K subscribers and tens of thousands of views where people get to access run-throughs of different python projects from scraping understat data, to looking at clustering models, to creating complex chart types within python. Alongside this he has built an impressive **Git repo** where others can access and run the code for themselves. Today we will be learning a little more about

Mckay, and one of his python step by step guides.

You can follow Mckay on Twitter, [here](#).

The screenshot shows McKay Johns' YouTube channel page. The header features the channel name 'MCKAY JOHNS' and the tagline 'I LIKE DATA.' Below the header is a 'SUBSCRIBE' button and social media links for Twitter and YouTube. The main content area displays five video thumbnails with titles and view counts:

Title	Length	Views	Published
How to get Data Visualization Inspiration	6:15	168 views	1 week ago
Football Manager for the first time - Sunderland till I Die #1	59:38	204 views	Streamed 1 week ago
Free Soccer Event Data with FC Python's Event Tagging...	13:01	565 views	2 weeks ago
How to Get Started With Coding in 2021	7:46	263 views	3 weeks ago
How to get Soccer / Football Data with the Statsbomb API	11:11	1.3K views	3 weeks ago

CJ: Mckay, Thanks so much for being a part of this month's edition. For those who are unaware of your background. Tell us how you got into data, and utilising python? Is your background in data?

M: My background in data really starts from when I was younger and really started to enjoy math. I've always enjoyed math growing up even in elementary school and high school and I usually found myself doing better at math than I did in any subject. Growing up and loving sports, I used to look forward to getting the newspaper delivered each morning so I could sit and read the stats of the different baseball and basketball teams and who was scoring the most, league leaders, different stats about different teams, etc. and that would translate over to things such as fantasy football, watching and learning about new statistics, and so forth.

When i got into college I actually didn't know what I wanted to do, I thought I wanted to be a sports psychologist and then I took one psychology class and found out it wasn't for me, so I moved over to the information systems department and learned about all the cool things people were doing with data and math and wanted to eventually be able to apply that sports as well.

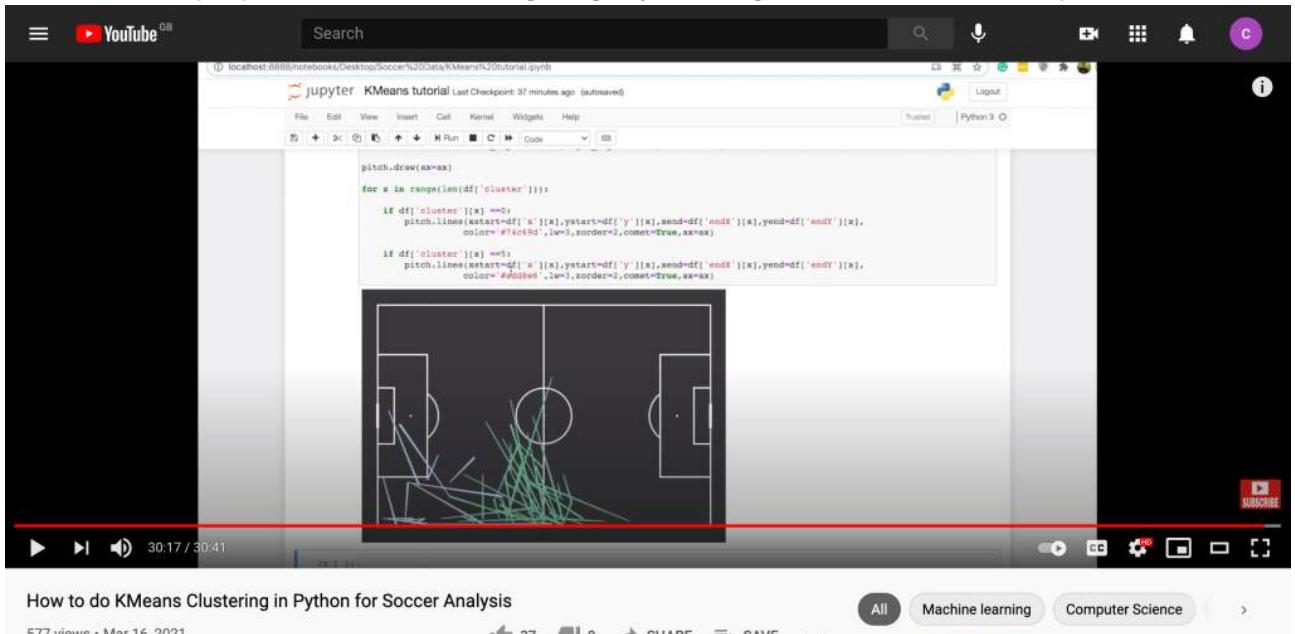
The main problem I found was that I had never coded in my life so I signed up to take an intro to computer science class which taught C++ and I hated it haha. I like the concepts though and the things you could do with it so after some research I found python and took a couple of online courses to learn it.

Right now I am working to finish my Master's degree in Data Analytics which is how I started to get into things such as machine learning and more advanced python materials.

CJ: What sparked the interest in doing python tutorials? What has been your favourite to produce?

M: I started doing the tutorials after I tried to start learning analysis for soccer myself. I saw a ton of people that were creating some cool things on Twitter, on blogs, and other platforms and wanted to learn how to do it. Since there really was no sort of information, I wanted to see if I could bridge that gap and help others get started. Most of my tutorials come as I learn something then I try to teach it in a video.

My favorite one so far was probably the tutorial I did about **KMeans clustering** which is a way to group identical records together to try and find hidden trends or information. I really like the method and I've seen a lot of people create some amazing things by watching the video so it's one I'm proud of.



How to do KMeans Clustering in Python for Soccer Analysis

577 views • Mar 16, 2021

All Machine learning Computer Science

CJ: I see you have created a thread of places to start learning python. What tips would you give to someone who is on the python learning path?

(You can find the thread, [here](#).)

 McKay Johns
@mckayjohns

Here is a list of all of the tutorials I have created so far to make it easier to find and access them:

5:14 PM · Feb 17, 2021 · Twitter Web App

M: I think the biggest thing about learning python (or really just anything in general) is being patient and consistent. When I first started learning to code, I started with C++ which I did not like, and then I kind of stopped learning because it was a little too frustrating as well as I thought I should be an expert in 2 weeks. I regret not trying to stay consistent because the compounding effects of consistency would have paid off in the long term and I could possibly be even further along my path than I am now.

One thing I always try to tell people who are learning python is to start with the basics, be consistent in practicing or doing tutorials every day, and then start building projects you are interested in that are going to help you learn even more. Learning a new skill is pretty hard but consistency and patience is how I've seen many people go from not knowing anything to being able to create some awesome things.

CJ: So, why football? (soccer)

M: I actually only played soccer until I was about 8 or 9 but living in the United States, all of my friends played baseball and football so I didn't play soccer growing up. I got into soccer because I started making some friends that played FIFA like 02 or 03 so I would play that for hours with them. I couldn't watch many games because it wasn't as accessible but I would watch highlights and on Sportscenter there would be plenty of things so I kept up with it.

I also ended up living in Argentina for 2 years after I graduated high school, so being in a country that lives and breathes football is a completely different experience. I really felt a connection to a lot of the people I met as they shared their stories about their football fanatics and I fell even more in love with the sport.

I like other sports too but football is the one that I find the most enjoyable to play and watch.

CJ: In a recent video you discuss 5 reasons why someone should learn tableau, covering off its demand, ease of use and its applications. What part of learning Tableau have you enjoyed the most?

5 Reasons You Need to Learn Tableau

256 views • Mar 21, 2021

20 0 SHARE SAVE ...

M: Tableau I think solves a really big issue with people not knowing how to code and needing to still make charts and graphs. I've loved how easy it is to integrate any data sources. This can be a little confusing with programming but Tableau is 10x easier with that. As well as the drag and drop functionality. The fact that I can just drag some measures and dimensions into spots that end up creating graphs that are aesthetically pleasing is amazing. It bridges those gaps and makes it a lot easier and accessible to many.

CJ: What in the data / sports community have you seen recently that has really impressed you?

M: Piotr has developed an **insane model to be able to evaluate coaches** based on a lot of different variables. It is probably one of the most high end things that I have witnessed and been able to see developed recently.

You can check it out, [here](#). In addition to his blog page, [here](#).



There's so many things I could list here haha but I think that one tops them all so I will leave it at that. There were a lot of cool things done in the NFL Big Data Bowl which had people using tracking data and advanced metrics to evaluate defensive performances on passing plays which was really cool. I didn't see all of the different submissions but the ones I did see were incredible.

CJ: Awesome thanks McKay. I've slowly realised there is a whole new world of sports analysis out there especially when it comes to data analytics/science, particularly in relation to soccer data.

I'd like to take the opportunity here to mention, (with no surprise to some) that #SportsVizSunday has been one of my favourite initiatives to take part in. Each week, I've seen both such a high standard and array of chart types, designs and stories come from the [weekly blogs](#).

Some of my favourites from the last month (April 2021) have been:

Dennis Kao – Wheelchair Marathon Winners

Dennis shows the various wheelchair marathon winners from 5 famous marathons across the world. He brilliantly shows the course details whilst including the athletes and respective years they won. How impressive to find Heinz Frei has won a total of 26 races, mainly in Berlin. I love the layout and colour

choices in Dennis' viz. This was a submission across SportsVizSunday, ProjectHealthViz and DiversityInData.

Fred Najjar – Games of the Paralympics

Radials are the way to my heart. Fred beautifully presented viz highlights the various sports included in the summer paralympics by year. I love the finer details of this viz including the sport participant vectors. I have become a real fan of where individuals make a 'showpiece' chart and then add smaller supplementary visual aids and text around the side for context. Fred does a great job of it here using a lighter grey text and greyscale bar.

Riley Martin – Seattle Mariners Sweet 116

Riley does an awesome job of looking at the historic 116 win season for the Seattle Mariners. I particularly like Riley's design in terms of typeface used as well as background shape colours. It makes for a very good read across the page. Riley's last three vizes have been super inspiring.

Simon Rowe – Lacrosse D1 Champions

Simon is a real leading contributor to SportsVizSunday, always coming with high standard dashboards. His Lacrosse dashboard particularly blew me away from utilising the layering functionality so well. Small things such as the icons, colouring and typeface can really make big differences and it shows with how well this came together. Both technically and aesthetically fantastic.

LACROSSE

MENS D1 CHAMPIONSHIP

Lacrosse is a team sport played with a lacrosse stick and a lacrosse ball. It is the oldest organized sport in North America, with its origins in a tribal game played by the indigenous peoples of the Eastern Woodlands and by various other Indigenous groups of North America. The game was traditionally used for educating the young by indigenous cultures to create its current collegiate and professional form.

Players use the head of the lacrosse stick to carry, pass, catch and shoot the ball into the goal. The most common are contact sports and all players wear padded gear. The women's game is played outdoors and does not allow body contact but does allow stick-to-stick contact.

The NCAA began sponsoring men's lacrosse championship in 1971 and women's in 1990. The NCAA national championship is a four team tournament, over \$10,000,000.

The results of each year's championship final. Click here for more information of the results.



2015 Michigan	2016 Penn State	2017 Michigan	2018 Maryland
13 — 9 —	13 — 11 —	5 — 5 —	14 — 13 —
2013 Maryland	2014 Duke	2015 Michigan	2019 Penn State
10 — 5 —	8 — 9 —	15 — 10 —	9 — 3 —
2010 Michigan	2011 Duke	2016 Syracuse	2018 Michigan
9 — 7 —	6 — 5 —	10 — 9 —	13 — 10 —
2017 Duke	2018 Michigan	2019 Michigan	2004 Michigan
12 — 8 —	15 — 7 —	9 — 8 —	14 — 13 —
2013 Michigan	2019 Syracuse	2001 Syracuse	2000 Maryland
9 — 7 —	12 — 12 —	10 — 9 —	12 — 7 —
1998 Maryland	1999 Syracuse	1997 Michigan	1996 Maryland
12 — 10 —	15 — 9 —	15 — 7 —	12 — 8 —
1995 Maryland	1994 Syracuse	1993 Maryland	1992 Penn
13 —	9 —	9 —	10 —

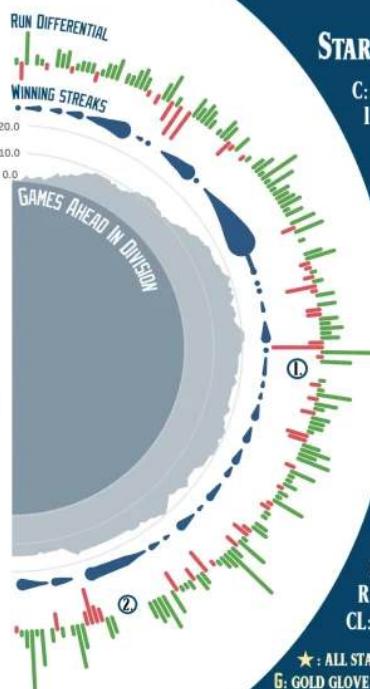
SWEET 116

SEATTLE MARINERS
HISTORIC 2001
SEASON

In 2001, the Mariners completed the best regular season in baseball history, winning 116 of 162 games. It's difficult to look closely at the accomplishments of this team as they didn't make it past the ALCS and since 2001, the Mariners haven't made the playoffs; that being said, a snapshot of the regular season can at least show the impressive streaks and winning patterns the team had. The campaign stands out in many ways:

The team brought on Ichiro before the season who went on to win Silver Slugger, Gold Glove, Rookie of the Year, and AL MVP all in the same season | They had seven 5-game-or-more winning streaks throughout the season, including a 15-game streak early on | The Mariners had a rare "Team Triple Crown", leading the league in batting, ERA, and defense.

After the season, the MLB released a documentary (usually only awarded to title teams) called Sweet 116 narrated by Seattle's legendary announcer Dave Niehaus that highlights the impressive play of the team. See the following visualization to follow the 2001 season along with wins, streaks, player accolades, and game breaks/moments from the historic campaign.



STARTING LINEUP

- C: DAN WILSON
- IB: JOHN OLERUD
- 2B: BRETT BOONE ★ 5
- SS: CARLOS GUILLEN
- 3B: DAVID BELL
- LF: MARK MCLEMORE
- CF: MIKE CAMERON ★ G
- RF: ICHIRO ★ S GRM
- DH: EDGAR MARTINEZ ★ 5

SEASON BREAKS

1. ALL STAR GAME IN SEATTLE



The Mariners sent an astounding 8 players to the All-Star game that was hosted in Seattle along with coach Lou Piniella. Ichiro led the game off with a hit, Freddy Garcia picked up the win, and Kazuhiro Sasaki had the save for the AL side... Reminiscent of a normal 2001 M's game.

2. BASEBALL RESUMES AFTER 9/11



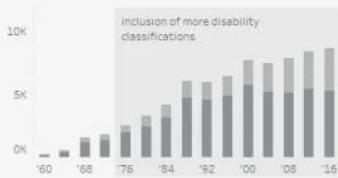
In the wake of 9/11, baseball took a week break, resuming play with heavy hearts on the 18th. From New York to Seattle, patriotic moments were shared as America's game did its best to help heal the nation. The Mariners held a moment of silence on the field after their win while in New York, George Bush threw an emotional first pitch of the game.

GAMES OF THE PARALYMPICS

The Summer Paralympics, are international multi-sports events where athletes with physical disabilities compete. The Paralympic Summer Games are held every four years, organized by the International Paralympic Committee (IPC). The first official Paralympic Summer Games was held in Rome, Italy, in 1960. 400 athletes from 23 countries competed at the 1960 games though only athletes in wheelchairs competed.

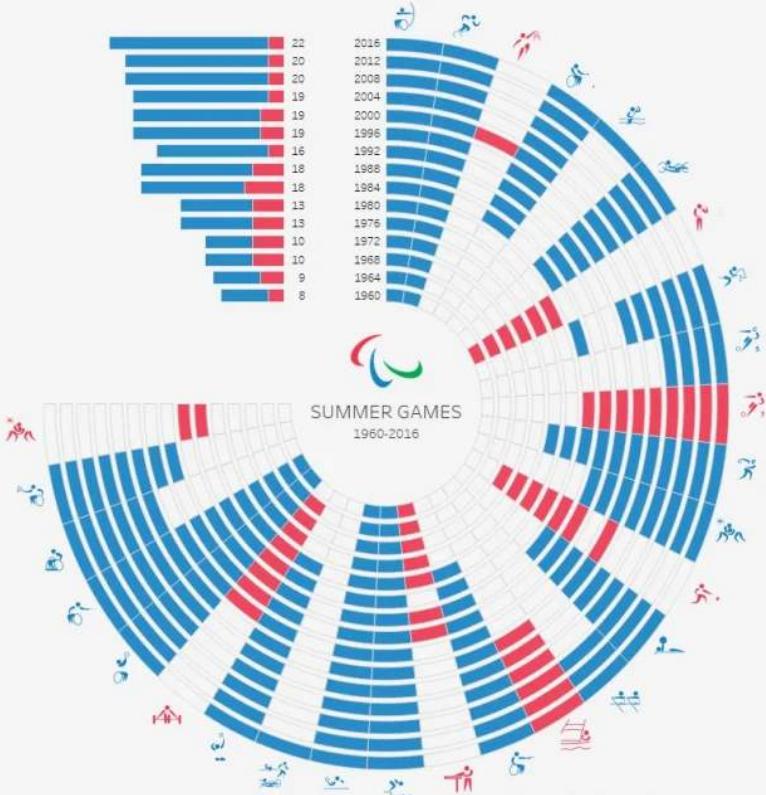
It wasn't until the 1976 Summer Paralympics when the IPC included more disability classifications, which in return expanded the athletes participating in the Paralympic to 1,600 from 40 countries.

Number of Participants Athletes:



In 2016, the Summer Paralympics included 22 sports compared to 20 sports in 2012. Historically the number of events have changed from one Paralympic Games to another, as some of the summer games got discontinued and others were added.

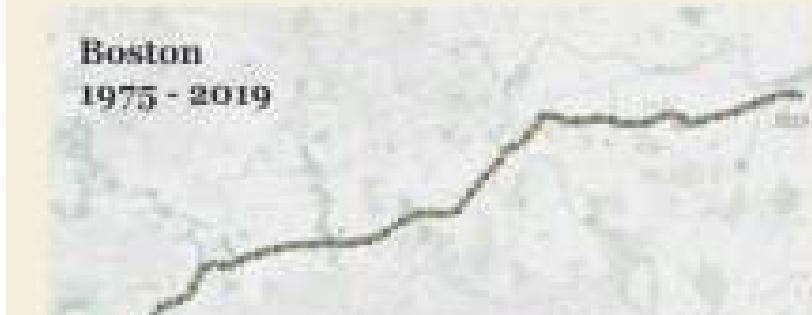
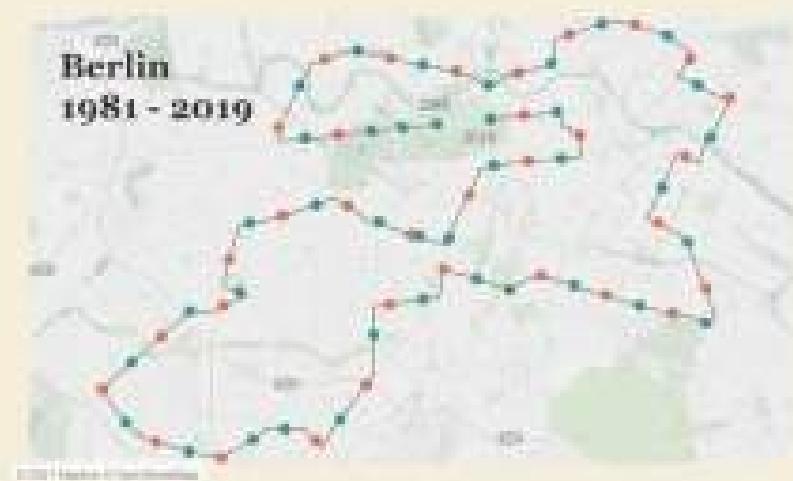
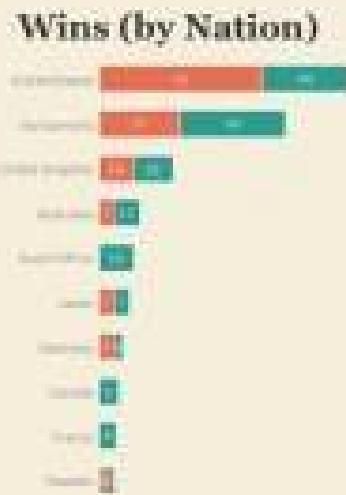
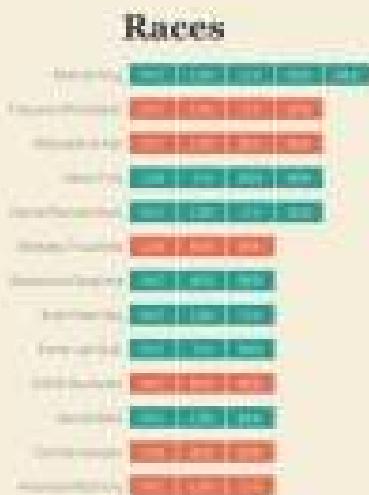
HOW TO READ:
Each Band represent a Sport, each Ring represents a Paralympic Summer Game. Sports are coloured by Current Sports and Discontinued Sport.



Wheelchair Marathon Winners

This data visualization highlights the 157 wheelchair race winners - 56 men and 53 women - of the Berlin, Boston, Chicago, London, and New York marathons.

Instructions: Hover over bars for more information on each year's race winner. Click on a nation to filter the bar chart. Download the result. Please do not reuse this data or graphics, with each sport representing each year's winner.



You can get involved yourself, [here](#).

CJ: Now, Finally, and I am so excited for this. Can you give us a written python run through of your shot chart tutorial?

M: So this is a tutorial I created and one of the first ones I made to make **shot charts** for soccer shots. It shows the locations of each shot that was taken in a match and you can use this to evaluate different things such as goals, misses, different clusters of locations, etc. It's one of the most basic charts that are used in soccer analysis. If you would like to follow the exact code you can download it on my [Github](#), [here](#).



mckayjohns Add files via upload

d1e006d on 9 Dec 2020 1 commit



Shotmaps Tutorial.ipynb

Add files via upload

5 months ago



shotmaps.csv

Add files via upload

5 months ago

The first part we are going to need to do is to import the necessary python packages.

We will be using, pandas, which allows us to upload and manipulate data, matplotlib.pyplot so we can plot the points, just the overall matplotlib package, as well as two external packages you will need to install onto your computer called highlight text (<https://pypi.org/project/highlight-text/>) and mplsoccer (<https://mplsoccer.readthedocs.io/en/latest/>) which we use to plot the pitch.

Therefore this may require you to write the following within your terminal.

```
Terminal: Local +  
(venv) (base) christophersMBP:MckayJohnsTutorial christophermayes$ pip install highlight-text  
Collecting highlight-text  
  Downloading highlight_text-0.2-py3-none-any.whl (11 kB)  
Installing collected packages: highlight-text  
Successfully installed highlight-text-0.2
```

```
import pandas as pd  
import matplotlib.pyplot as plt  
from highlight_text import fig_text  
import matplotlib as mpl  
from mplsoccer.pitch import Pitch
```

The next thing I like to do is set up general use colors such as a text color so we are not having to type a hex code every time. We do this in the next bit of code:

```
#Set general use colors  
text_color = 'w'
```

The next part is going to be loading our data which is in a csv. We use pandas to do this with the following code to create a dataframe which is basically just the python version of an excel spreadsheet and we can check the top couple of rows as well by just typing the name of our dataframe.

```
: data = pd.read_csv('shotmaps.csv')
```

```
: data
```

	minute	second	team	x	y	outcome
0	21	42	Barcelona	50.88	85.20	Saved
1	29	33	Barcelona	34.96	91.68	Missed
2	35	3	Barcelona	44.40	101.64	Saved
3	41	3	Barcelona	27.92	96.36	Saved
4	42	9	Barcelona	50.40	104.88	Saved
5	42	13	Barcelona	21.60	108.00	Missed
6	45	32	Barcelona	47.84	107.64	Saved
7	46	51	Barcelona	47.04	89.76	Saved
8	57	31	Barcelona	48.64	107.04	Post
9	60	12	Barcelona	33.76	101.64	Missed
10	64	29	Barcelona	37.36	98.28	Saved

Make sure your csv and python file are in the same location. This way you don't have to pass in the specific file path for your csv. If they aren't in the same folder, then make sure you are passing in the correct file path for your csv.

The next step is going to be creating the pitch and plotting the shots. This is what the code looks like:

```
fig, ax = plt.subplots(figsize=(13,8.5))
fig.set_facecolor('#22312b')
ax.patch.set_facecolor('#22312b')

#The startbomb pitch from episoccer
pitch = Pitch(pitch_type='startbomb', orientation='vertical',
               pitch_color="#22312b", line_color="#e7d5cc", figsize=(13, 8),
               constrained_layout=False, tight_layout=True, view='half')

pitch.draw(ax=ax)

#I invert the axis to make it so I am viewing it how I want
plt.gca().invert_yaxis()

#plot the points, you can use a for loop to plot the different outcomes if you want
plt.scatter(data['x'],data['y'], s=100,c='#e66969',alpha=.7)

text_color = "#e66969"

s="Barcelona Shot Chart vs Juventus"
fig_text(s=s,
         x=.27,y=.9,
         fontfamily='Andale Mono',
         highlight_weights=['bold'],
         fontsize=24,
         color=text_color
        )

total_shots = len(df)

fig_text(s=f'Total Shots: {total_shots}',
         x=.27, y = .87, fontsize=14,fontfamily='Andale Mono',color=text_color)
fig_text(s=f'xG: .85',
         x=.45, y = .87, fontsize=14,fontfamily='Andale Mono',color=text_color)
fig_text(s=f'Goals: 0',
         x=.68, y = .87, fontsize=14,fontfamily='Andale Mono',color=text_color)
fig_text(s=f'@mckayjohns / twitter',fontstyle='italic',fontsize=12,fontfamily='Andale Mono',color=text_color)

plt.savefig('bcnjuvshots.png',dpi=300,bbox_inches = 'tight',facecolor='#22312b')
```

But I will break down each section to make sure we are understanding what is going on.

The first section is creating the pitch.

```

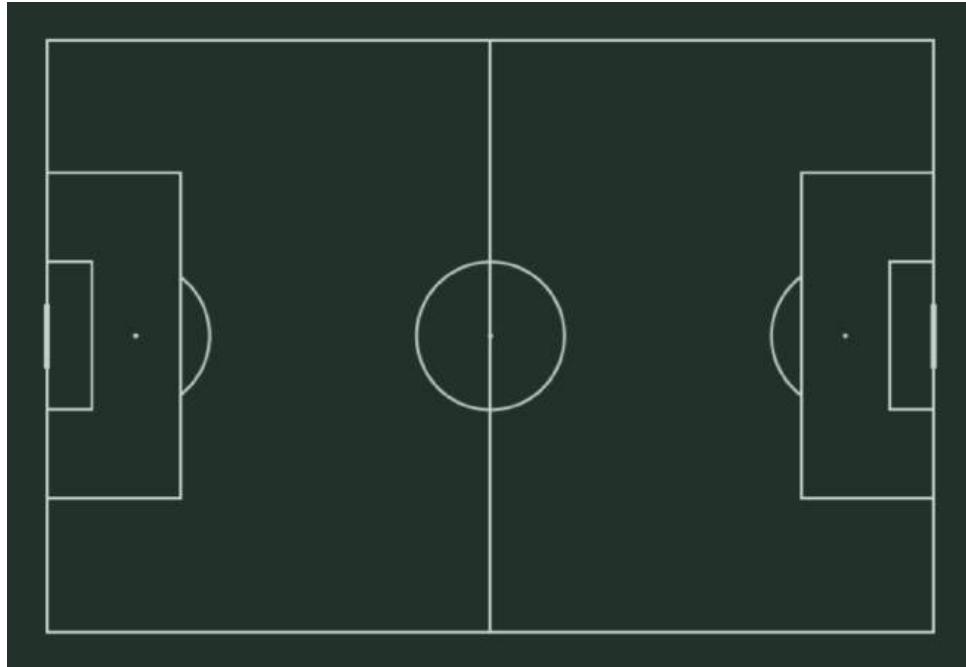
fig, ax = plt.subplots(figsize=(13,8.5))
fig.set_facecolor('#22312b')
ax.patch.set_facecolor('#22312b')

#The statsbomb pitch from mplsoccer
pitch = Pitch(pitch_type='statsbomb', orientation='vertical',
               pitch_color='#22312b', line_color="#c7d5cc", figsize=(13, 8),
               constrained_layout=False, tight_layout=True, view='half')

pitch.draw(ax=ax)

#I invert the axis to make it so I am viewing it how I want
plt.gca().invert_yaxis()

```



This is the original pitch without our orientation and making the pitch as half.

We use a combination of matplotlib and mplsoccer here to create it. The first three lines are actually creating the “canvas” we’ll use and we set the colors we want with the hex code.

The next chunk is we create a variable with mplsoccer called pitch which basically takes a bunch of different arguments to create the pitch we want. This is the one I use, but there is more customization options if you read the documentation. The next line is actually just drawing the pitch on that canvas we created. And the line after that we need because the statsbomb pitch we are using has an inverted y axis compared to the data we are using so we need to make sure they are going the same way (you may or may not need this line when using different data).

The next section is just plotting the shots. We are just going to plot all of the shots the same color, but you could use something called a for loop if you wanted to plot each shot type or outcome a different color. It’s a simple code. We just use matplotlib’s scatter function and pass in the x column and the y column from our dataframe, and then we set the size to 100, the color to a red, and then alpha is making it a little more transparent.

```

#plot the points, you can use a for loop to plot the different outcomes if you want
plt.scatter(data['x'],data['y'], s=100,c='#ea6969',alpha=.7)

```

The next section is just annotation of the plot. This is super easy with the highlight_text package as well as other ways. I chose to use this so if I wanted to add colors in the future I could.

Each one of the texts is using an x and y to plot the location of the annotation and the s argument is where we put the string we will be passing.

```

s='Barcelona Shot Chart vs Juventus'
fig_text(s=s,
         x=.27, y=-.9,
         fontfamily='Andale Mono',
         highlight_weights=['bold'],
         fontsize=14,
         color=text_color
     )
total_shots = len(df)

fig_text(s=df['Total Shots: (total_shots)'],
         x=.27, y=.67, fontsize=14,fontfamily='Andale Mono',color=text_color)
fig_text(s=df['xG: .85'],
         x=.49, y=.67, fontsize=14,fontfamily='Andale Mono',color=text_color)
fig_text(s=df['Goals: 0'],
         x=.68, y=.67, fontsize=14,fontfamily='Andale Mono',color=text_color)

fig.text(.22,.14,f'@mckayjohns / twitter',fontstyle='italic',fontsize=12,fontfamily='Andale Mono',color=text_color)

#plt.savefig('bcnjuveshots.png',dpi=300,bbox_inches = 'tight',facecolor="#22312b")

```

There is a lot of customization with the highlight_text package so I would recommend looking into that if you have any questions on what else you can do.

When you're all said and done you can save it and your final image should look like this!



That's the end of the tutorial! If you have any questions about the code, we just started a [discord chat](#) you can feel free to join where you can get help with any questions or things about football/soccer or just sports analytics in general.

CJ Round Up:

Thanks for reading this month's "What's Good?" and do let myself or McKay know how you got on with the tutorial. I am hoping to post my own soccer blog next week, without a doubt, to a much lesser python quality standard so do watch out for that. It will more heavily look at scraping data from Understat and loading it into Tableau for mapping.

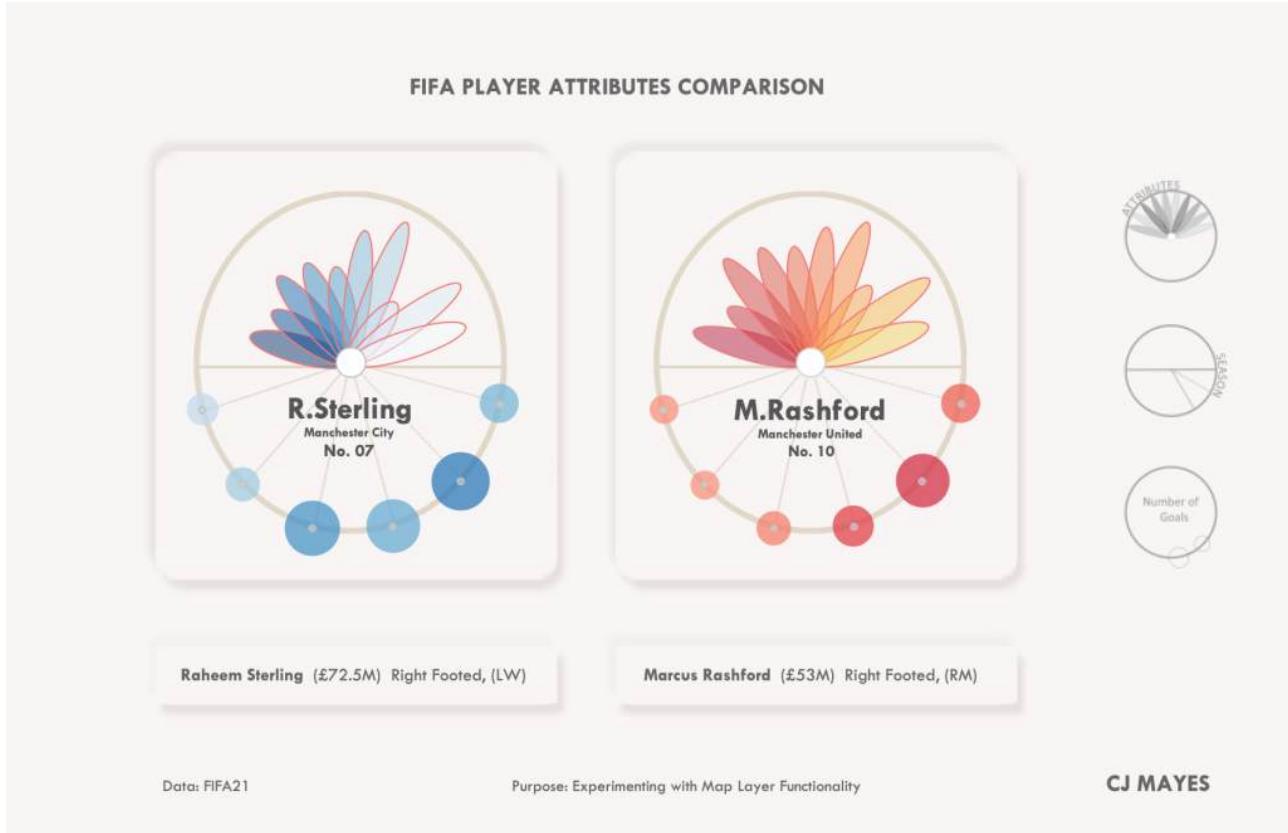
Further thanks to McKay for the run-through. Keep up the fantastic youtube tutorials, they are a great source of learning. I'd like to finish this month by congratulating McKay also on a new role he took up recently, and wish him the best with the remainder of his masters course.

LOGGING OFF.

CJ

PETALS AND CIRCLES DON'T ALWAYS MAKE WREATHS

This post covers the thought process behind creating petal vizzes and the inspirations behind it. Whilst you may not want to create this visualisation directly, hopefully it will detail topics of rotating shapes, creating radial graphs and using map layers.



Hello!

I am not sure what to call this run-through? Half flower half circle thing? I posted it on twitter only partially finished. It was mainly for experimentation purposes with map layers, but received a fair amount of good reception so have written this blog to explain some of the behind the scenes.

In truth, I'm fairly unhappy with the published dashboard mainly as it has little context and you realistically learn nothing from looking at it at face value. I did however learn a lot in terms of transformations and map layers so felt empowered to post it... one day I may need to steal the calculations out of it. Not every dashboard needs to be a finished work of art after all.

Reasons why my dashboard doesn't sit well with me:

- The petal sizes are hard to cross compare. In fact I picked two different player positions in the vain hope that their attributes would be wildly different but they aren't!
- The circles (goals) are tough to cross-compare too. They probably could have done with using a different measure type. That's the problem when you start with mock data of the alphabet and then try substitute in a dataset that doesn't particularly work well.
- Theoretically it's probably quite odd too having petal attributes for 2021 only and then the goals are per season for the past 6 years. This probably should be signalled a little clearer with text on the top which way the seasons go.

Reasons I posted it:

Looks quite cool, ha.

Before we start, I must say. You don't have to look far to recognise the amazing work of **Neil Richards** in the Tableau community. If you want to check out how to utilise flowers in visualisations, check out his blog post [here](#).

Neil recently did a **vizconnect** session called Patterns, Polygons and Petals. 20 minutes in he covers off petals, which he used in a **Premier League** visualisation. He goes on to discuss the calculations behind the visualisation and how to rotate the petals, discussing trigonometry in more detail. Naturally, I wanted to give it a go.

In the wider world I have been blown away by the graphics of **Federica Fragapane**. Her work is a thing of beauty. I often sit there scrolling through behance and pinterest thinking where I would even start to try

replicate some of her concepts in Tableau. Check out one of my favourite [here](#).

Some worthwhile videos and pre-reading:

Tableau 2020.4: How to use the new map layers feature (and go beyond just maps!) – Data Coach

Lacrosse D1 Championships – Simon Rowe

How to Map Any Background Image in Tableau – Ryan Sleeper

Geospatial Analysis with Map Layers – Marc Reid

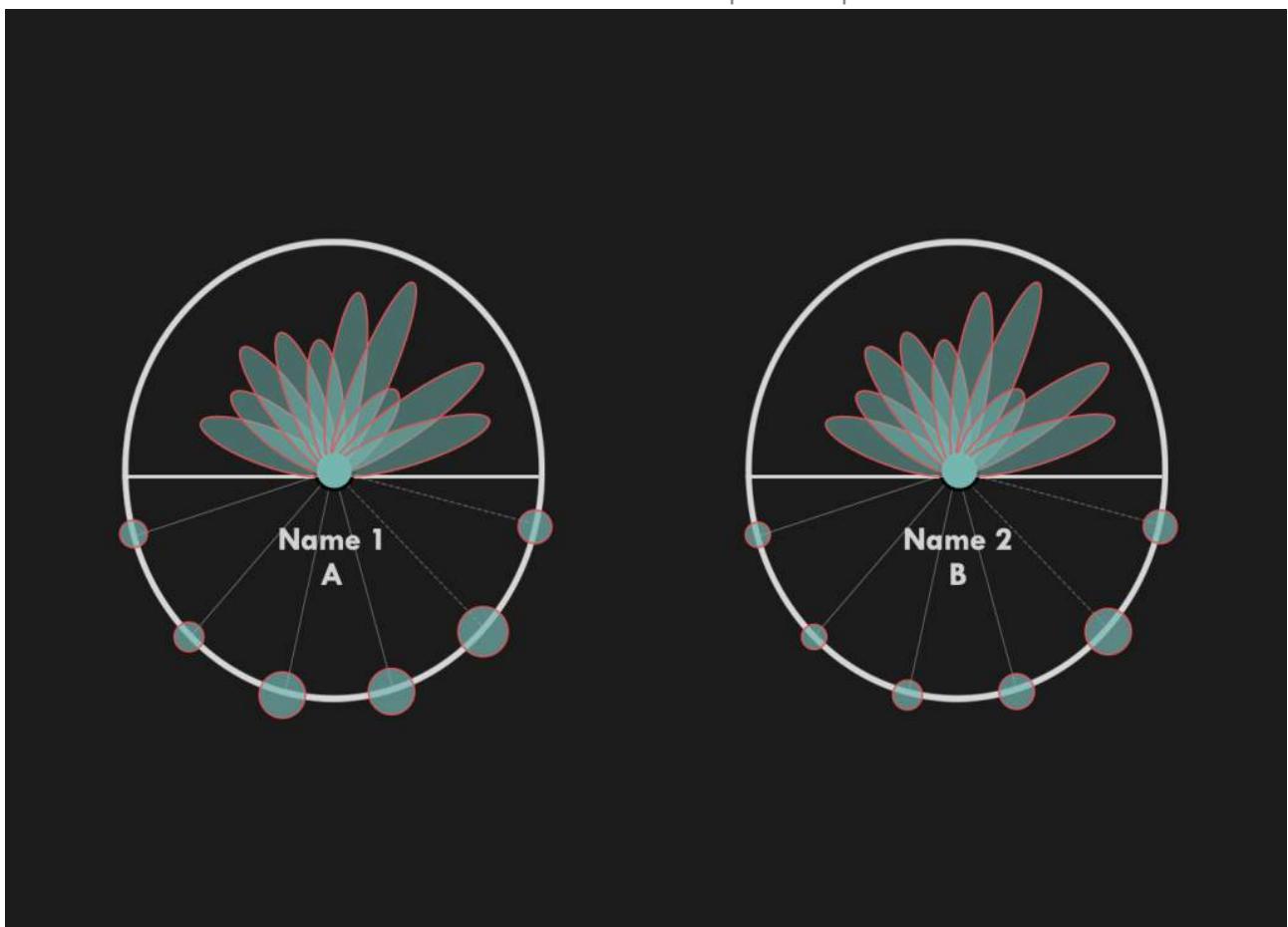
Luke's data coach was utilised to understand the layers. Simon covers this off in a written blog too and provides an alternative method to creating a background which may be of interest. Ryans background image was used to add the circular frame having exported my finished sheet as an image and then constructing it to fit my visualisation. Marc's blog covers off using multiple datasets on a map, which is utilised when prepping the data.

LOOKING AT THE DATA

Below I will look to outline the steps and give explanations behind specific decisions.

Some mock data to get us started is stored on Github using the link at the top of the page. I have also attached the final run-through workbook which is much cleaner than the one I posted on Tableau Public, feel free to download a copy through the link at the top of the page.

This is what we will look to replicate/explain.



There are three sheets within the file. The way we join them together is hugely important.

	A	B	C	D	E	F	G	H	I	J
1	Y Petal	X Petal	Id							
2	1	0	0							
3	0.99384417	0.01955431	1							
4	0.97552826	0.03862712	2							
5	0.94550326	0.05674881	3							
6	0.9045085	0.07347316	4							
7	0.85355339	0.08838835	5							
8	0.79389263	0.10112712	6							
9	0.72699525	0.11137582	7							
10	0.6545085	0.11888207	8							
11	0.57821723	0.12346104	9							
12	0.5	0.125	10							
13	0.42178277	0.12346104	11							
14	0.3454915	0.11888207	12							
15	0.27300475	0.11137582	13							
16	0.20610737	0.10112712	14							
17	0.14644661	0.08838835	15							
18	0.0954915	0.07347316	16							
19	0.05449674	0.05674881	17							
20	0.02447174	0.03862712	18							
21	0.00615583	0.01955431	19							
22	0	0	20							
23	0.00615583	-0.0195543	21							
24	0.02447174	-0.0386271	22							
25	0.05449674	-0.0567488	23							
26	0.0954915	-0.0734732	24							
27	0.14644661	-0.0883883	25							
28	0.20610737	-0.1011271	26							
29	0.27300475	-0.1113758	27							
30	0.3454915	-0.1188821	28							
31	0.42178277	-0.123461	29							
32	0.5	-0.125	30							
33	0.57821723	-0.123461	31							
34	0.6545085	-0.1188821	32							

	A	B	C	D	E	F	G	H	I	J
1	Flower	Name	Shape	Dimension	Rank	Size	Size Original	Attribute		
2	A	Name 1	Petal	A	1	0.78	78	Attribute 1		
3	A	Name 1	Petal	B	2	0.85	85	Attribute 2		
4	A	Name 1	Petal	C	3	0.46	46	Attribute 3		
5	A	Name 1	Petal	D	4	0.9	90	Attribute 4		
6	A	Name 1	Petal	E	5	0.78	78	Attribute 5		
7	A	Name 1	Petal	F	6	0.57	57	Attribute 6		
8	A	Name 1	Petal	G	7	0.65	65	Attribute 7		
9	A	Name 1	Petal	H	8	0.69	69	Attribute 8		
10	A	Name 1	Petal	I	9	0.59	59	Attribute 9		
11	A	Name 1	Petal	J	10	0.67	67	Attribute 10		
12	B	Name 2	Petal	A	1	0.78	78	Attribute 1		
13	B	Name 2	Petal	B	2	0.85	85	Attribute 2		
14	B	Name 2	Petal	C	3	0.46	46	Attribute 3		
15	B	Name 2	Petal	D	4	0.9	90	Attribute 4		
16	B	Name 2	Petal	E	5	0.78	78	Attribute 5		
17	B	Name 2	Petal	F	6	0.57	57	Attribute 6		
18	B	Name 2	Petal	G	7	0.65	65	Attribute 7		
19	B	Name 2	Petal	H	8	0.69	69	Attribute 8		
20	B	Name 2	Petal	I	9	0.59	59	Attribute 9		
21	B	Name 2	Petal	J	10	0.67	67	Attribute 10		
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33										
34										

	A	B	C	D	E	F	G	H	I	J
1	Flower	Name	Shape	Dimension	Rank	Size				
2	A	Name 1	Circle	E	1	6				
3	A	Name 1	Circle	F	2	7				
4	A	Name 1	Circle	G	3	18				
5	A	Name 1	Circle	H	4	17				
6	A	Name 1	Circle	I	5	20				
7	A	Name 1	Circle	J	6	9				
8	B	Name 2	Circle	E	1	5				
9	B	Name 2	Circle	F	2	5				
10	B	Name 2	Circle	G	3	7				
11	B	Name 2	Circle	H	4	10				
12	B	Name 2	Circle	I	5	17				
13	B	Name 2	Circle	J	6	9				
14										
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34										



Sheet name

Reason for the data

Petal Shape

I cheekily pinched the co-ordinates of this from Neil's recent workbook (I do slightly transform the shape as I want the petals to be a bit thinner for my viz). These points form the shape of the petal.

Petals

The petals sheet will be what is used to form the number of petals.

Circles

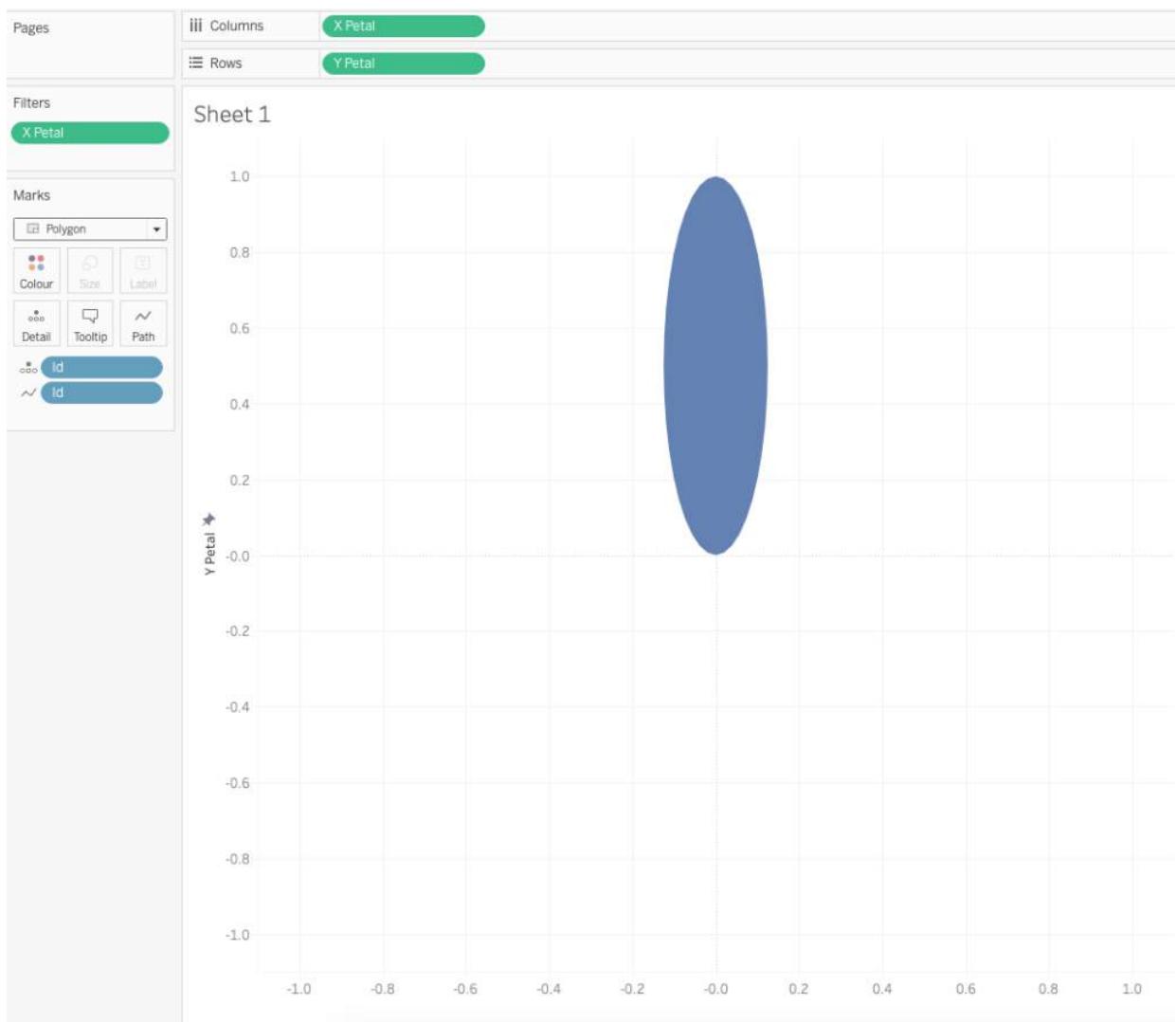
The circles sheet will be what is used to form the circles around the bottom

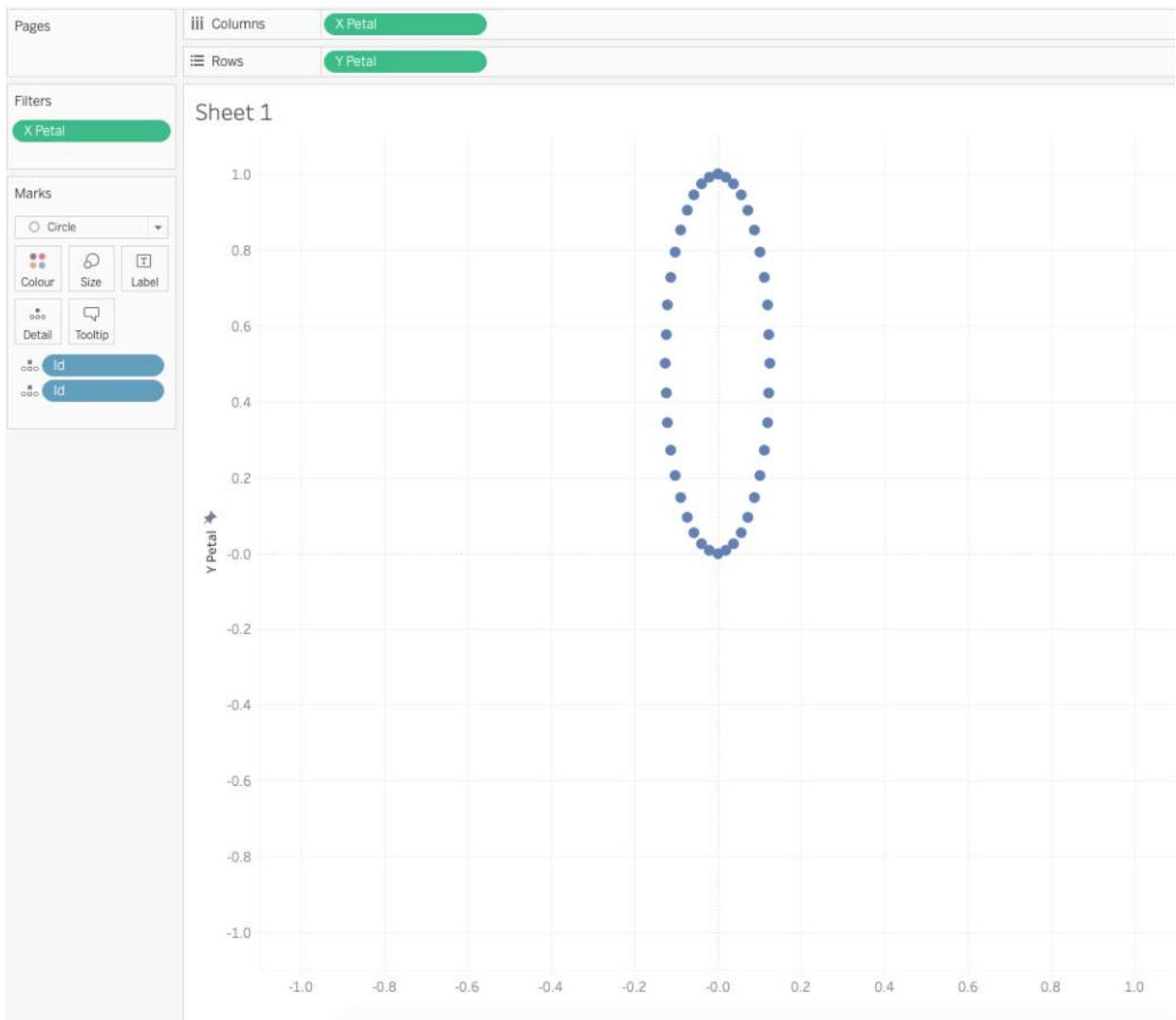
Things to be aware of

See in the [printscreen below](#) how the shape of the petal goes up to point (0,1) and the bottom of the petal is at co-ordinate (0,0). This is something to be wary of when we want things to be in proportion later. We can scale these later on.

We will want to make sure we use the correct join. The size column we will use to scale the petal sizes. The Dimension & Rank refers to the number of petals that will be created and the rank of each petal clockwise.

We will want to make sure we use the correct join. The sizing values do not matter as they are independent of petal shape only relative to one another. Again, the dimension and rank refers to the number of circles and the order of them.





What should I do if I want to make amendments to the sheets?

Petal Shape: If you want to make adjustments to the petal shape you can. I would recommend loading the petal shape sheet into tableau and creating calculations to adjust the size of the petal and re-export these values out. The current petal shape is as above, using 40 points through an ID.

Petals: The Dimension will be each petal (A-J in the mock data), currently 10 petals. Feel free to delete or add as appropriate. Assign each petal a rank value. If you'd like to amend the size of the petals then feel free. I have made mine so that the maximum size the petal can be is 1. Therefore all the other petals shrink based on the size given. This is important as i built everything between -1 & 1. Keep this in mind.

Circles: The Dimension column holds 6 circles; each assigned its own rank. Hopefully the structure of the data makes sense to be able to easily populate these with fields you want. For now, I would highly recommend against deleting any columns, as we may need them in calculations.

General note: Feel free to add as many extra columns in as you'd like.

DATA PREP

Connect to the Petals sheet.

- Create a left join between Petals to Petal Shape using a join of 1 = 1.

Join			
Inner	Left	Right	Full Outer
Data Source	Petal Shape		
1	=	1	
Add new join clause...			

Explanation: The petals sheet contains our petals. If we left join our petal shape to it we create the 41 points in the sheet for each petal. Creating the X, Y co-ordinates for each flower, causing the number of records to massively increase.

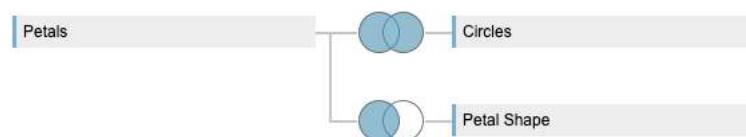
- Create a full outer join between Petals and Circles using 1=2

Join			
Inner	Left	Right	Full Outer
Data Source	Circles		
1	=	2	
Add new join clause...			

So what's with the circles join?

We want to include the circles in the one map layer. Creating the join of 1=2 means nothing is equal. In effect it is like stacking two separate datasets on top of each other but nothing in this case matches. The print-screen below shows how it will create nulls for the missing data. I do this so that I can easily tap into the different (X,Y) co-ordinates for the petal and the circles separately in a single sheet.

Data Template is made of 3 tables. ⓘ



(I learnt about this from reading **Marc Reid's Blog on Geospatial Analysis** [here](#))

The screenshot shows the Tableau Data Template interface. At the top, it says "Petals+ (PetalTemplate)". Below that, there's a note about using a Data Interpreter to clean Microsoft Excel workbooks. The main area displays a diagram of three tables: Petals, Circles, and Petal Shape, connected by relationships. A preview of the data is shown in a grid format with columns like Flower (Circles), Name (Circles), Shape (Circles), Dimension (Circles), Rank (Circles), Size (Circles), X Petal, Y Petal, Id, Name, Shape, and Dimension. The preview shows several rows of data with various values for each column.

THE BUILD

We will create certain parts of the visualisation then go back to update calculations this will make it easier to fully understand.

PETAL PREP

1a. Count of Petals

10

The screenshot shows the Tableau calculation editor titled "1a. Count of Petals". The code entered is: `//A count of the petals.
10`. Below the code, a message says "The calculation is valid." and shows "8 Dependencies". There are "Apply" and "OK" buttons at the bottom.

Explanation: A count of the petals, I have hardcoded it. Please update where necessary.

2a. Angle Petals

($360 /$)

The screenshot shows the Tableau calculation editor titled "2a. Angle Petals". The code entered is: `//the angle should be the same for all distances
(360/[1a. Count of Petals])`. Below the code, a message says "The calculation is valid." and shows "8 Dependencies". There are "Apply" and "OK" buttons at the bottom.

The screenshot shows the Tableau calculation editor with the message "The calculation is valid." displayed below the code entry field. There are "Apply" and "OK" buttons at the bottom.

Explanation: We are creating equal gaps between the petals for the circle. The angle should be the same for all distances. We will come back and update this calculation.

3a. Rank Angle Petals

(^{*})

3a. Rank Angle Petals

X

$([Rank] * [2a. Angle Petals])$

The calculation is valid.
6 Dependencies ▾
Apply
OK

Explanation: To create what the angle is going to be we have to multiply the angle distance by the rank of each flower.

4a. X Petal Rotated

$$-(^* \cos(\text{RADIANS}())) \\ + (^* \sin(\text{RADIANS}()))$$

4a. X Petal Rotated

X

$//[X \text{ Petal}]$

$-([X \text{ Petal}] * \cos(\text{RADIANS}([3a. Rank Angle Petals]))) \\ + ([Y \text{ Petal}] * \sin(\text{RADIANS}([3a. Rank Angle Petals])))$

The calculation is valid.
4 Dependencies ▾
Apply
OK

Explanation: Since then I have found a good explanation online of how it works on Maths stack exchange. If you'd like to use their equations instead then feel free.

4b. Y Petal Rotated

$$(^* \sin(\text{RADIANS}())) \\ + (^* \cos(\text{RADIANS}()))$$

4b. Y Petal Rotated

X

$([X \text{ Petal}] * \sin(\text{RADIANS}([3a. Rank Angle Petals]))) \\ + ([Y \text{ Petal}] * \cos(\text{RADIANS}([3a. Rank Angle Petals])))$

The calculation is valid.
4 Dependencies ▾
Apply
OK

Explanation: Within these calculations we are rotating the petal around a point using trigonometry. Below is the online example i found which is fantastic. I ended up using Neil's equation from his workbook because I

wanted to add in a few sizing controls later on, but I did test using the equation written in the same format as below which obviously also works for the petals.

If your central point is (c_x, c_y) and you want to rotate counter-clockwise about this point by an angle of θ (in radians) you would shift the center to the origin (and the rest of the points of the plane with it), then rotate, then shift back. You can use:

$$x_{\text{rot}} = \cos(\theta) \cdot (x - c_x) - \sin(\theta) \cdot (y - c_y) + c_x$$

$$y_{\text{rot}} = \sin(\theta) \cdot (x - c_x) + \cos(\theta) \cdot (y - c_y) + c_y$$

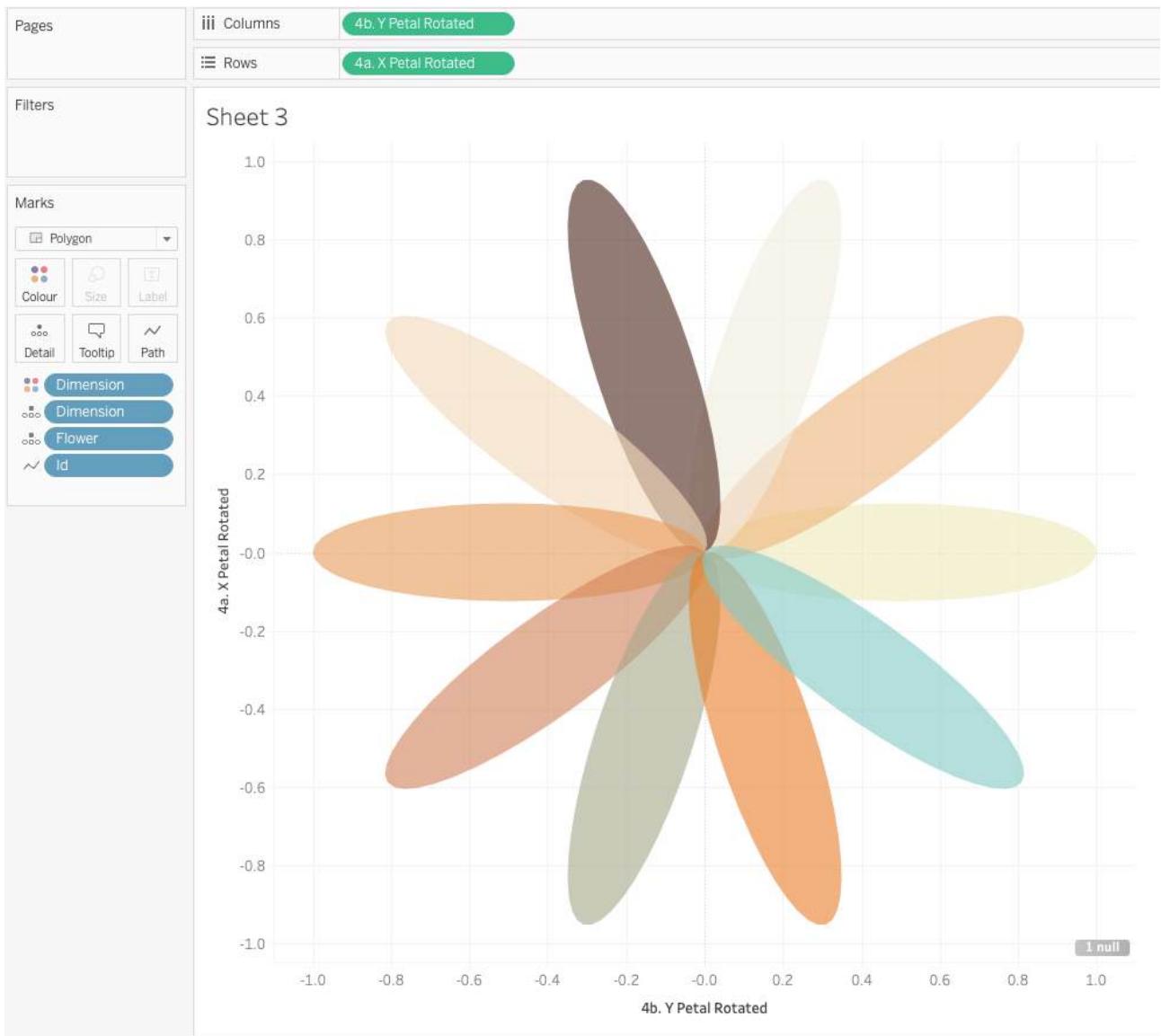
(x, y) are your initial coordinates and $(x_{\text{rot}}, y_{\text{rot}})$ are the new coordinates after rotation by θ about (c_x, c_y)

Example: If you want to rotate the point $(3, 0)$ by $90^\circ = \frac{\pi}{2}$ radians about the point $(3, 2)$ the formula should give $(5, 2)$. Computing to check:

$$x_{\text{rot}} = \cos(\frac{\pi}{2}) \cdot (3 - 3) - \sin(\frac{\pi}{2}) \cdot (0 - 2) + 3 = 5$$

$$y_{\text{rot}} = \sin(\frac{\pi}{2}) \cdot (3 - 3) + \cos(\frac{\pi}{2}) \cdot (0 - 2) + 2 = 2$$

We will revisit these calculations and amend them again later to make it half a circle and resize them accordingly. For now if you plot X Petal Rotated against Y Petal rotated you will see the flower shape!



For the time being lets move on to start to create the circles.

CIRCLE PREP

5a. Rank For Circles

$\text{COUNTD}() * \text{PI()} * 2$

5a. Rank For Circles

$[\text{Rank (Circles)}] / [\text{COUNTD}([\text{Rank (Circles)}])] * \text{PI()} * 2$

The calculation is valid.

6 Dependencies

Apply

OK

Explanation: $2\pi R$, same concept as the petals but for the circle ranks. We will want to separate these out from the Players to be on its own axis. Do note that we are using the rank from the circles sheet!

6a. End X Circle

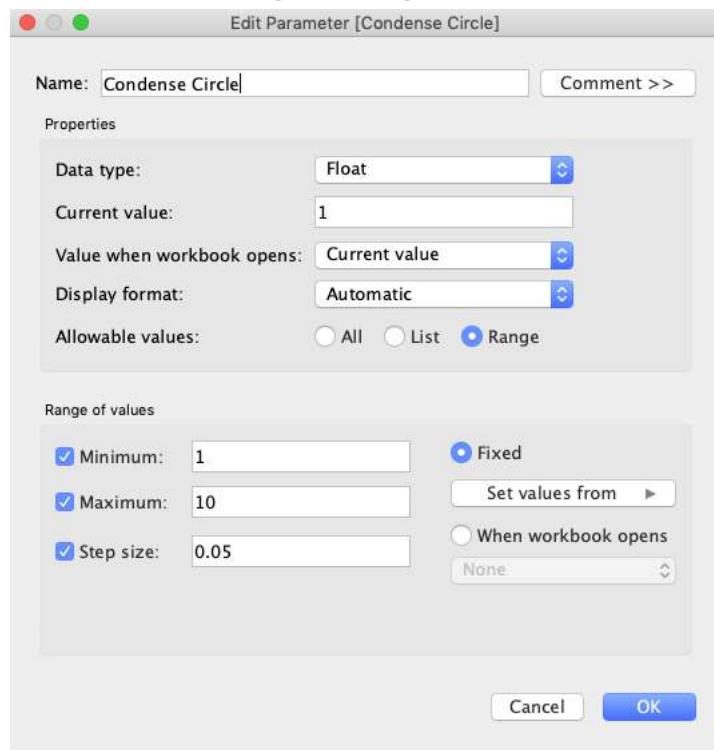
$\text{COS}()$



Explanation: Using the Cos and Sin functions we can now make these into the circular points we need. So we are half way there. Now we just need to make all the circles bunch at the bottom, and all the petals to be in the top half. Then we will want to see how we can put them onto one sheet. Lets start with the circles, as it's easier.

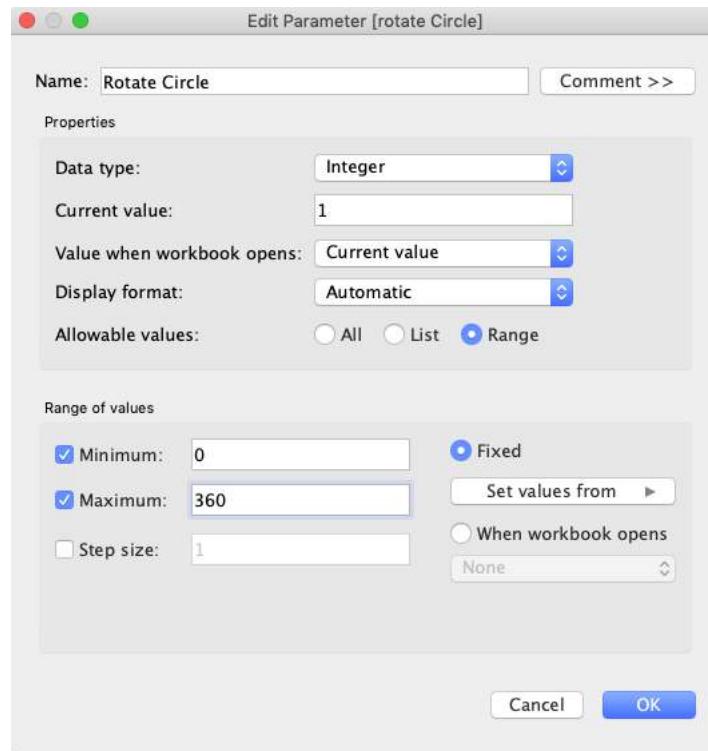
Create the following Parameter.

Condense Circle



Explanation: We will add this into our circle calculations to make the gaps smaller.

Next make Parameter Rotate Circle



Explanation: We will want to move the circles to be around the bottom of the circle.

In truth these end values will end up being whatever is preferable, but once made it makes it the visualisation easier to adjust.

Update 6a. End X Circle with
 $\text{COS}(/ + \text{RADIANS}())$

6a. End X Circle X

`COS([5a. Rank For Circles]/[Condense Circle] + RADIANS([Rotate Circle]))`

The calculation is valid. 1 Dependency ▾

Apply OK

Update 6b. End Y Circle with
 $\text{SIN}(/ + \text{RADIANS}())$

6b. End Y Circle X

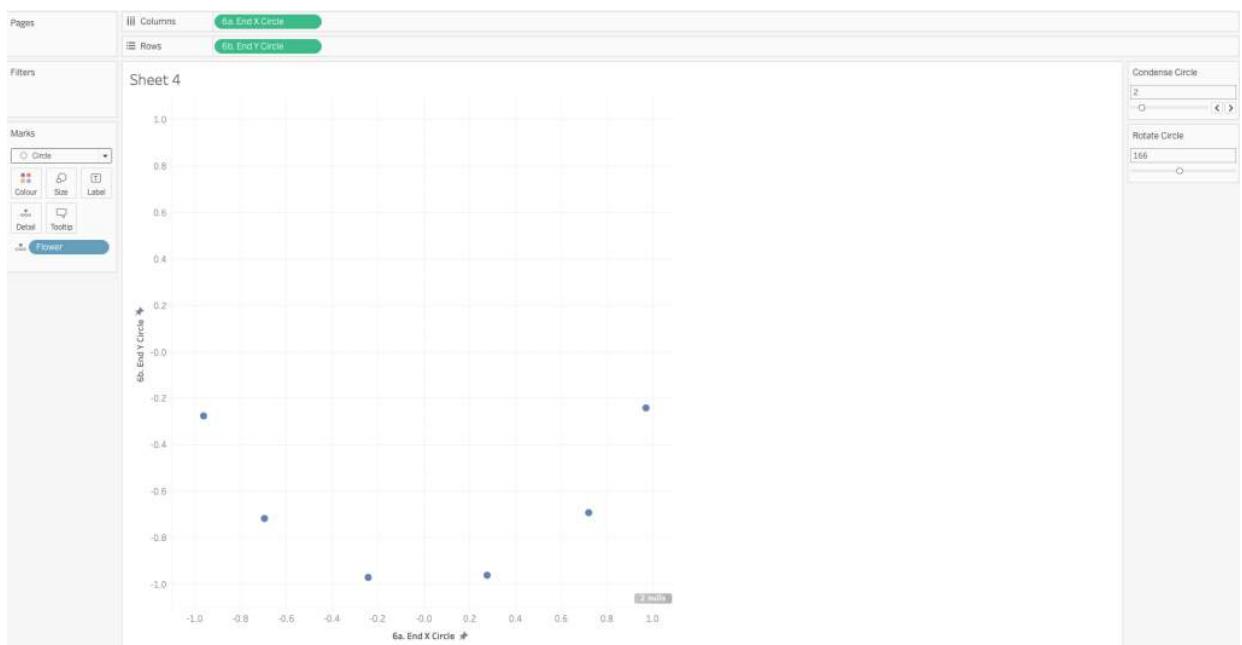
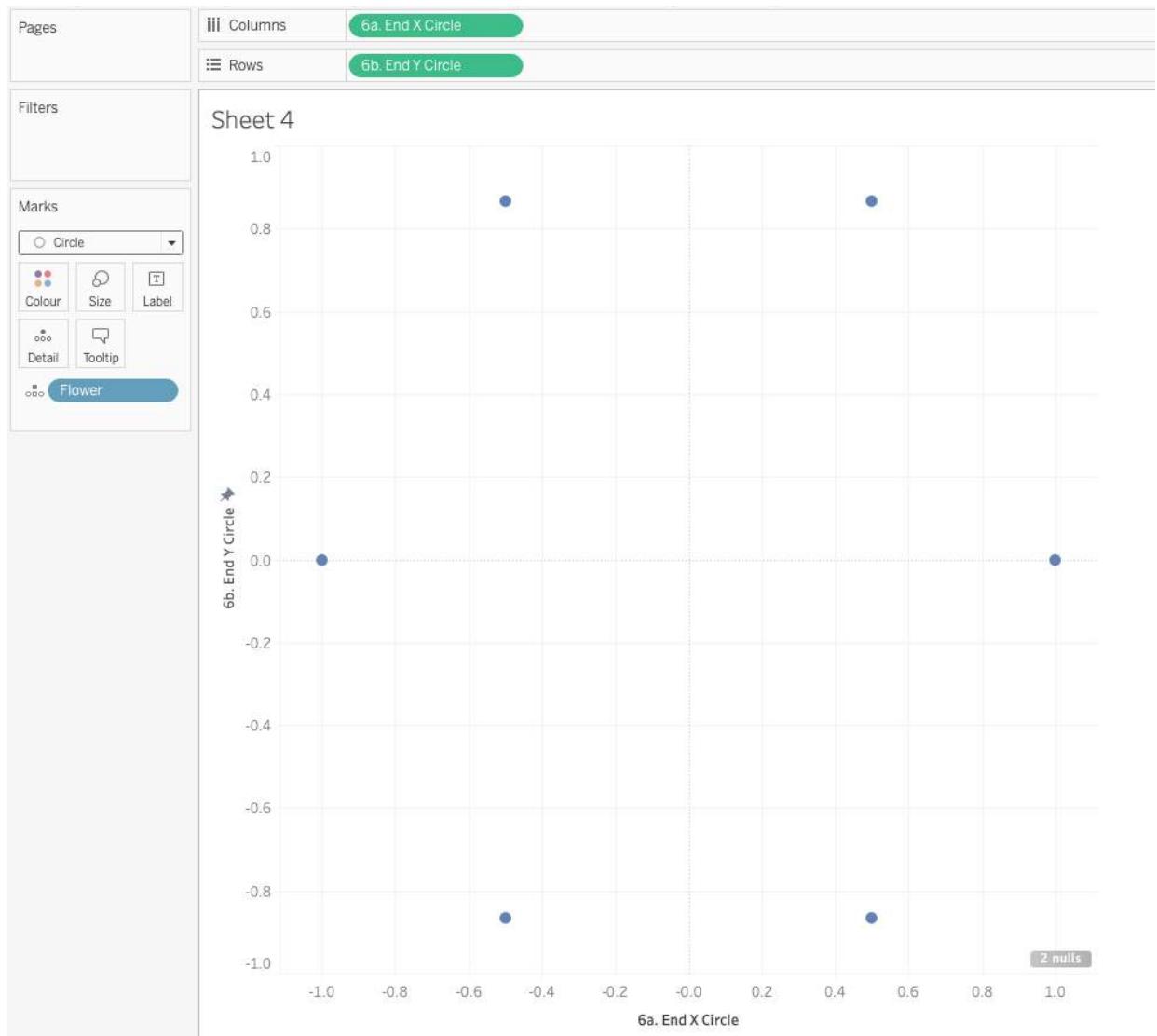
`SIN([5a. Rank For Circles]/[Condense Circle] + RADIANS([Rotate Circle]))`

The calculation is valid. 1 Dependency ▾

Apply OK

Have a play around with the new Parameters. Check that you can get the rotation and spacing changed. I recommend doing this in a fresh sheet where the axis are fixed between -1 and 1 on the X and Y.

Side note: It's worth noting at this point when we made the circles it has a radius of 1. This is to my advantage because I know that I want the flowers to sit in the top half and have a radius of 1 too. If the petals and the circles had different radius' I would have to scale them to bring them in line. You can see I set the parameter Condense to 2 and rotate to 166.



Now let's go back and amend the petals.

4a. X Petal Rotated

$$-(1.5 * \cos(\text{RADIANS}())) \\ + (* \sin(\text{RADIANS}()) \\ *)$$

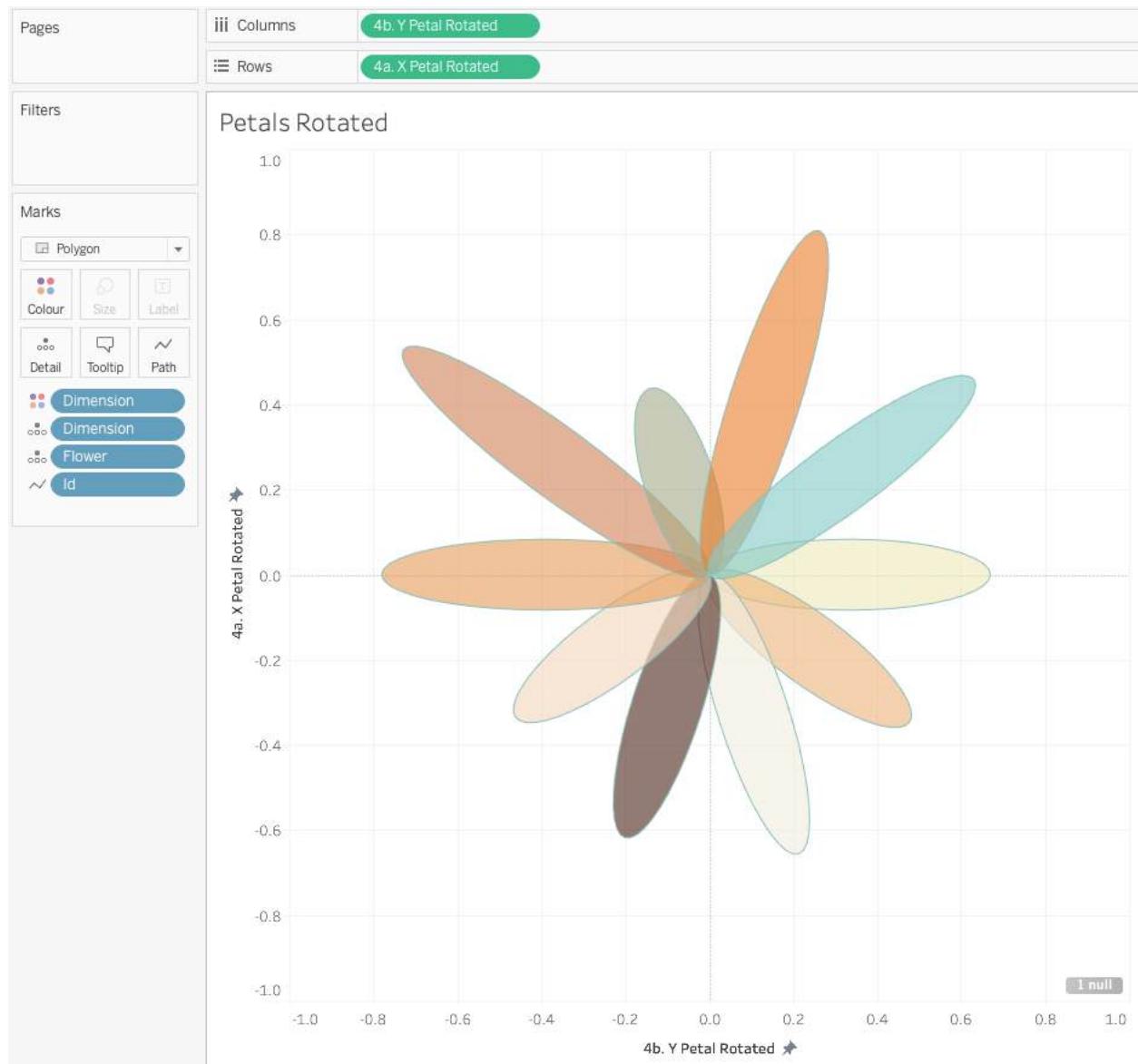
```
4a. X Petal Rotated X  
  
// [X Petal]  
  
-([X Petal]/1.5 * cos(RADIANS([3a. Rank Angle Petals])))  
+ ([Y Petal] * sin(RADIANS([3a. Rank Angle Petals])))  
*[Size] ▶  
  
The calculation is valid. 4 Dependencies Apply OK
```

4b. Y Petal Rotated

$$(/1.5 * \sin(\text{RADIANS}())) \\ + (* \cos(\text{RADIANS}()) \\ *)$$

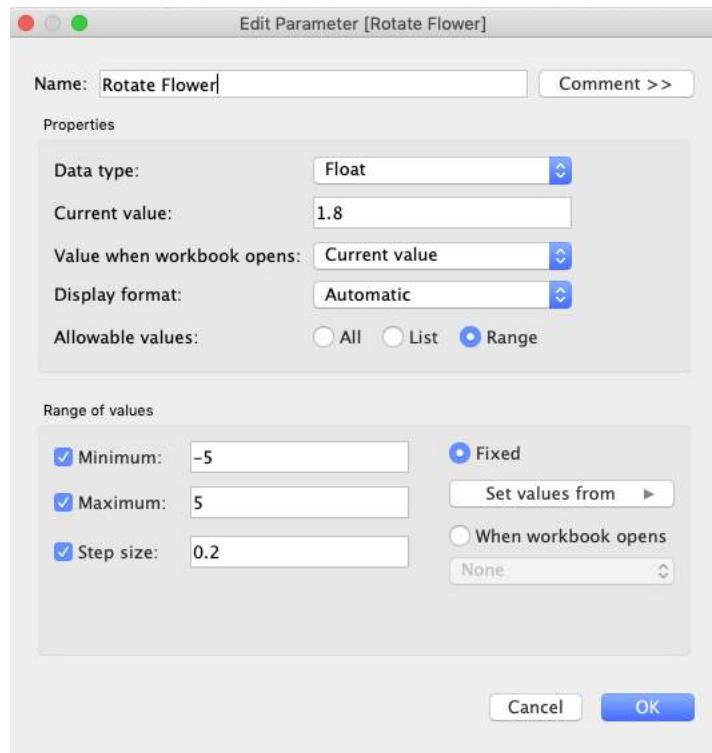
```
4b. Y Petal Rotated X  
  
([X Petal]/1.5 * sin(RADIANS([3a. Rank Angle Petals])))  
+ ([Y Petal] * cos(RADIANS([3a. Rank Angle Petals])))  
*[Size] ▶  
  
The calculation is valid. 4 Dependencies Apply OK
```

Explanation: The first thing I do is add in a division into the X Petal part, I just want the flowers to be slightly thinner. Simply for aesthetics. The next thing is I multiply the petal by the size. Multiplying what was a length of 1 by a decimal will reduce the size of the flower proportionally.



Next I need to find a way to amend the gap between the flowers to make them all sit at the top.

Lets create a new parameter: Rotate Flower



Then let's update

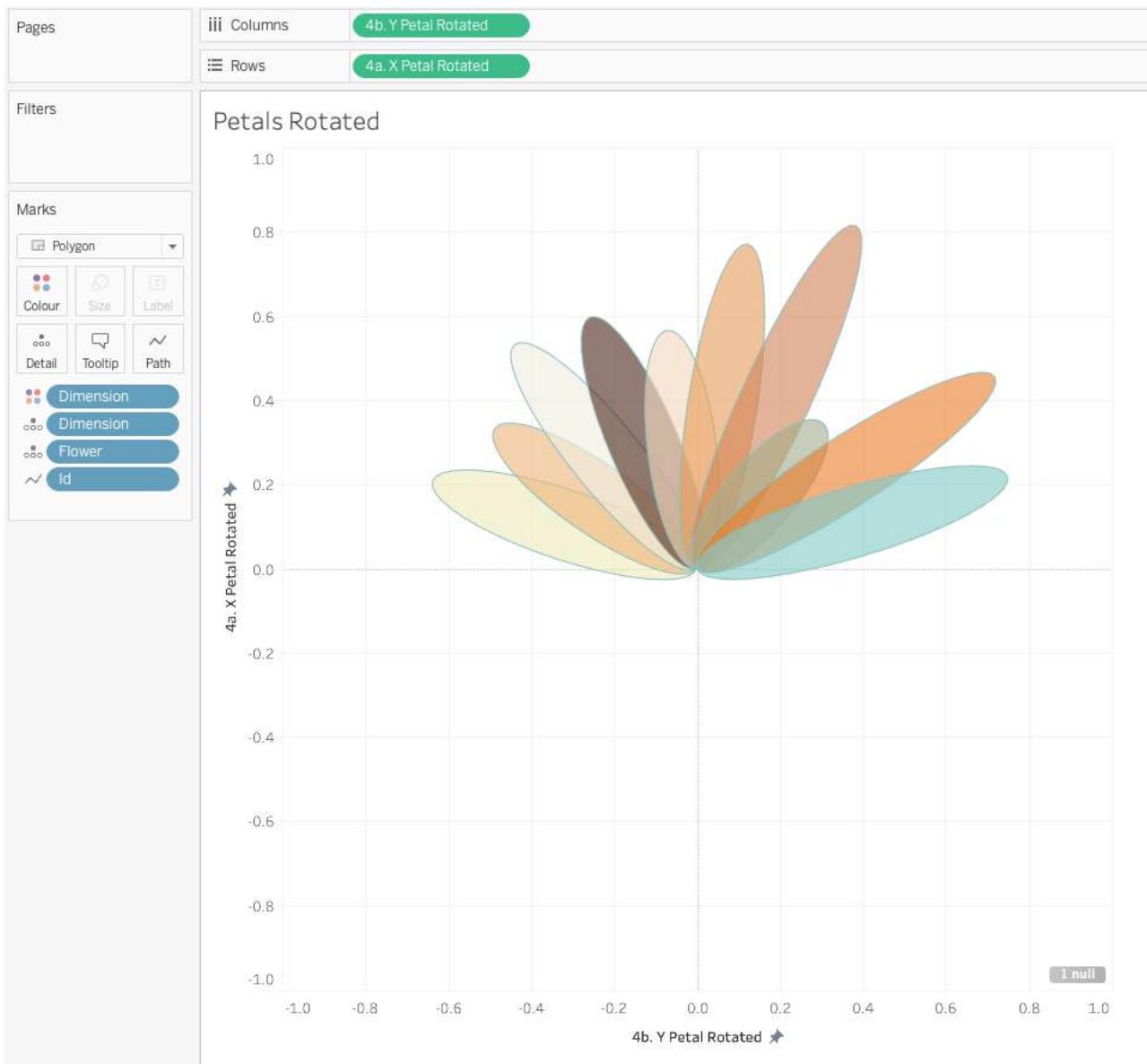
2a. Angle Petals

$$(360//2)-$$

```
2a. Angle Petals
//the angle should be the same for all distances
(360/[1a. Count of Petals]/2)-[Rotate Flower]
```

The calculation is valid. 7 Dependencies ▾ Apply OK

Explanation: Dividing the values by 2 makes them into a semi-circle. We have then added a rotate parameter just to make sure we can make the petals look even going outwards, in my final viz this value was 1.2 but have a play around with the slider to see what works. In the below screenshot it is 1.8



So now we have both parts of the visualisation. We have the circles prepped ready for the bottom. And we have the petals prepped ready for the top. Now we need to glue it together in one sheet. To do this we will need to use the new functionality of map layers.

MAP LAYER BUILD

7a. MP Petals

IF = 'A'

then

MAKEPOINT(,)

ELSE

MAKEPOINT(+3)

END

7a, MP Petals

```

IF [Flower] = 'A'
then
MAKEPOINT([4a. X Petal Rotated],[4b. Y Petal Rotated])
ELSE
MAKEPOINT([4a. X Petal Rotated],[4b. Y Petal Rotated]+3)
END

```

The calculation is valid.

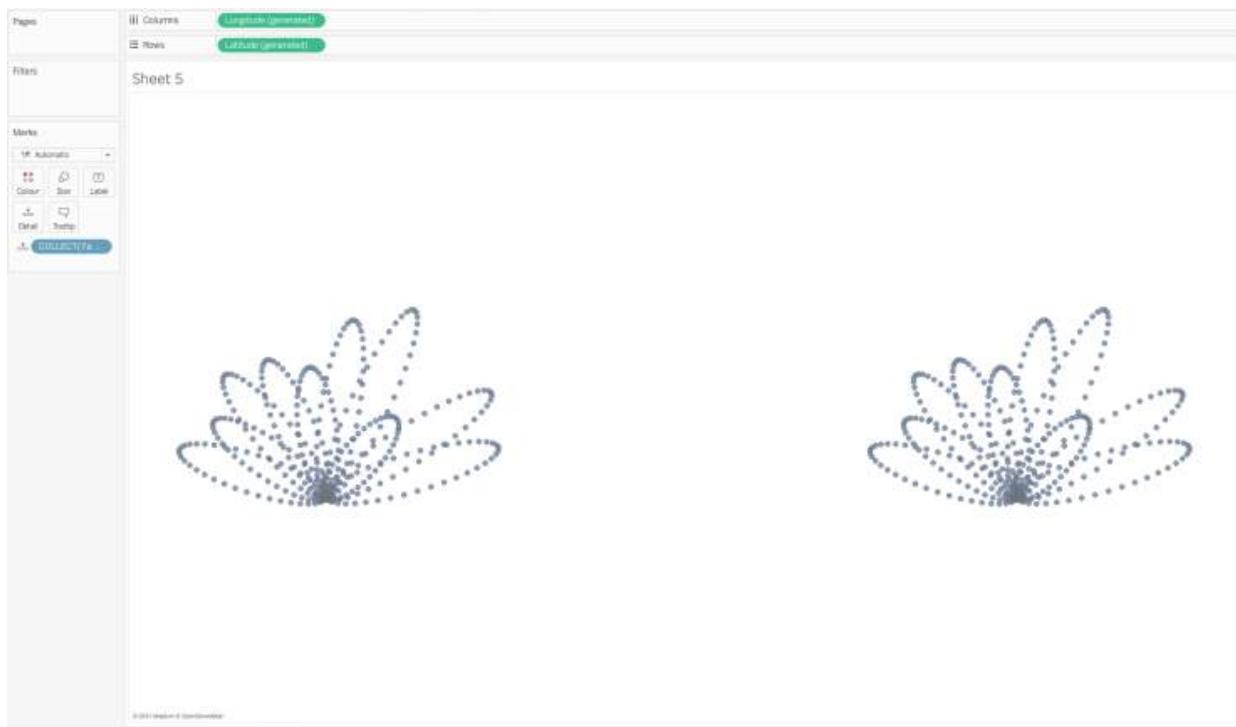
2 Dependencies ▾

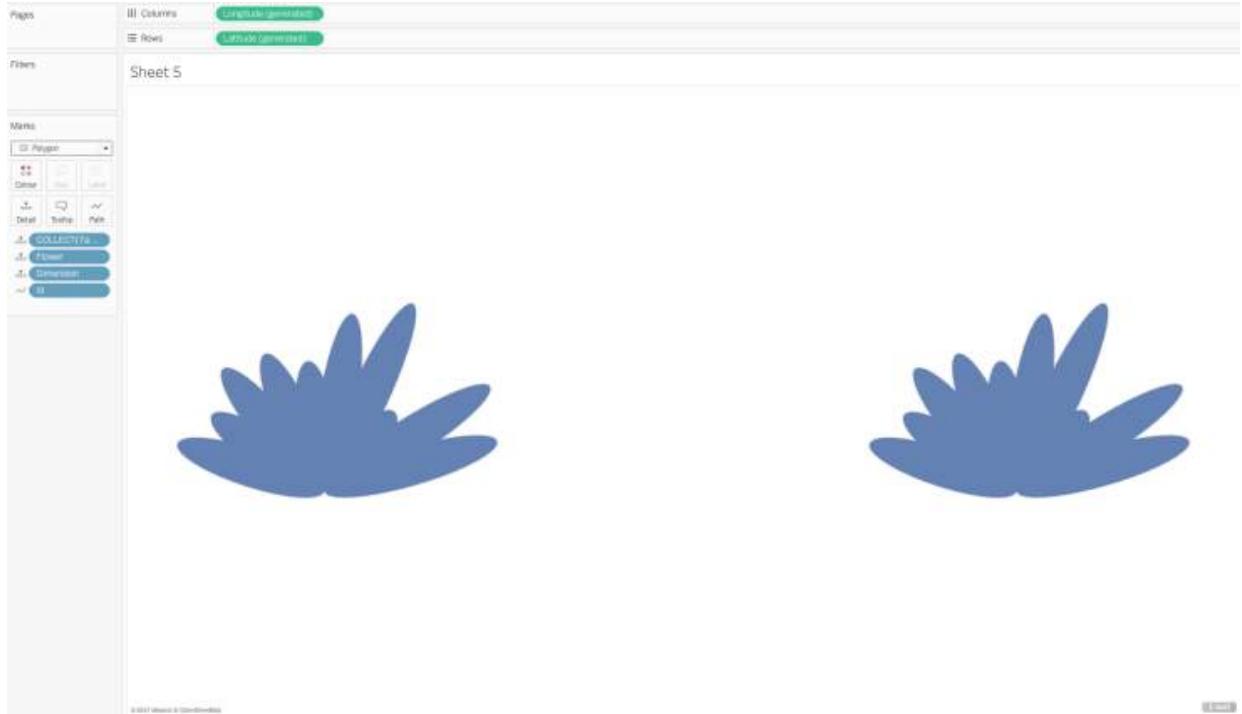
Explanation: We have two different Flowers A and B. We will want to create separate places for them to be plotted. The Makepoint is used to plot the points of the petals. All I do is shift the Y axis for flower B three to the right (Note: This was a good enough spacing as I remembered my petal leaves are radius 1)

Drag Dimension, Flower and ID from Petals onto detail.

Change the Marks to a polygon and drag ID onto Path.

Next we will want to add the circles in





7b. MP Circles

IF = 'A'

then

MAKEPOINT(),

ELSE MAKEPOINT(+3)

END

7b. MP Circles

X

```
IF [Flower (Circles)] = 'A'
then
MAKEPOINT([6b. End Y Circle], [6a. End X Circle])
ELSE MAKEPOINT([6b. End Y Circle], [6a. End X Circle]+3)
END
```

The calculation is valid.

2 Dependencies

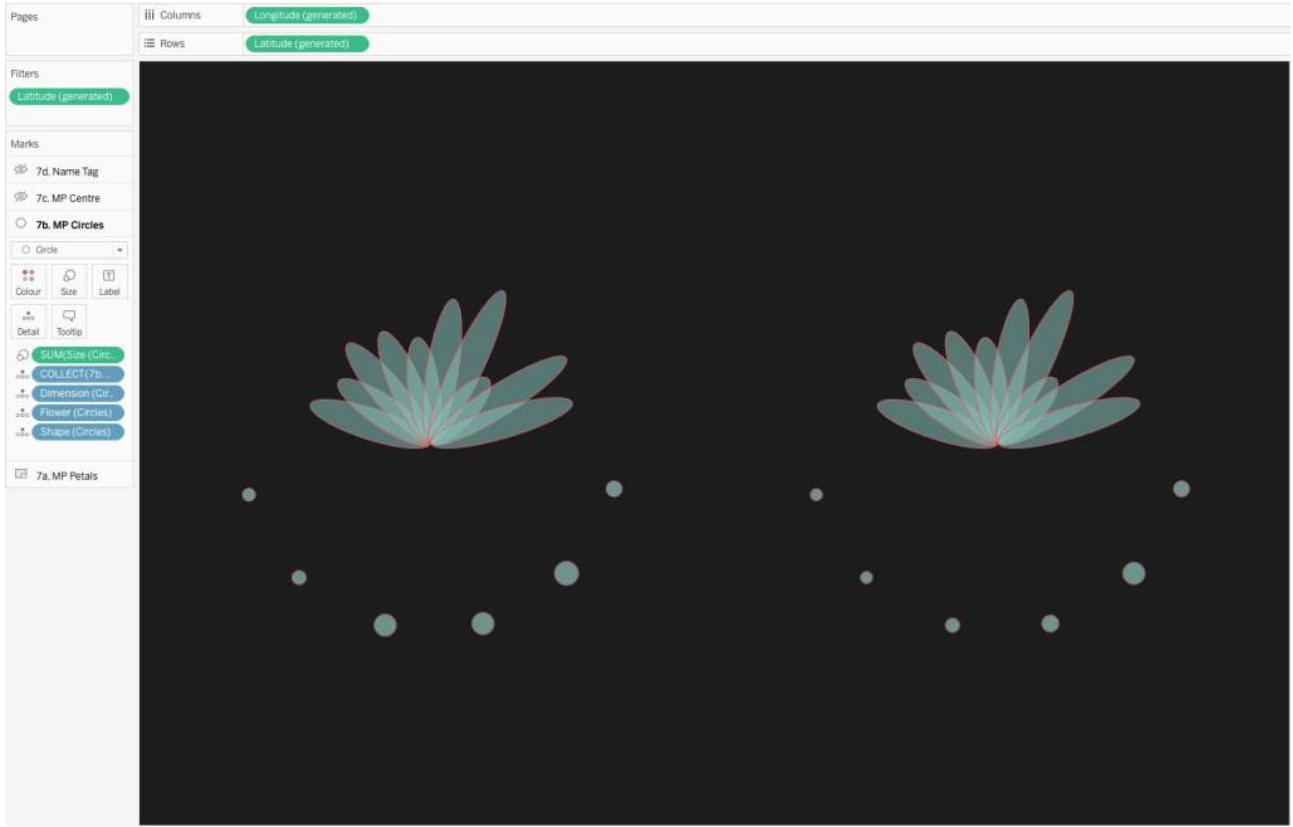
Apply

OK

Drag 7b. MP Circles onto the marks layer.

Change the marks card to a circle.

Drag Dimension, Flower and Shape from the circles table onto the marks card.



(Side note: If we go to Map – Background Maps – None and then fix the Y axis between -2 and 2. And also fix the X axis between -1.5 and 4.5 we can see what it would look like so far)

We are very close now! It is mainly cosmetic calculations from here onwards.

(If you checked what turned the background map off, turn it back to light so we can add a few more things!)

I then add a circle into the middle of the circles.

7c. MP Centre

IF = 'A'

then

MAKEPOINT(0,0)

ELSE

MAKEPOINT(0,3)

END

7c. MP Centre

X

```
IF [Flower] = 'A'
then
MAKEPOINT(0,0)
ELSE
MAKEPOINT(0,3)
END
```

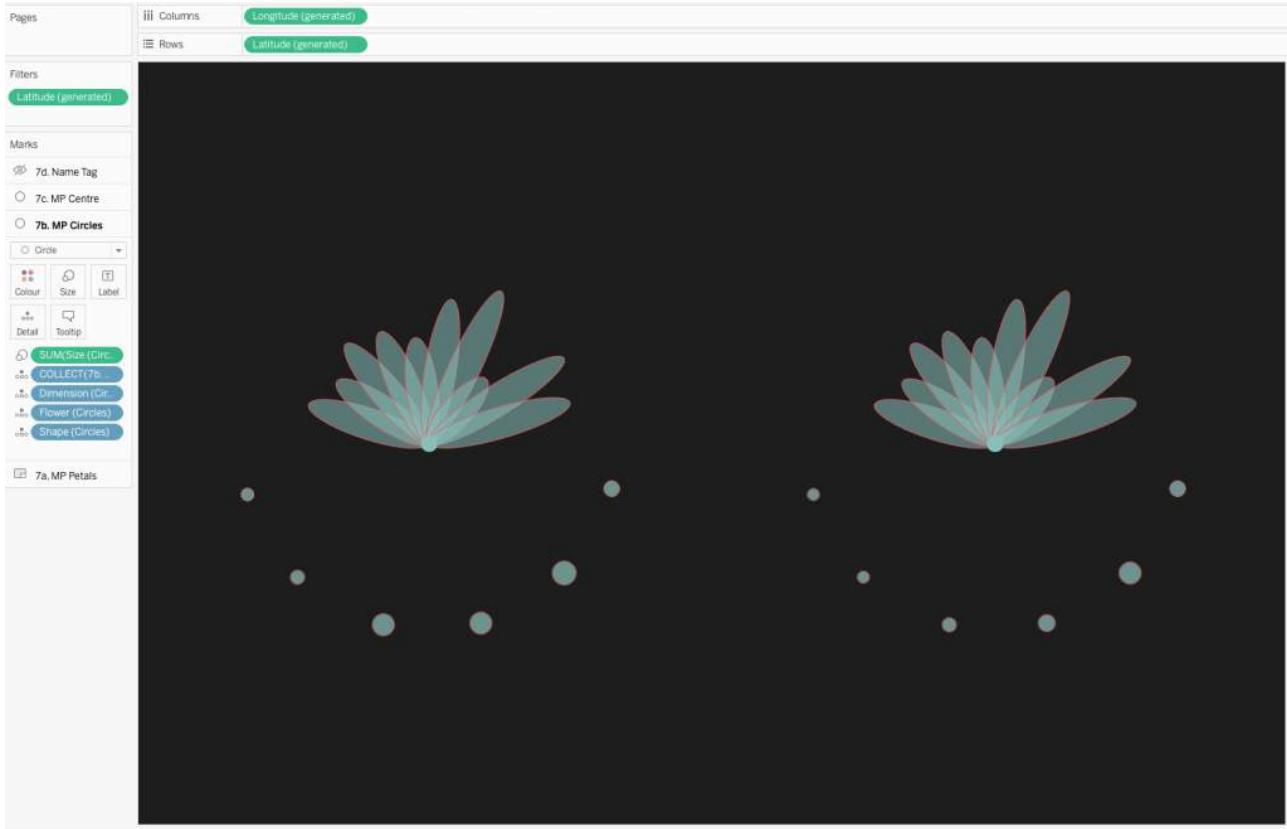
The calculation is valid.

2 Dependencies ▾

Apply

OK

Explanation: I am putting a centre circle in the petals for each flower. Flower A at (0,0), For Flower B at (0,3).



Drag 7c. MP Centre onto Map Layers

Turn the marks to a circle and drag Flower from petals onto the detail card. Resize and colour at your leisure.

Next we could add some text too.

7d. Name Tag

IF = 'A'

then

MAKEPOINT(-0.38,0)

ELSE

MAKEPOINT(-0.38,3)

END

```
7d. Name Tag
IF [Flower] = 'A'
then
MAKEPOINT(-0.38,0)
ELSE
MAKEPOINT(-0.38,3)
END
```

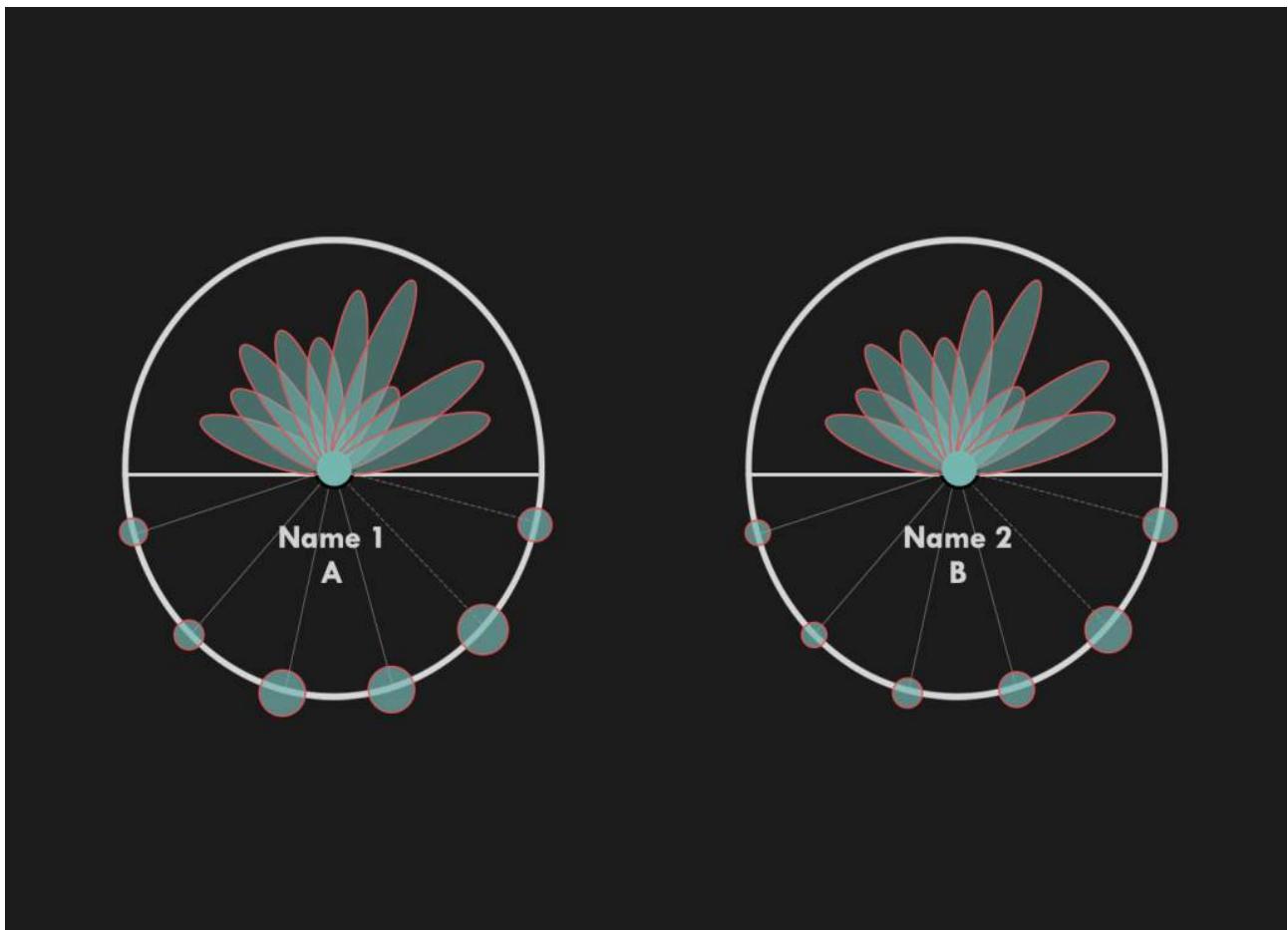
The calculation is valid. 2 Dependencies ▾ Apply OK

Explanation: For flower A position the point just below 0,0 for Flower B do the same remembering its coordinates are three to the right.

Drag 7d. Name Tag onto the marks card and change to text.

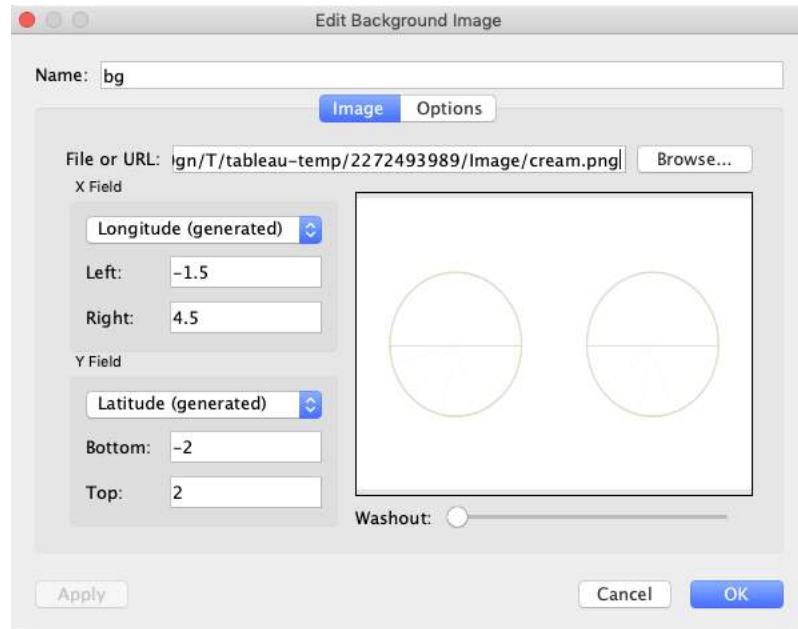
Drag Flower from Petals onto detail.

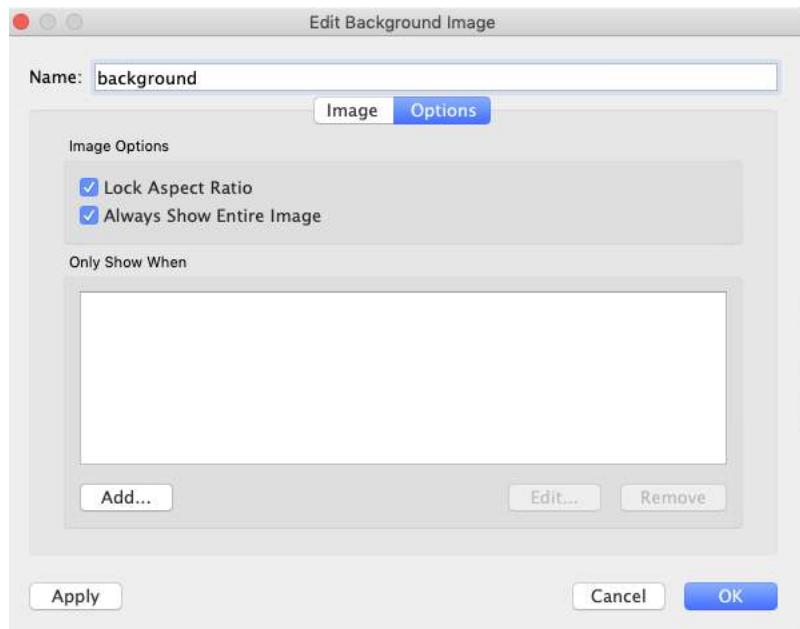
Drag Flower and Name onto Text. To turn off the ugly grey text background click colour and halo 'none'.



Think I will leave it there for this run-through of the map layers. If you get stuck do dig through my original workbook online. There are a few additional touches that I added such as mapping my own background image onto the picture, a few colouring tips. One last thing to note is not getting the circles data mixed up with the petal data when you drag things onto the detail card.

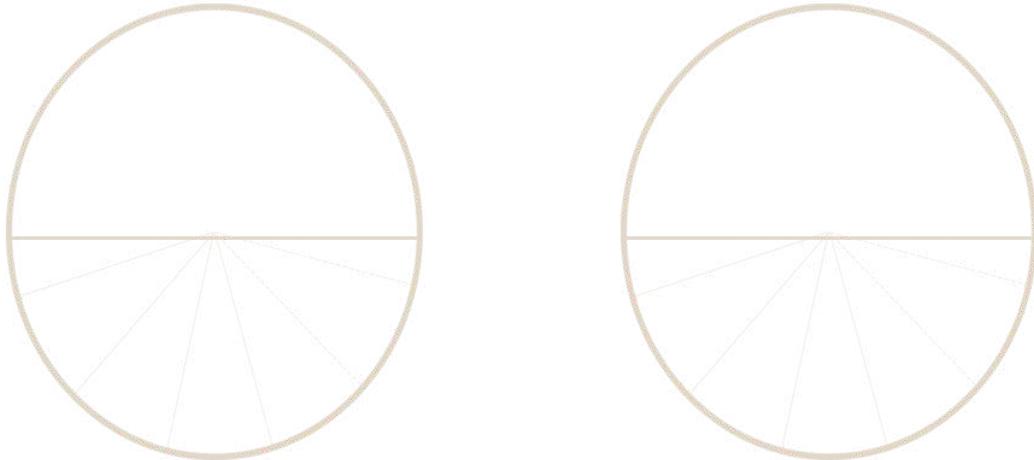
If you would like the background image I've attached it below. To add this go to Maps – Background Images – add Image. I've attached the sizing's. You will want to make your axis fixed to the same sizes for this image to work.





To create this image in the first place what I did was create the chart, then export the chart from the sheet as an image with my axis already fixed. I went into Photoshop and created the background using the image as a reference then saved it without the original chart. This is how best to get the proportions of the circles right if you want to create your own.





The alternative to this would be create your frames as shapes and add them in as layers. [Simon Rowe](#) shows how this can be done in his recent [Lacrosse](#) visualisation. Simon's [blog post](#) covers off his alternative method of adding a background.

Thanks for giving this a read. Not sure this is really one that will get recreated, but hopefully there are some technical takeaways from it (creating your own petal diagram, trigonometry behind flowers and circles, map layers). I'd love to see someone utilise this in their own way.

As always, if you have any questions please reach out to me on [Twitter](#), or [LinkedIn](#).

Logging OFF.

CJ

BUSINESS DASHBOARDS WITH ZAK GEIS

Welcome to the April edition of “What’s Good?”.

Each month will have a tailored theme, this months is Business Dashboards.

I am so pleased to invite Zak Geis to the blog for the April edition of “What’s Good?” This month’s topic is on Business Dashboards Design Tips. Zak was one of the first individuals I messaged in the community, over a year ago, when I was just starting my Tableau Public profile.... I couldn’t get a huge NBA dataset to stop crashing my computer at the time so I needed to know a way to slice the data beforehand. Anyway, I’m glad we have come full circle!

Zak is the Tableau leader at JPMorgan & Chase and is a Tableau Public Ambassador. Zak’s passion stretches further than dashboard design to Desktop, Server and DataDev / API’s. Recently Zak has been publishing #TableauDesignTips for the community. You can check out a run-through example at a recent #VizConnect [here](#). You can connect with Zak on Twitter [here](#). Zak recently published his website [Data Theories](#), which is well worth bookmarking!

Zak has produced over 25 Design Tips so far on his Tableau Public profile. You can check out the catalogue [here](#).



CJ: Zak, so great to have you on the blog. Let's start with your recent VizConnect: You mention 5 specific tips. The first three of which I think I am going to bundle into human-centred design.

- 1.
- 2.
- 3.

**Think outside the box.
User experience is everything
Find Inspiration**

Why is it important to build dashboards around the user?

Z: Thanks for the intro CJ! So happy to be included in your interview series.

We all work in data. We're architects or engineers or developers or analysts or whatever title is thrown at us. Regardless, our mission is to inform others with data. The data, the information, should be all the user ever needs to think about. When we don't provide a quality user experience, they are disrupted from that flow. They have to think about how to interact, how to filter, how to interpret the dashboard instead, and that's wasted time. If we spend the time to make their experience seamless and so well-done that the user doesn't

have to think about it at all, we've excelled in our work.

CJ: What are some design tips you think ALL KPI dashboards should have?

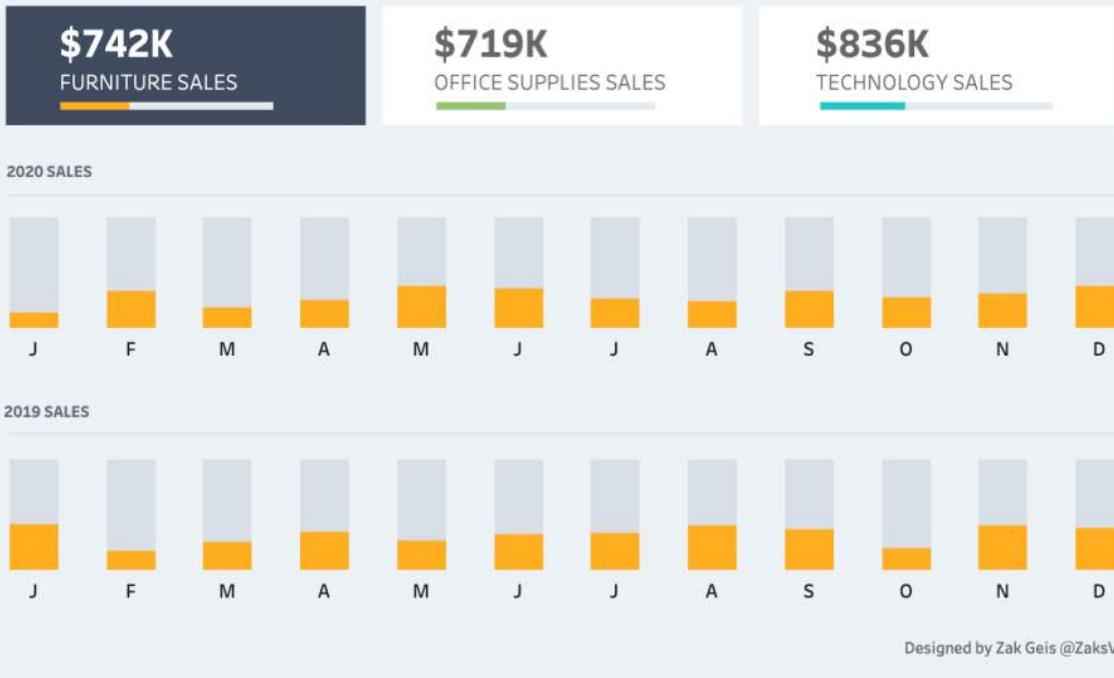
Z: Keep them clean, simple and provide plenty of white space. Adding additional context is also always important. Provide a spark line, some filtering and/or a relationship to the more granular data to give the user more than a big number. There is always a balance between proving a clean simple dashboard and giving the user the expansive details that they may need. Work on that balance in your dashboards and your users will thank you.

CJ: Could you give us some examples of where parameter actions are best used in business dashboards?

Z: All over the place! Parameter actions are my favorite new(ish) feature in Tableau. They open so many opportunities in designing dashboards with user experience in mind. Take my tips for example – several of them are just about adding custom user interface elements to the dashboard. Some of the examples include checkboxes, custom filters, toggle shapes, buttons – these are things that users are used to because they see them in their favorite apps.

But you asked for specifics! I would recommend creating custom buttons and combine them with parameter actions for a better experience. Although Tableau is a great tool, the filter/parameter options leave much to be desired. Give them some fresh life by making them custom.

#TableauDesignTips - KPI Filter



#TableauDesignTips - Custom Sort Buttons



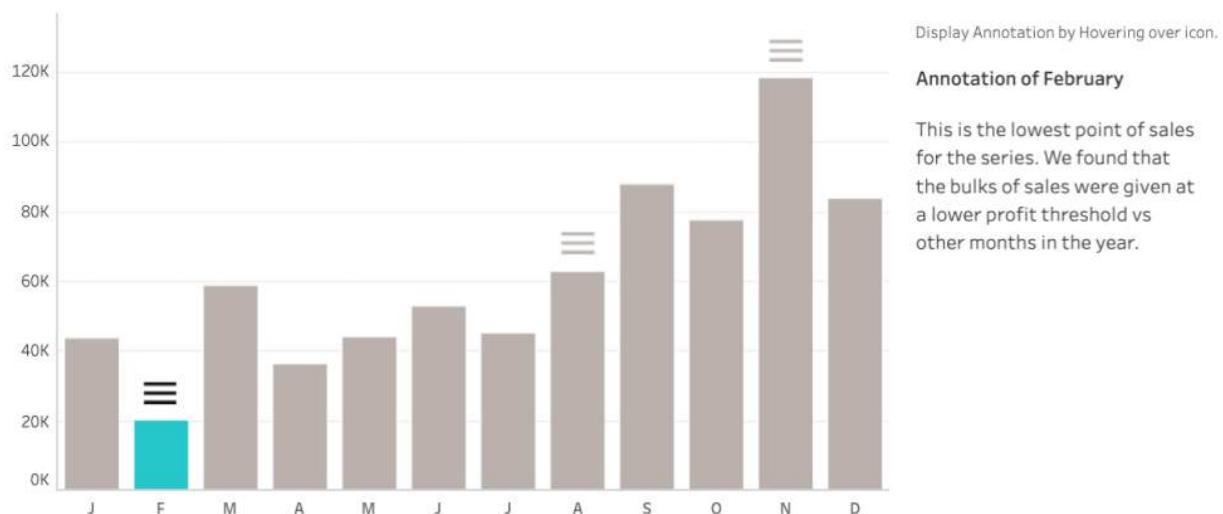
#TableauDesignTips - Custom Filters



Designed by Zak Geis @ZaksViz

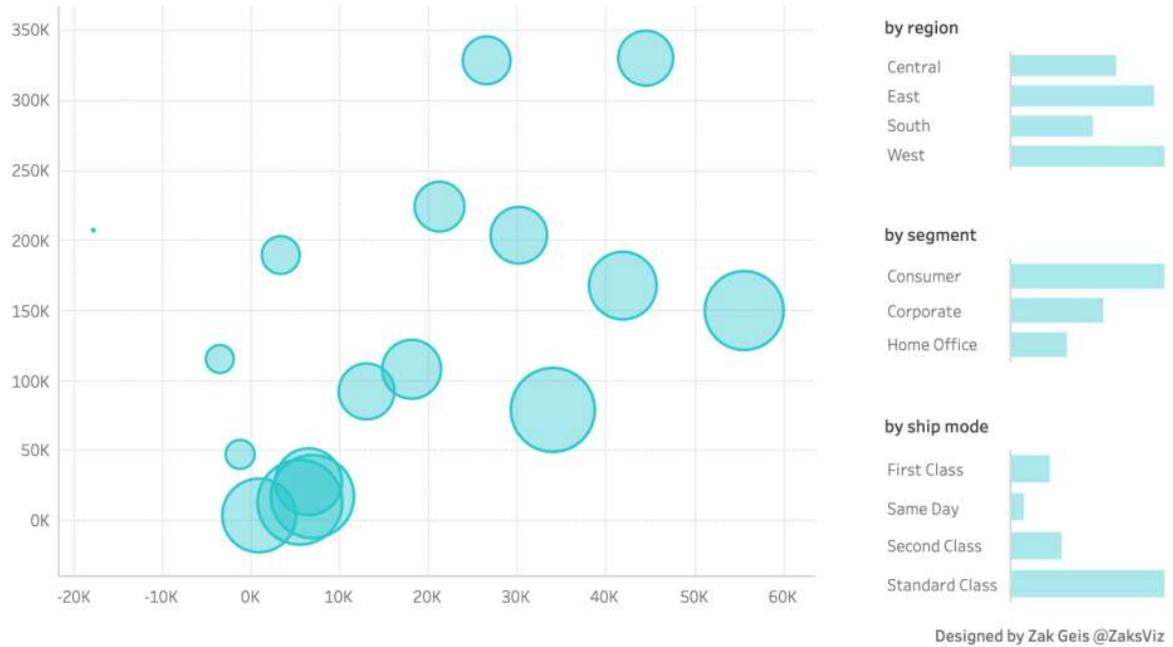
CJ: A couple of my favourite tips you've given have been around selection filter colouring but also annotation tips. Do you have any rulings on the number of filters and text that should appear on a page?

#TableauDesignTips - Annotation Buttons



Designed by Zak Geis @ZaksViz

#TableauDesignTips - Selection Focus



Z: Thanks! I try not to have any hard and fast rules on most things. However as a rule of thumb, I typically encourage less than five filters and the least amount of text possible. This helps to present a clean layout and limits the cognitive load. I also try my best to push things that aren't commonly used to the background, like by using a hide/show container to group and hide the filters.

It is also especially important to consider the value a filter gives on its own. Is it useful to have a date selector but without context into why you should filter? Probably not. Try to give a user context with every action and filter they can use, and they will have a more streamlined experience with your content.

CJ: Have you seen any 'design nightmares'? What are some things to avoid when building a dashboard for the workplace?

Z: Unfortunately, I come across nightmares all the time. I would be happy to share some things to avoid and tips to use. Here are the biggest and most important in my eyes.

- Use White Space – too often, I work with people that rely on the defaults. I always recommend to at least triple the padding around dashboard objects. It makes a huge difference.
- Use Color Sparingly – It is so easy to drag something to the color shelf in Tableau, that many creators neglect to think if they should. Never use colors for categories and instead use them to highlight the message or focus point of the view.
- Limit filters – As mentioned above, filters, especially when overused, steal the focus of the user which should be spent on the data itself.
- Don't overload a screen – It can be tough, but everything doesn't need to be on the same page. It becomes too overloading for the user to interpret the dashboard. It can also have an impact on performance.
A tip: if you have a scrollbar, think about changing up your dashboard.

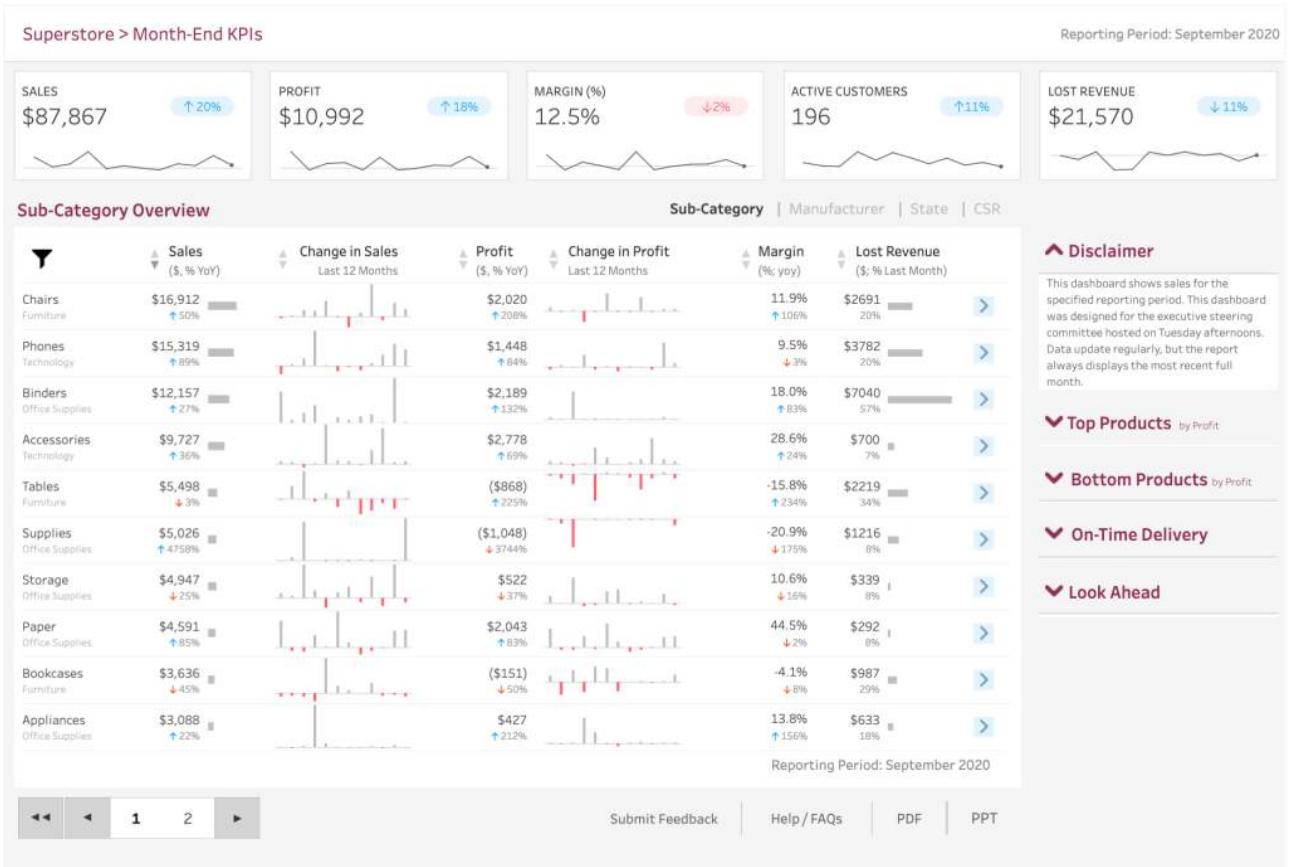
CJ: You referred to the work of **Nadiah Bremer** in your recent Viz Connect, What business dashboards / KPI design's have you seen in the wider community that you like and why?

Z: There is a gap when it comes to practical examples of dashboards in the data viz community. So much is focused on designs that do not naturally work well with business capabilities. That said, I would recommend:

1. The **Real World Fake Data (RWF)** initiative by **Mark Bradbourne**. It's generated a wealth of great content that is focused on practical business design. I'd definitely take a look and also participate if you have the time. Mark releases a new dataset every two weeks.
2. **EverydayDashboards** hosted by **Chris Love**. This is another excellent repository of real and actual dashboards submitted from across the community. Chris was focusing on real and practical use of

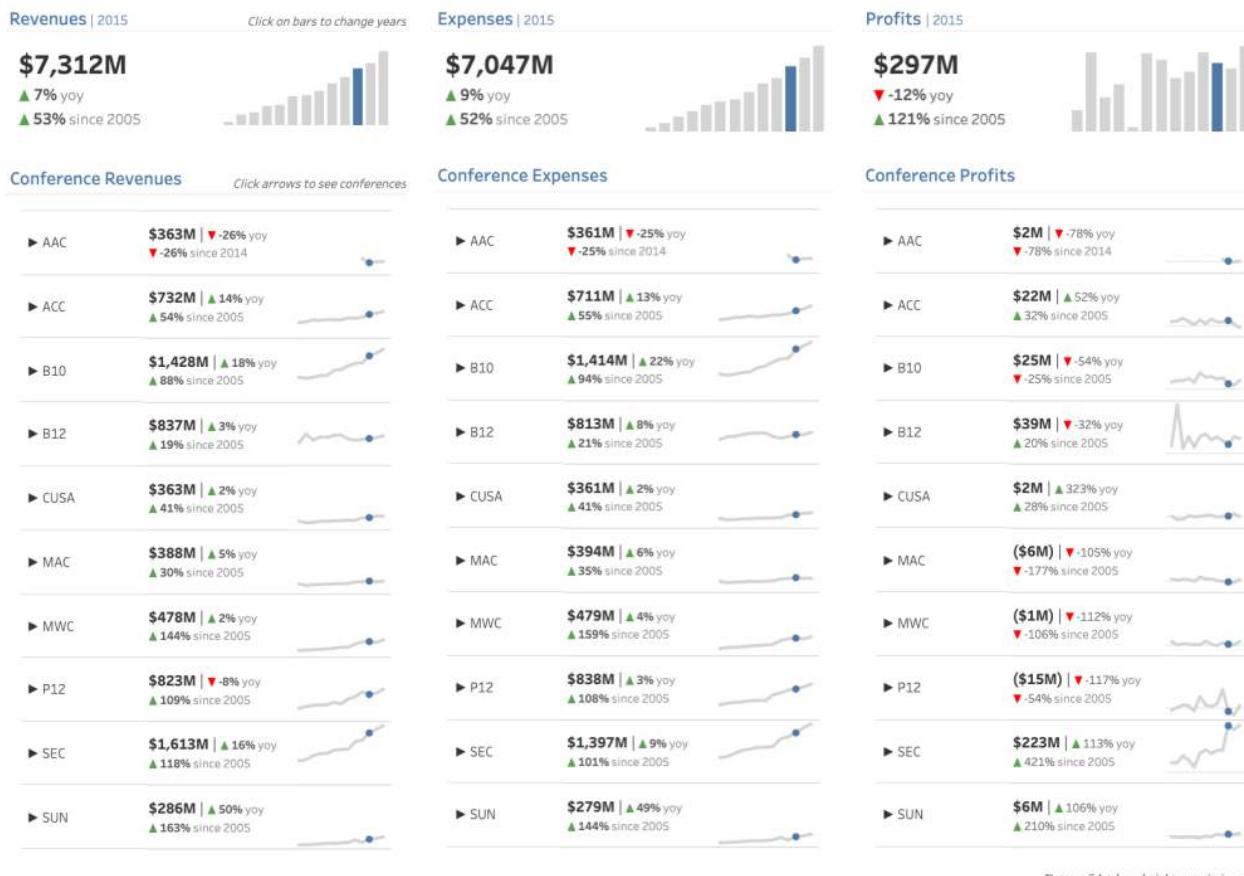
Tableau in this initiative.

3. **The Superstore Sales Dashboard for Executives by Luke Stanke.** Luke has done some incredible stuff in pushing the boundaries of business dashboards. His ability to combine tables with data & charts is unparalleled.
4. **NCAA Profits KPI Dashboard** by Spencer Baucke. Spencer is also an awesome force when it comes to this stuff. I'd definitely look through his public portfolio for some inspiration.
5. Anything from **Ryan Sleeper**. He is the king of building functional, clean dashboards for business use cases while also showing inventive ways to provide a great user experience.



How Much Do NCAA Athletic Departments Profit?

With a California court ruling that student athletes may not profit off of their likeness, the debate on whether to pay college athletes is back in the spotlight. In order to discuss this topic appropriately, here is a breakdown of athletic department profits and losses from 2005-2017.



Data: cafidatabase.knightcommission.org

CJ: In the business world, how important is it to revamp current dashboards with new features? Is there anything from the new Tableau releases that have caught your eye?

Z: Great question! This is something that developers often overlook in Tableau dashboard delivery. Requirements change, needs change, data changes – so dashboards should change too. You should always check in with your users to see if the dashboard is needed or if they need something new. Also monitor for activity. This can be your best friend and tell you tons of info.

As for new features, I am very interested in the direction Tableau is going with Map Layers. The ability to stack marks on layers, turn them on and off and also individually format them is great. I really hope this is just the first in a series of making Tableau more design-friendly. This could completely change the game in making well-designed stuff in Tableau and pulling in from other successful applications like those found in the Adobe Suite.

CJ: Designing for Tableau Public and for the workplace is very different, I was surprised to hear how you still use Pinterest & Dribble for this. What have been some of the more obscure examples of inspiration from these sites you've had?

Z: I just love the field of design! There is so much interesting stuff out there if you look for it. Every day, I check in on these sites for inspiration. Most of my tips have been impacted in some way from the things that I see out in the wild. A few of my favorite, lesser-known places to watch are:

- **Muzli** – a great curation blog for weekly design inspiration.
- **Awwwards** – not just for web/app design, this site is all about user experience and awards that are given to the best.
- **Siteinspire** – this one just covers some of the best website designs. I get a ton of inspiration from looking at well-designed websites and applications.

CJ: Do you have any tips on how companies can build dashboards for longevity and don't become outdated?

Z: For this question, I am going to put on my server hat! There is a ton of data behind every Tableau Server installation in the backend Postgres database just waiting to be explored. This is a great opportunity to use it to determine:

- Are users still leveraging this dashboard?
- Are they frequently returning?
- Are the *right* people using it?
- Are they using it interactively or just downloading the data?
 - How is the performance?
- Is there an extract – if so, is it refreshing as expected?

Using data to determine where our focus should be is the right step forward. After all, we are data people!

CJ: Do you think companies should aim for bespoke dashboards, templates or a blend of the two? Is homogeneity important in dashboard design at a company? Is this possible across divisions?

Z: This one is tough. I think it is a blend of the two, especially in a larger company. My team and I typically take the approach of providing guidance, best practices, and a little bit of control vs full control over any design. We leave the ownership of this to the individual teams.

That said, I do see a lot of value in prescribing design standards where possible. Mostly, because this ensures that the end users have a positive and consistent experience regardless of the developer or team.

This is especially true in higher management, where the developer could be anyone, from any team. I personally feel that stepping out of the way, while also giving the tools to succeed is the right option, but it can certainly depend on the use case.

CJ: How does your BI team tend to approach the build of a dashboard? Do you have projects that are a) Blue-sky thinking design, e.g Anything goes before seeing the data. b) Solution-design e.g building alongside the data c) End of process. E.g 'Oh a dashboard would be good now' ? Does this impact design?

Z: You are on a roll with these questions. Really good one!

Typically, my team is focused on the IT side, but we do occasionally have dashboard delivery requests. Just like with most BI delivery efforts, it is a mixed bag. Sometimes we can work with the sponsors from the beginning and have a hand in the design of the data, however we are mostly involved later in the process. In any ideal dashboard project, it is better to be involved throughout the process, talking to the end users and the project sponsors, detailing the requirements of the data, understanding the needs of the reporting layer. Regardless of whether that is the case, I always challenge my team to think outside of the box. As you can tell from my earlier answers, I rarely focus on what can be achievable in Tableau, but first start with the design and what I would like to happen. Then, we move into how we will make it happen in the product. The designs can be challenged on how the earlier events happen and how in-touch we are with the other teams but having the autonomy to design early and often is key to a good project.

CJ: Last but not least, Tiled or Floating?

Z: Oh man, the controversy – trying to get me in trouble right at the end! So, I know most people prefer tiled dashboards and I get it. If done well, tiled dashboards make sense and are a good practice. However, I love the freedom you get with floating. Being able to easily play with the size and position of things makes floating the choice for me.

CJ Round Up:

So great to see Zak share all these tips with the community. I'm sure a few companies have 'long term borrowed' them for their own dashboards. I know I've personally been bookmarking a fair few. I'm a floating over tiled kind of person myself too!

I wanted to highlight a few extra dashboards in the community from going through my favourites tab on Tableau Public. They are:

Sam Parsons – Company Profit | Superstore Insights

Preeth – Sample Superstore Orders Dashboard

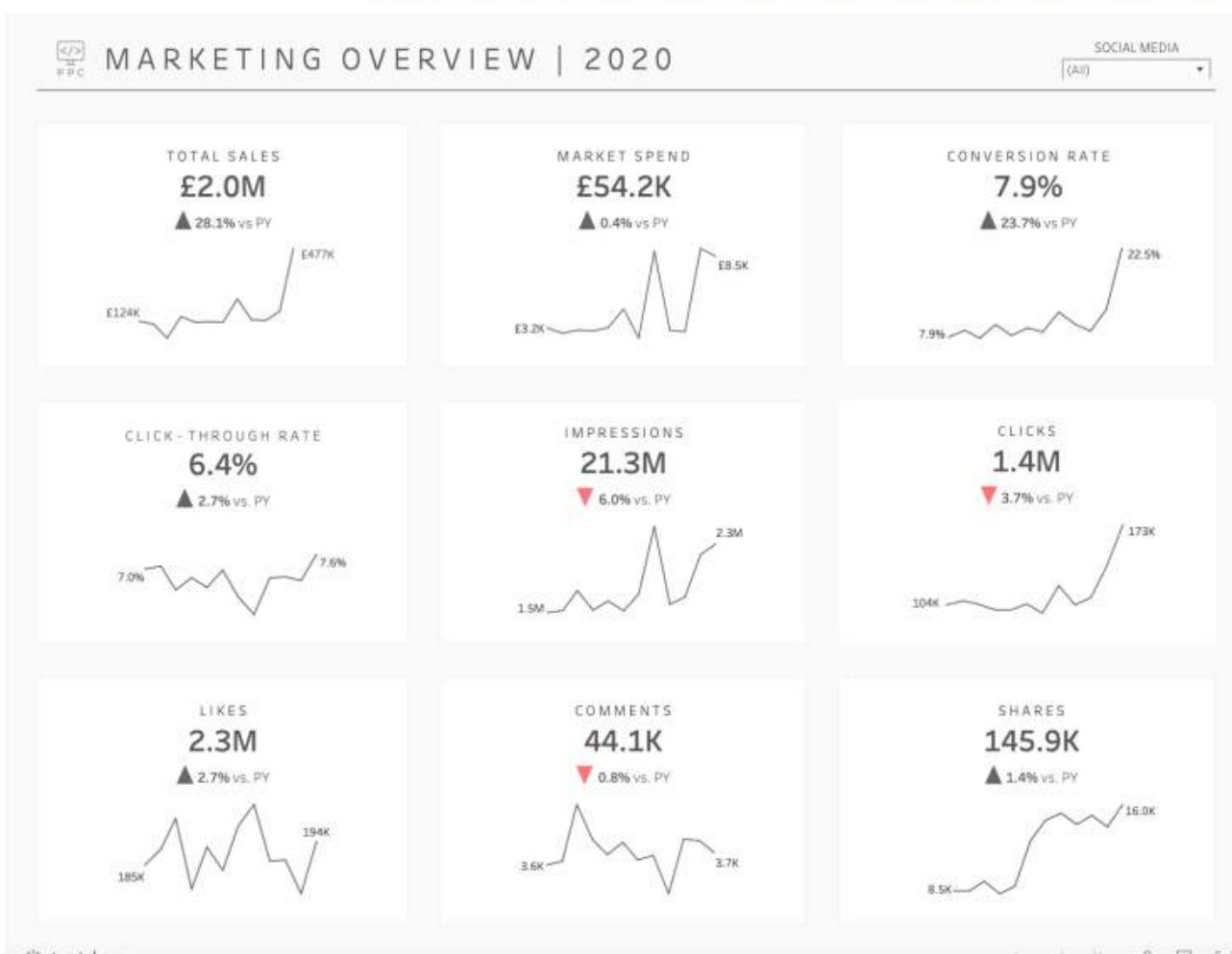
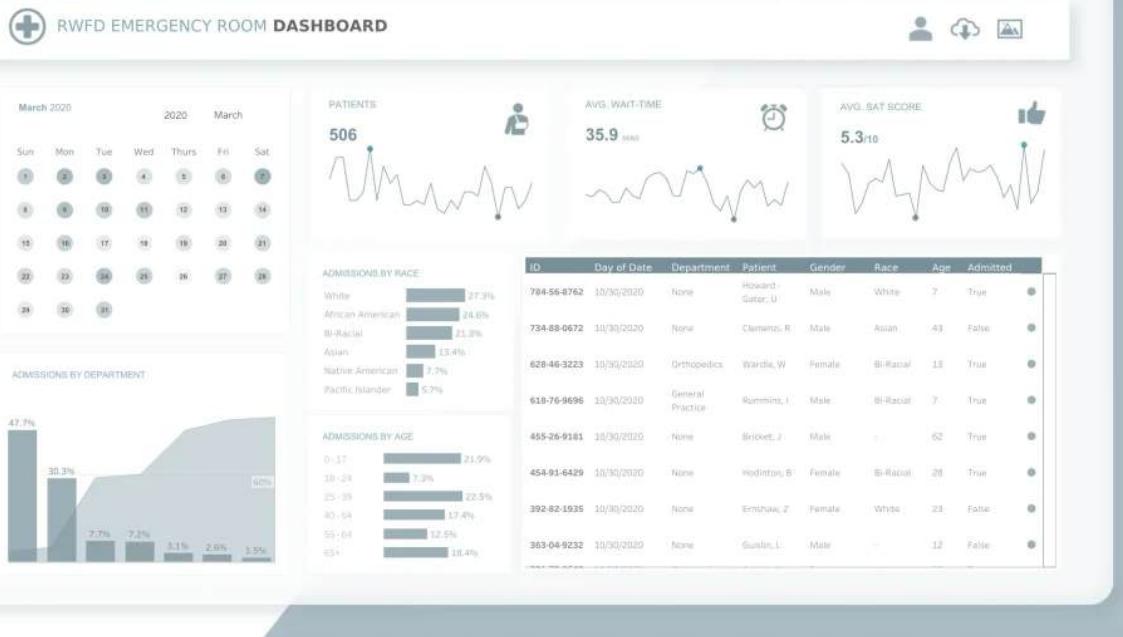
Ellen Blackburn – Demo Insurance Dashboards – Underwriter Performance

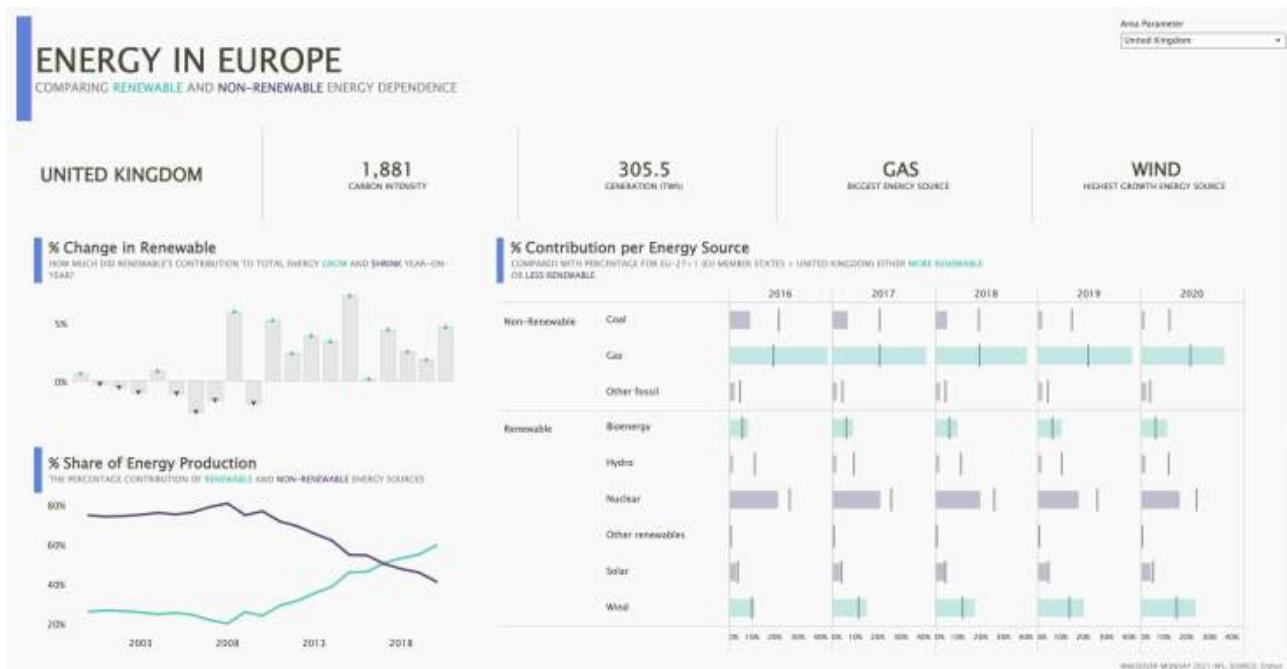
Chris Marland – Energy in Europe

Chimdi Nwosu – RWFD Call Center Dashboard

Priya Padham – Marketing KPI Dashboard

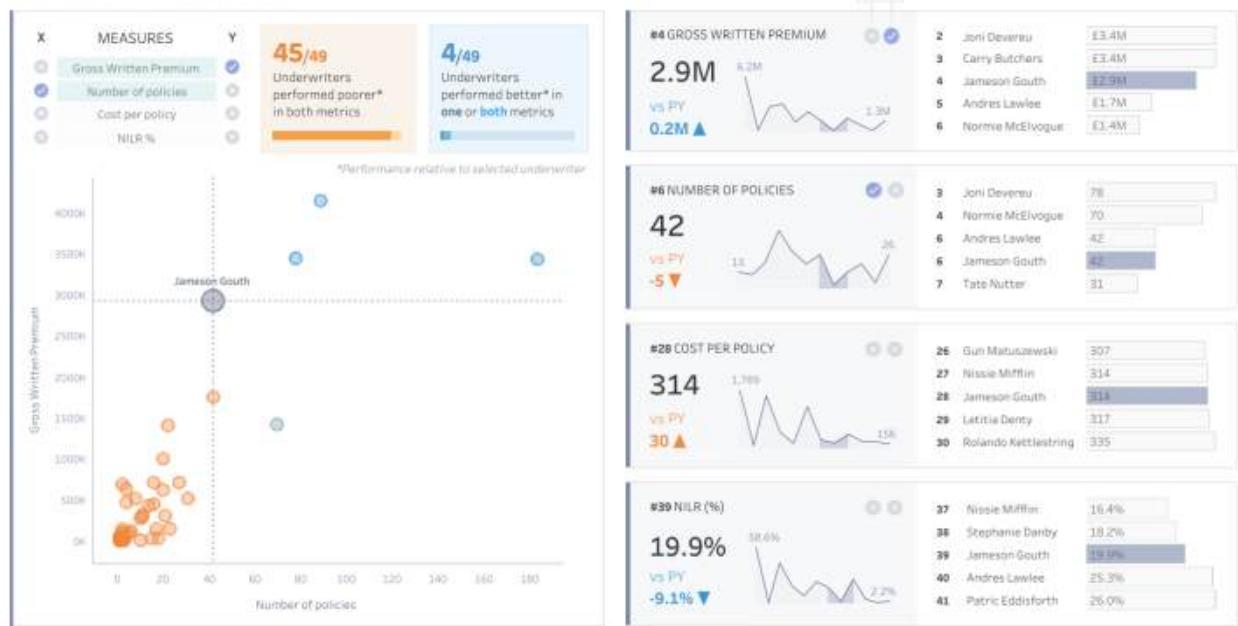
Olushola Olojo – Healthcare: Emergency Room





INSURANCE | Underwriter Performance | 2019 Q3

▶ Selected Underwriter: Jameson Gouth



SUPERSTORE ORDERS DASHBOARD

DASHBOARD

DETAILED TABLE



Company Profitability



Finally, thanks Zak for joining, and so pleased to see **Data Theories** up and running.

Thanks for reading and do share your favourite dashboards with me!

LOGGING OFF.

CJ

WOMEN IN DATA WITH AUTUMN BATTANI

Welcome to the March edition of “*What’s Good?*”.

Each month will have a tailored theme, this months is Women in Data.

I am so pleased to invite **Autumn Battani** to the blog for the March “*What’s Good?*” Autumn is a consultant at Tessellation, a Public Featured Author, and a good friend of mine. Recently, I’ve been super impressed by the amount of high quality blogs Autumn has done, especially her recent collaboration on design. If you haven’t seen her [blog](#) and [Tableau](#) do check them out and follow her on [Twitter](#).

Autumn and I talked quite regularly over the past few months (Since Lockdown number 3 if you’re in the U.K) and it’s been a fantastic way to chat through new ideas we’ve had. One of those is the below visualisation for our collaboration for this month’s topic of Women in Data.

We compiled a list of those in the data visualisation industry who have really impressed us and made this visualisation so others can give them a follow. I will let Autumn’s blog cover off the who/what/where and how we went about it, she has an exciting collaboration blog out soon. A massive thank you to all those that got involved! This has been one of my favourite projects.

Highlighting the women who inspire us, guide us, teach us, and support us every day. Select a picture on the right to see more information about them

ABISOLA ONI

Occupation: Paystack - Growth
Years Working in Data: 4
Country: Nigeria (shown below)

How did you get into data?

I was applying for a new role back in Dec 2016 and part of the interview requirements was to create a deck highlighting the benefits of Tableau. Prior to this, I had never heard of the software or what data viz was, however, I guess I was able to present a compelling presentation and I got hired, I was responsible for leading the firm's analytics practice, so I pretty much got thrown into the deep end of Tableau with no choice but to swim and not sink. I spent lots of hours learning via YouTube videos and in the community forums and that's how my journey into data began. 4 years in and it's been such an amazing ride!

Click to find them online!

Data: Google Form collection... Images: Twitter (consent given)

[Click here](#) to view the full dashboard on Tableau Public.

Click on an individual's image within the grid to learn more. You can find details around how long each individual has worked within the data field, their country of origin and their social media details. We asked each individual to choose one of 5 questions to answer which you can see displayed in the bottom right hand side of the visualisation. You may need to hover for the full response where an individual put a longer response. Happy exploring!

Now onto a few questions...

CJ: For those who don't know you, how did you end up in a data role?

A: I am not entirely sure. Looking back on my passions growing up it makes a lot of sense. I gravitated heavily to two things: math and creative outlets. But I don't think I ever would've anticipated doing the kind of work I'm doing now. When I started college I thought I was going to be a Psychologist, and to be honest there's more overlap between that and data practitioners than people think. I wanted to help people. And in a sense I still think that I am in just a different way. Professionally, I help people understand their data. I help people make better business decisions. I help people stop problems early on. I help save them time. And in my outside work, I try to help people better understand the world around them. So my purpose has remained the same in that regard.

My first job was studying television viewing habits and trends for Disney. It bridged my background in studying people with my love for entertainment. And with that came making sure we were connecting people to the content they wanted to watch in the way they wanted to watch it but also making sure it was reflective and representative of the viewers. That was my first 'data' role but it didn't feel all that much about data as it did about the people.

TLDR: baby steps. I went after things that interested me and felt meaningful to me and then I ended up here.

CJ: You're unique in the community for making your blog more than just Tableau. Why is that important to you?

A: We're humans before we're data scientists or Tableau developers or BI specialists. And that emphasis we put ourselves to exceed in and exude one particular thing can be harmful, and exhausting. I love data, I love Tableau. But I also love movies and food and traveling and lots of other things. And as Tableau became a bigger part of my life it became really important to me to keep a balance, to remember and honor those other parts of myself. And I want other people to know it's okay if they do that too. Because it took me a bit to realize that people supported Autumn the person and not just Autumn the viz maker. And if other people have those hesitations just know people will welcome you where you are with what you got. I try to bring that energy to both my blog and my Twitter.

CJ: I particularly love your blog because it encompasses you as a person. It brings with it authenticity and is hugely relatable to. Take for example, your blogs on charts and parameter switching. You often make quite complex things easier to understand. Do you think the technical aspect puts people off?

A: It's really daunting to see other people's work let me tell you. I feel it all the time. And I think people get really nervous about the technical aspect really early on. You know this but I've recently just made my first radial viz. I had put it off for so long because I just assumed I couldn't do it. It looked hard. And it really wasn't that bad. But I also was fortunate to find **a blog** that explained it in a way that made total sense to me. So my advice would be, if people feel like something is too hard or they read a blog and don't understand it, keep searching. There will be so many blogs on whatever it is you want to learn and there will be one that hits the spot.

And it's something I tried to think about when **I wrote that blog**. I tried to think about why I find some tutorials more helpful than others, what do I wish for from them and tried to translate that into the way I wrote it. Because I know what it's like to struggle and feel discouraged and I don't want people to feel that way when they read my stuff.

CJ: Why do you personally love working in data? How do your *technical* experiences of data differ at Tessellation compared to Disney?

A: Is it because I'm super Type A? It might be. I love data because I'm a super curious person. I think the reason I love Tableau though is because I love efficiency. When I first started integrating the tool into some of our regular reporting at Disney, we were mainly in Excel. And I immediately saw the value add not only for how much time it was going to save us but how much more varied and flexible our insights were going to be.

It felt like my Swiss army knife in that role. Excel is for reports, Tableau is for reporting.

The biggest difference between what I was doing at Disney and what I do now is that my role is entirely Tableau based. And I think the way that feels sort of speaks a little bit to what I was saying before. At Disney my role was very much on analyzing and informing. Now I'm a little more removed from the numbers in the sense that I'm not focused on what they are, I'm focused on how to best elevate them and portray them in a way that a lot of different people and teams can utilize them for their roles. It required a bit of a mindset shift I'll be honest. And both have helped me grow my skills in such different ways. I feel quite lucky to have had both of them.

CJ: Who are your biggest inspirations?

A: CJ, I appreciate his friendship, his positivity, and his encouragement. It keeps me going. Everyone go get you one.

Damola Ladipo is killing it. He's one to watch. For starters his output is insane. I'll have connected to a dataset and in the same amount of time he's put out 7 vizzes. But they're ALL FIRE. Right now he's someone whose work is motivating me to do better.

Judit Bekker gets a lot of credit in the design category but not nearly enough for being a great person. I love how she just has this really unique personality and she's so true to it.

MY MOTHER. Is the funniest, most genuine person on the planet. I try to be more and more like her every day.

Can I name things? I love **food diagrams**. That's probably something people don't know about me and I want them to because then they can tag me when they see them and I'll be happy. I have a lot saved on my computer. I've always wanted to illustrate one myself but I don't think my skills are there yet. **My caffeine viz** is pretty close.

I love **Chef's Table** on Netflix. I love the way it's put together, the music, the cinematography, and the stories they choose to highlight. It makes me want to be more intentional with the things that I do.

The way citrus smells and the sound of opening a can of pop.

CJ: Your recent diversity in data initiative has been a massive success. I loved the engagement it got, especially the dataset on female CEO's. What were your favourite visualisations from this? Did they translate your own opinion on the subject?

A: My favorite thing to see is people reaching outside of the data we provide or thinking past where the data set ends. **Aida Horaniet's entry from January** is a great example of that. She projected out how long it would take to see equality with Fortune 500 CEOs. I also thought **Ant Pulley's from February** was thoughtful in that it allowed the user to further educate themselves. I think it's a great step in the direction of our goals. Eve and I started this initiative to help educate people but we wanted that to be just the starting point for them to build their knowledge around these subjects and think more critically about them on a regular basis. And I think looking at the data and taking it further is a great beginning to that. The information doesn't stop with what we provide and we hope that the people participating don't stop there either.

CJ follow-up: Why do you think we have such a disproportionate gender split in the fortune 500 and how can we correct it?

A: I told CJ this question was really hard but I'm going to try my best. There's three contributing factors in my opinion. The first is history. The lack of access to education, inability to work, and discouragement of doing so sort of started women (and lots of other groups) behind. On top of that, they haven't really been given the resources to catch up. There are still a lot of stigmas, negative and harmful opinions and biases that people in power hold that make it harder to break past those barriers, that's the second thing. And then I think last is the corporate structure. I think a lot of places need to seriously reevaluate their hiring and promoting practices and their office culture. I don't think the recruiting process treats people equally. And then once people are on the inside they aren't treated equally then either. It's an uphill battle so shout out to all of the strong women, not even just the CEOs, all the strong women everywhere who have gotten where they are. How can we correct it? Million dollar question. I'm going to say something possibly controversial. Diversity isn't that hard. I actually find it quite tiresome when people treat it like it's a huge task. The biggest barrier to diversity isn't the process to accomplish it, it's motivating people to want to. The people who can make the necessary changes to significantly push the needle aren't doing what it would take. Not because it's hard, but because they aren't prioritizing it. It makes me so sad as a woman of color when people talk about diversity and inclusion like a war's worth of effort because it makes me think, why is valuing and making space for others that hard for you?

CJ: What interesting facts, blogs or stories prompted you whilst researching datasets for your I&D initiative?

A: Corporate America is really male dominated but Disney had a lot of strong women in power and I was fortunate to meet several of them. Having them as an example and someone to look up to really motivated me. While I was at Disney I had the fortune of meeting **Kathleen Kennedy, Jennifer Lee**, and Channing Dungey. Some of Kathleen's credits include Jurassic Park, E.T., The Sixth Sense, the Back to the Future trilogy, Gremlins, The Goonies, Poltergeist, Schindler's List, and The Color Purple. Can you imagine having a resume like that? For ANYBODY. Let alone a woman coming up at the time she did. Entertainment has very much historically been a boys club. It is stunning the things she's accomplished. And now she serves as the president of Lucasfilm. To be tapped by George Lucas as a successor -brain explosion emoji-. I was in awe of her and her story and her conviction when I met her. She's insane. Jennifer Lee THE WRITER OF FROZEN..Let me say that again, THE WRITER OF FROZEN! Is also the head of Walt Disney

Animation. Other than being in charge of such an influential part of the company, especially for young women, she also has such a great presence. I met her at a talk she gave but we also worked in neighboring buildings on the Disney lot so I saw her around regularly. She was always smiling, always laughing, always saying hi to people. She ate a real lunch in the caf with the rest of us peasants. That may seem like a strange thing to point out but few executives were ever seen around and tbh they didn't look very happy (I did see Bob Iger in the caf once and I followed him around the salad bar with an empty tray panicking). This probably makes me sound crazy but I'm good at reading people and I know she's nice. And last but certainly not least, Channing Dungey. She led ABC at a time when it was really championing women led content and

stories about people of color in a way that other networks were not doing or prioritizing. She's a force to hear speak and she's so mindful about creating realistic, relatable, and representative characters. All of them were doing amazing things in a space that was extremely competitive for anybody, let alone women. Role models

like that are so important. I'm going to have to do a viz on one of them now aren't I?

CJ: If I was to grant you three wishes about Tableau what would they be?

A: You know me. Design options, design options, and design options. I want more fonts, I want rounded corners, I want drop shadows. I want to make things in Tableau that look like some of the modern tools/websites that we use without having to go to another platform. I LOVE Adobe Illustrator. I don't think that's a secret. But I don't waaaant to use it as frequently as I do. But my dashboards feel incomplete without it sometimes because I want that extra little touch. Also, maybe along the same lines, I'd love to be able to copy and paste containers and formatting? I think that could be useful. Ugh, now that I'm thinking about it there's so many things coming to mind lol. The formatting options of parameters and filters are so limited. Oh

I'd love conditional showing of containers/parameters too. Okay, ceej, when can I expect these?

CJ: What small changes can we make that will have a big impact on attracting women to data, specifically?

A: I don't think it's about attracting as much as it is about being welcoming. Women are attracted to data. But whether or not they feel like there's a place for them is a whole different thing. Being respectful towards, open to, and encouraging of different perspectives and approaches is really important. There can be a tendency to think problems should be solved a certain way and to label things outside of that box as incorrect or in need of fixing. There's a bunch of ways to cross a river. And that's been one of my bigger struggles, feeling like thinking differently wasn't going to be accepted. And it can also lead to a bit of condescension and that really alienates people from pursuing things and also from feeling confident in that pursuit and putting forth their ideas.

CJ: Whilst I'm not sure how your answer of 'To be a butterfly' got through Quality Assurance when asked on our viz "What did you want to be when you grow up?"... I do want to know your thoughts on how education and upbringing impact career paths?

A: CJ wants me to dissect the patriarchy and the education system and effects of region and people's socioeconomic statuses all in one blog and I am STRESSED. Okay. Gosh, where do I even start. Not everyone is encouraged to learn or made to feel like learning should be important in their lives and that is so heartbreaking to me. I think the US has a long way to go in regards to that and especially in relation to access to secondary education. I think the way you are positioned towards education growing up has a significant impact on not only how you approach your career and that journey but also in how you think about yourself. School is probably the biggest part of most children's lives so whether or not it is put forth as valuable AND achievable leaves a lasting mark on how you choose to spend your time. Also there's way too big of an emphasis on output that betrays actually learning and I think that translates to career choices. If you grow up thinking an A is more important than knowing the information I think it can translate, in a capitalist society, to thinking status/financial gain from employment is more important than passion and dedication. I know putting food on the table is important. It takes a certain level of security and privilege to choose your interests above monetary needs, I'm just saying it's messed up and starts early.

I was fortunate at a young age to have a family who thought the world of me and my potential. I was told I could be whatever I wanted to grow up. Which was a butterfly at one point. But it was also a lawyer, an oncologist, and the first female President of the United States. And no one made me feel like I couldn't do it. And that carried me a long way. There were people later on, school staff, boyfriends, professors, who made me feel like my dreams were silly or like I wasn't good enough to achieve them*. But because of the upbringing I had it was SIGNIFICANTLY easier to brush them off. That kind of confidence starts young and I wish everyone had the support I did.

*I was especially told this when I talked about my career goals in conjunction with my family goals which is egregious. The way working mothers are treated is terrible and I don't think the pandemic helped that at all.

CJ: What advice do you have for women who want to work in the field of data visualisation?

A: Two things I think have helped me, but the jury is still out on whether or not I'm doing well. Number one, find a support system. They don't even need to be in your field. Find people who will champion you,

encourage you, console you if need be. In any field. You're going to be way less afraid of falling if you know someone has your back.

Number two, stand up for yourself even if it makes people uncomfortable. I think a huge burden a lot of women carry is deprioritizing their feelings, their justice, and their mental and emotional well-being because it makes other people feel better. Try to stop if and where you can*. If someone says something you don't like, that doesn't sit right, that you think is inappropriate, that's condescending or disrespectful, that's inaccurate, SAY IT. It might go poorly. I'm not saying this because it works out all the time. I'm saying this because even in the moments where nothing changed or someone got upset, I still knew that I did right by myself. And that gets me through the hard bits. Not everyone you meet will be nice to you or will look out for you, so you gotta do it for yourself.

*Phrased this way because I KNOW it's easier said than done. I'm not saying it's simple, it's really hard. But it's worth it.

CJ: You can go to dinner with three people dead or alive, who are you taking? What meal are you having?

A: Churrascaria. It's not even my favorite type of food but it's the first thing that popped into my mind. That says, "dinner with celebrities" food to me. I cannot explain this. Who's at the dinner party, let's see. This is so hard because I'm afraid to find out they're lowkey terrible! I'm going to change your question and you can't stop me. I'm picking three women from the data community I'd love to have dinner with. **Dzifa Amexo**.

Without a doubt. The brightest light I can think of. I probably don't even deserve to have dinner with her because I'm such a grumpy old grouch. She's a fairy princess and I'm a bridge troll. **Soha Elghany**. I don't know her well but have you ever just thought of someone and knew you'd be good friends? I feel like we'd get along. I love her work, I think she's fantastic really. And **Emily Kund**. The breadth of the stuff she does really amazes me and it's so high-quality and thoughtful, I'd love to just have a chat. So that's my group* and I'm stickin to it.

*Honorable mention to **Sarah Bartlett** and **Michelle Frayman** who I have adopted as my data godmothers even if they don't know it.

CJ: In terms of technical skills, what's top of your list for this year?

I've been TRYING to learn Python. I think I would be getting on with it better if I had more genuine intentions.

I don't even know why I'm learning it but I think there's a little bit of a feeling that I just *should*. I'm sure it could help me in some way but all I've done so far is make a tip calculator and I already knew how to do that.

D3js is absolutely on my list and my little heart would be so full if I could accomplish it. I've seen such kickass (can I swear on here?) things from it and with my love for design I think I could really make something of it.

Gotta find the time though.

Alteryx. I think it's the PB to the J that is Tableau. Especially now that I'm not working with as clean data as I was before when I was at Disney. When I was in house it was a lot easier to push back and ask for resources towards that but in a consulting environment you get what you get.

CJ: Finally, do you have any other collaborations coming up?

I DO! So by the time this blog comes out two will have been announced already. One is that Diversity in Data is partnering with Project Health Viz and Sports Viz Sunday in the month of March to build awareness around adaptive sports. I think this is a great topic and one we're excited about across the board. So I expect to see a submission CJ! Diversity in Data is also doing a collab in April that I think people are going to be really engaged with. We're still well over a month out (at the time of me writing this) and I am already planning out my viz for it, it's going to be epic. The other thing that will be announced by the time this blog goes live is my community event with **Eric Balash** that is going to go throughout the month of March as well and I hope people enjoy it and participate! I think it's a fun twist on getting people involved. Also in very early stages is a viz collab with none other than **Spencer Baucke**. It may be my biggest and baddest viz yet so stay tuned.

Also if you're interested in the idea of collabs, check out my blog on what it's like to do a collaborative viz coming out this Sunday!

CJ Round-up:

I am so pleased to have had Autumn as a guest on the blog, she strikes the perfect balance between addressing serious questions on gender equality, inclusion and diversity whilst maintaining her jovial self. Before we put this together we joked that I would let her write answers, then I would create the questions

round whatever her thoughts were. You can probably understand why, when Autumn describes food diagrams as one of her biggest inspirations.

I particularly enjoyed hearing about Autumn's experiences at Disney and some of the success stories from female exec's there. It was also great to hear Autumn's thoughts on the fortune 500 and a need for change in terms of I&D. I can totally understand Autumn's view of "Diversity isn't that hard". Concentrations need to be on actioning change rather than talking about it. Stating the obvious, we can't change the past, but we can change the future.

Best of luck to Autumn with the upcoming blogs, she is playing such a fantastic role in the community and it shows. Keep at it with the python, I alongside a few others are going through a similar process. If you'd like to join in on the learning you can find the course a few of us in the community are doing under "**100 days of code**" on Udemy. The instructor has probably made a small fortune by now with the number of people I've recommended it to.

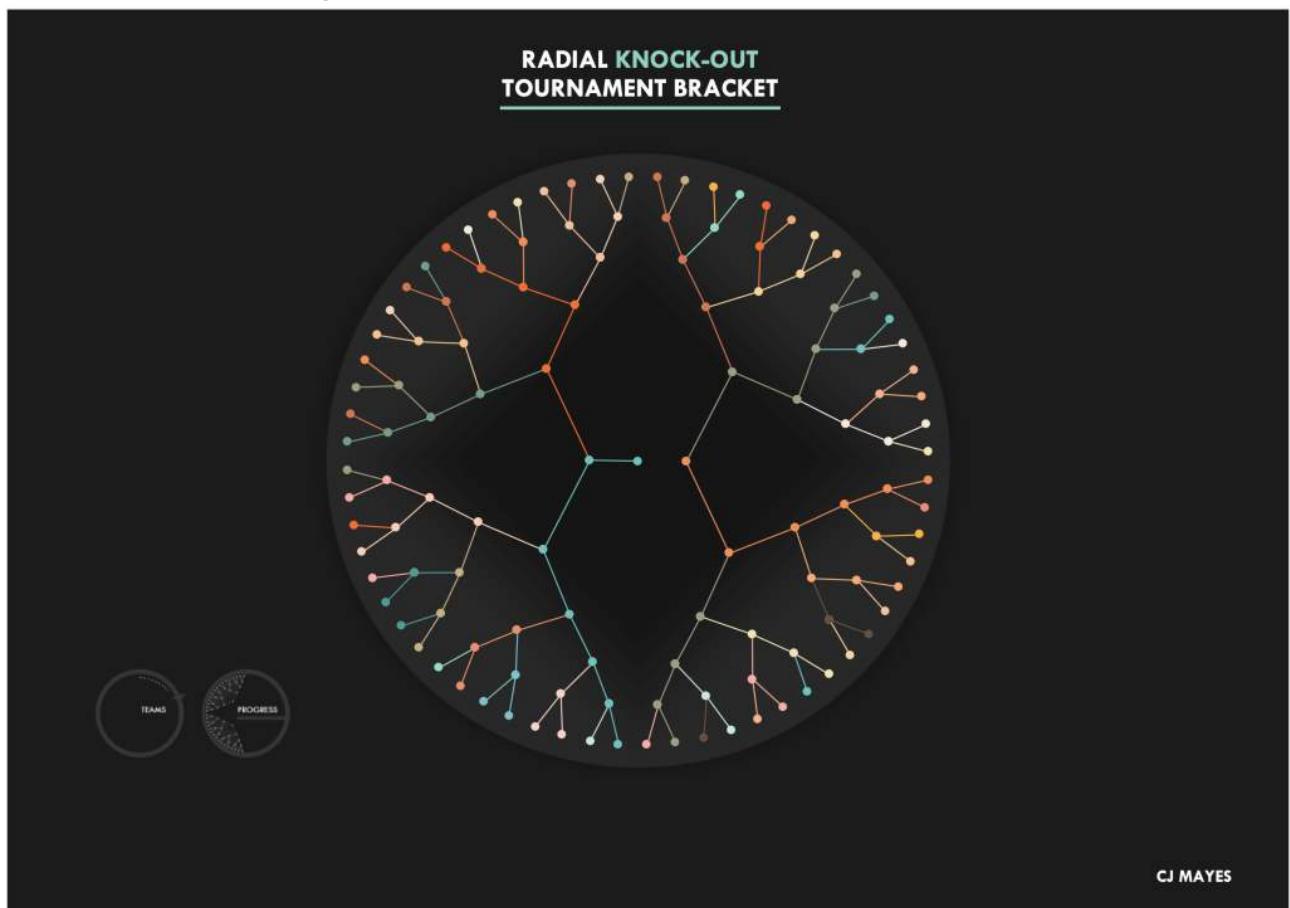
Happy International Women's Day.

LOGGING OFF.

CJ

RADIAL TOURNAMENT BRACKET

*This post runs as a complimentary blog to the guest post found on the **Flerlage Twins** website. This will look to extend on learnings from the current tournament bracket, and how we can create a radial version.*



The template will look to cover a 64 knock-out teams scenario. The way it works is all players/teams are a starting point on the outer-most edge of the circle. The closer the team gets to the centre, the further they have progressed in the tournament. The winner is the centre point of the circle.

If you haven't already, please check out my recent guest spot on the Flerlage Twins site, [here!](#) It's a real honour to be featured on their site. Kevin and Ken are such a driving force for the community, making Tableau accessible to individuals of all levels. The guest post builds on the foundations of Kevin's original bump chart, to allow users to input their own results and build a tournament bracket. There are currently three variations to choose from.

Today I'm going to be introducing a fourth, radial, variation. I'm pleased to say this tutorial will only require 4 calculations!

A small disclaimer before we start, *like most my blog posts so far....*this doesn't necessarily show best practice, and probably lacks many user cases. Personally, I like how it condenses the points to all in one view, as well as creating a nice looking geometric effect.

I've recently produced a visualisation using the template to showcase Serena Williams 7th Wimbledon title.

This dashboard can be downloaded from my public profile. I copied the data from [here](#).



It seems only right to plug the #SportsVizSunday initiative here. **Kate, Simon, Chris, Spencer and James** are great ambassadors, role models and inspirations both in the community, and for the initiative. I am so pleased to see how they showcase talent of different authors through the weekly blogs found [here](#). The team produce new datasets each month to pull insights from. You can find some of the previous sports datasets [here](#). What a great driving force for sports and data! Thanks guys.

Data Prep

Onto the tournament bracket! If you'd like to follow along, download a copy of the original files on github at the top of the page.

A	B	C	D
Dimension	Time	Rank	Actual Time
TEAM 1	1	1	First Round
TEAM 2	1	3	First Round
TEAM 3	1	5	First Round
TEAM 4	1	7	First Round
TEAM 5	1	9	First Round
TEAM 6	1	11	First Round
TEAM 7	1	13	First Round
TEAM 8	1	15	First Round
TEAM 9	1	17	First Round
TEAM 10	1	19	First Round
TEAM 11	1	21	First Round
TEAM 12	1	23	First Round
TEAM 13	1	25	First Round
TEAM 14	1	27	First Round
TEAM 15	1	29	First Round
TEAM 16	1	31	First Round
TEAM 17	1	33	First Round
TEAM 18	1	35	First Round
TEAM 19	1	37	First Round
TEAM 20	1	39	First Round
TEAM 21	1	41	First Round
TEAM 22	1	43	First Round
TEAM 23	1	45	First Round
TEAM 24	1	47	First Round
TEAM 25	1	49	First Round
TEAM 26	1	51	First Round
TEAM 27	1	53	First Round
TEAM 28	1	55	First Round
TEAM 29	1	57	First Round
TEAM 30	1	59	First Round



The file contains two tabs.

The first tab is the bracket to be populated. All you need to do is use the drop downs to fill in your team or player names until the final. Be sure to fill in the full bracket, including the winner slots. The drop down is there for convenience so that you don't get any issues with miss spelling the same persons name between rounds!

The second tab named 'data' will be what we connect to in Tableau, it auto populates the dataset from bracket. Feel free to take a look at it to understand how it works, but i don't think it'll need much in terms of amendments. You will see that each sequential round takes the mid-points of the previous games ranks.

Here is an example of the data once in Tableau.

The screenshot shows the Microsoft Excel ribbon with the 'Data' tab selected. On the left, the 'Connections' pane shows a connection to 'Radial_Tournament_Template' (Microsoft Excel). The 'Sheets' pane lists 'Bracket Data Entry', 'Data', and 'New Union'. The main area displays the 'Data' sheet with the following table:

Dimension	Time	Rank	Actual Time
TEAM 1	1	1	First Round
TEAM 2	1	3	First Round
TEAM 3	1	5	First Round
TEAM 4	1	7	First Round
TEAM 5	1	9	First Round
TEAM 6	1	11	First Round
TEAM 7	1	13	First Round
TEAM 8	1	15	First Round

The Build

The first is the radius of each round being plotted.

1.

```
Distance From Centre  
IF = 1 THEN 6.3  
ELSEIF = 2 THEN 5.3  
ELSEIF = 3 THEN 4.3  
ELSEIF = 4 THEN 3.3  
ELSEIF = 5 THEN 2.3  
ELSEIF = 6 THEN .21  
ELSEIF = 7 THEN -1  
END
```

1. Distance From Centre

Data (Radial_Tournament_Template)

X

```
IF [Time] = 1 THEN 6.3
ELSEIF [Time] = 2 THEN 5.3
ELSEIF [Time] = 3 THEN 4.3
ELSEIF [Time] = 4 THEN 3.3
ELSEIF [Time] = 5 THEN 2.3
ELSEIF [Time] = 6 THEN .21
ELSEIF [Time] = 7 THEN -1
END
```

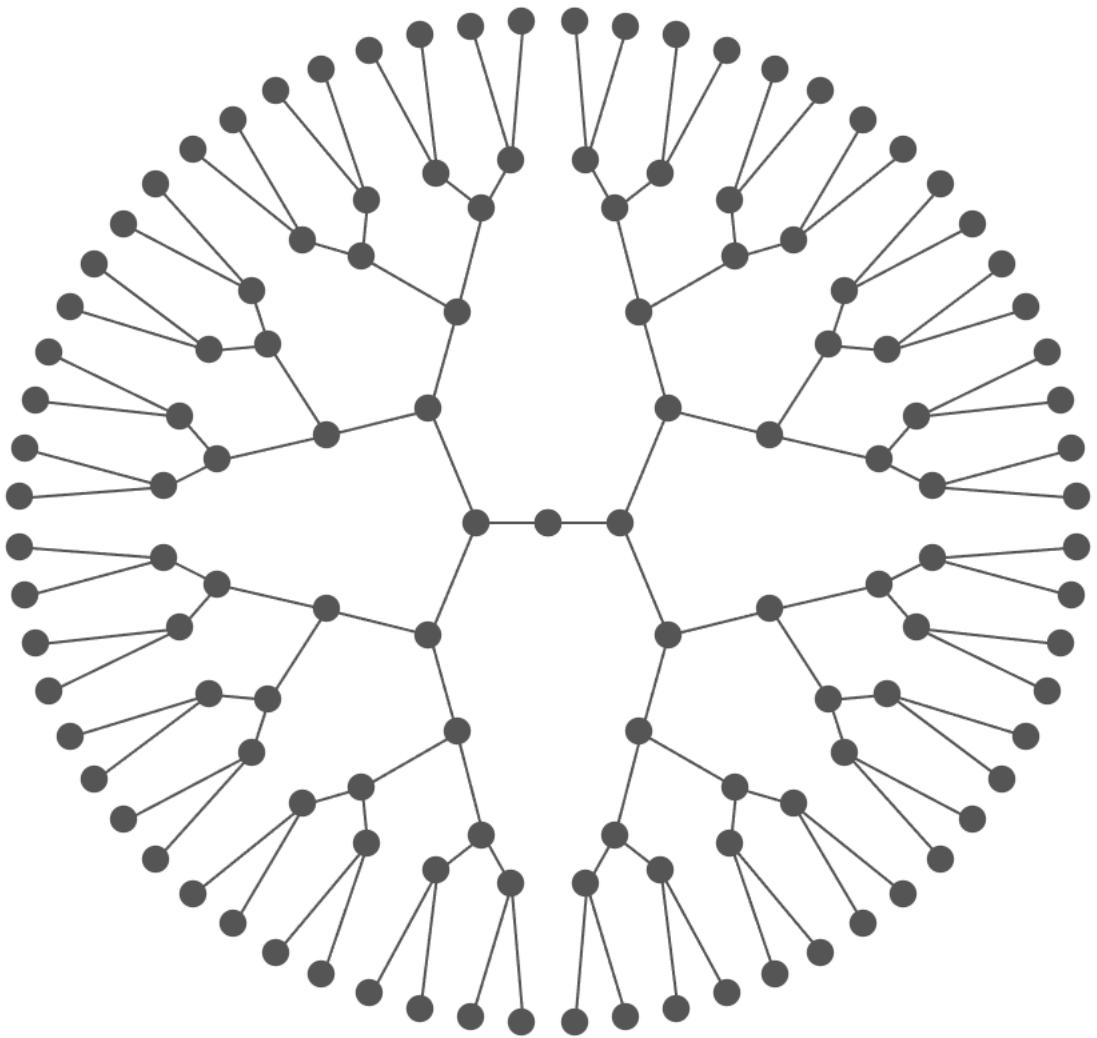
The calculation is valid.

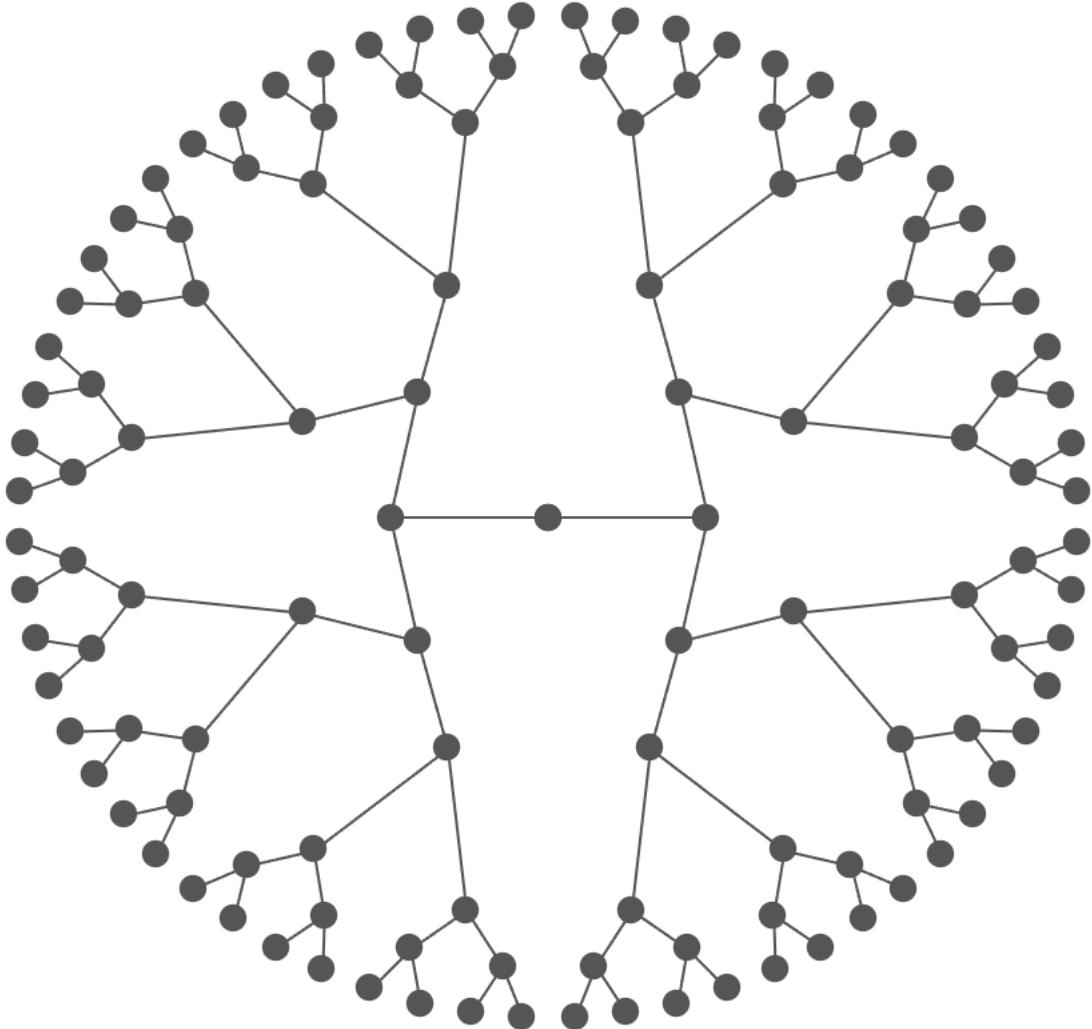
5 Dependencies ▾

Apply

OK

Explanation: Where time is equal to 1 this is the first round, these marks need to be shifted the furthest out. As time increases it moves through the 2nd, 3rd, Quarter final, Semi Final and Final. You can play around with these values at the end to make different styles. Just make sure as Time increases, your values decrease. Check out the below variations, but for now use the above calculation as default.





2. Modified Calc

/128

2. Modified Calc

Data (Radial_Tournament_Template)

X

[Rank] /128

The calculation is valid.

5 Dependencies ▾

Apply

OK

Explanation: We need this calculation as within the original dataset the ranks go up to 128. (This is 64 teams with a space of 1 in between)

3. X

```
// Making the X points radial  
(+1) * COS( * 2 * pi())
```

3.X

Data (Radial_Tournament_Template)

X

```
// Making the X points to become circular  
([1. Distance From Centre]+1) * COS([2. Modified Calc] * 2 * pi())
```

The calculation is valid.

1 Dependency ▾

Apply

OK

4. Y

```
//Making the Y points radial  
(+1) * sin( * 2 * pi())
```

4.Y

Data (Radial_Tournament_Template)

X

```
//Y  
//Making the Y points radial  
([1. Distance From Centre]+1) * sin([2. Modified Calc] * 2 * pi())
```

The calculation is valid.

3 Dependencies ▾

Apply

OK

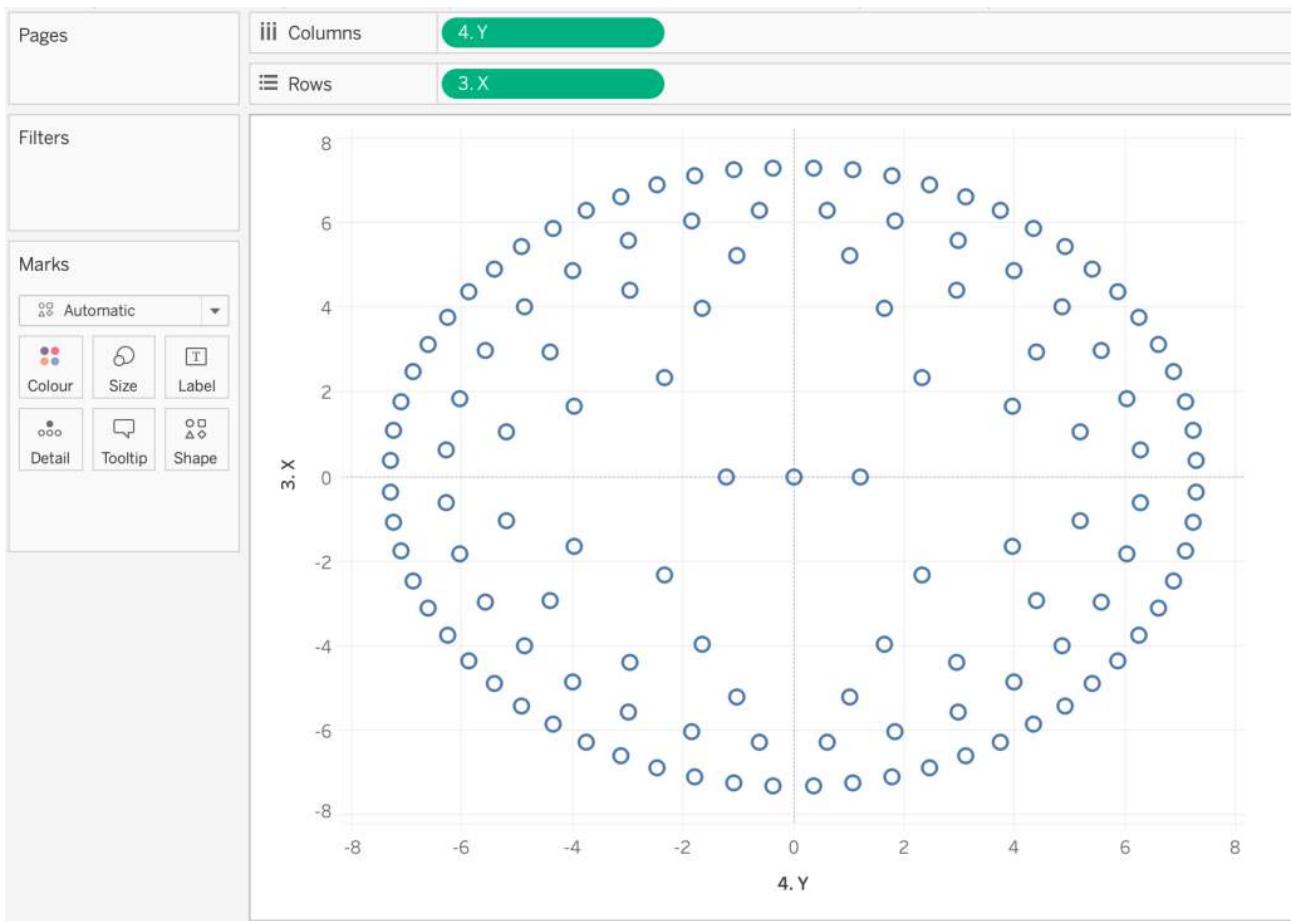
Explanation: The X & Y use sin and cos functions to make the visualisation radially.

The Build

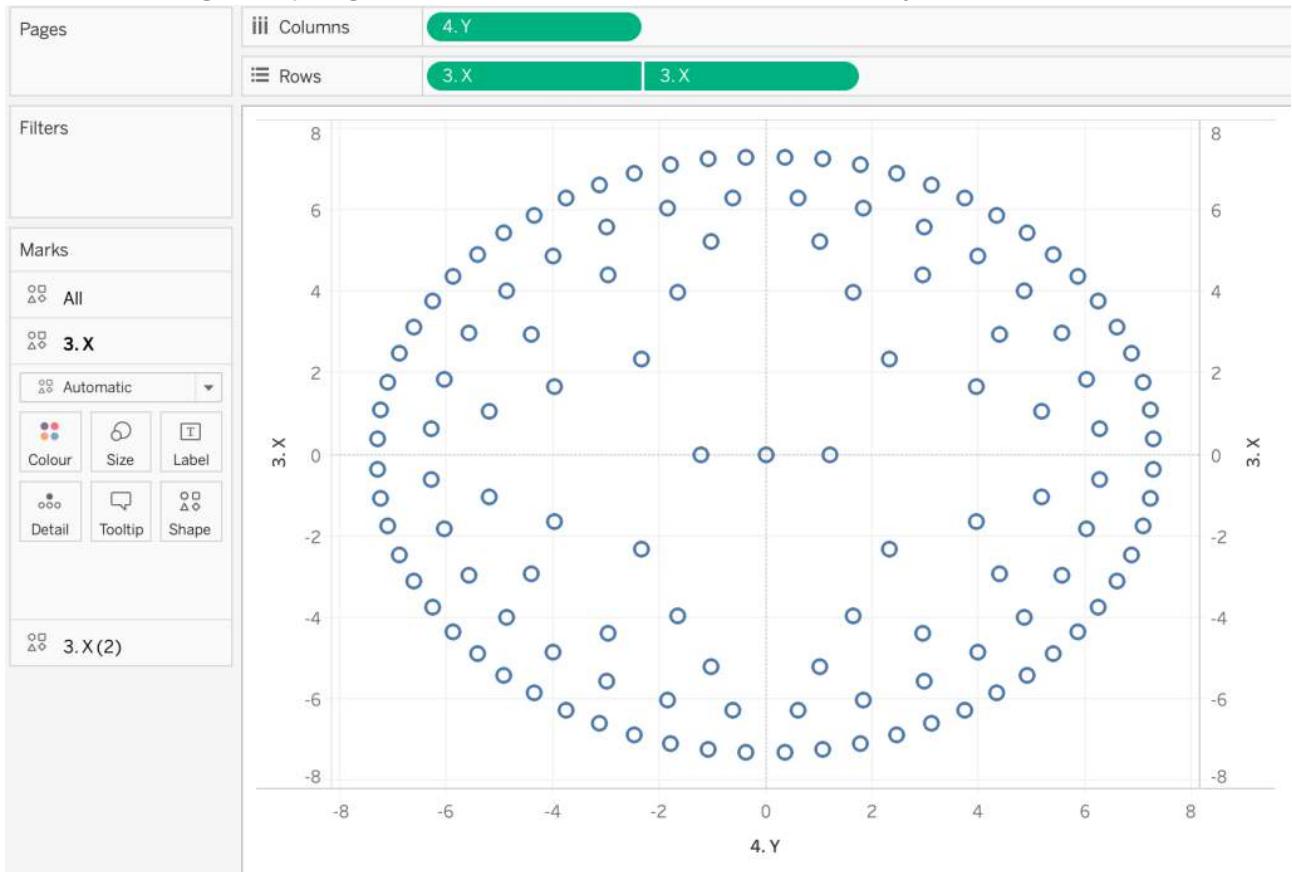
Step 1.

Drag Y onto Columns – Make sure it is a dimension.

Drag X onto Rows – Make sure it is a dimension.

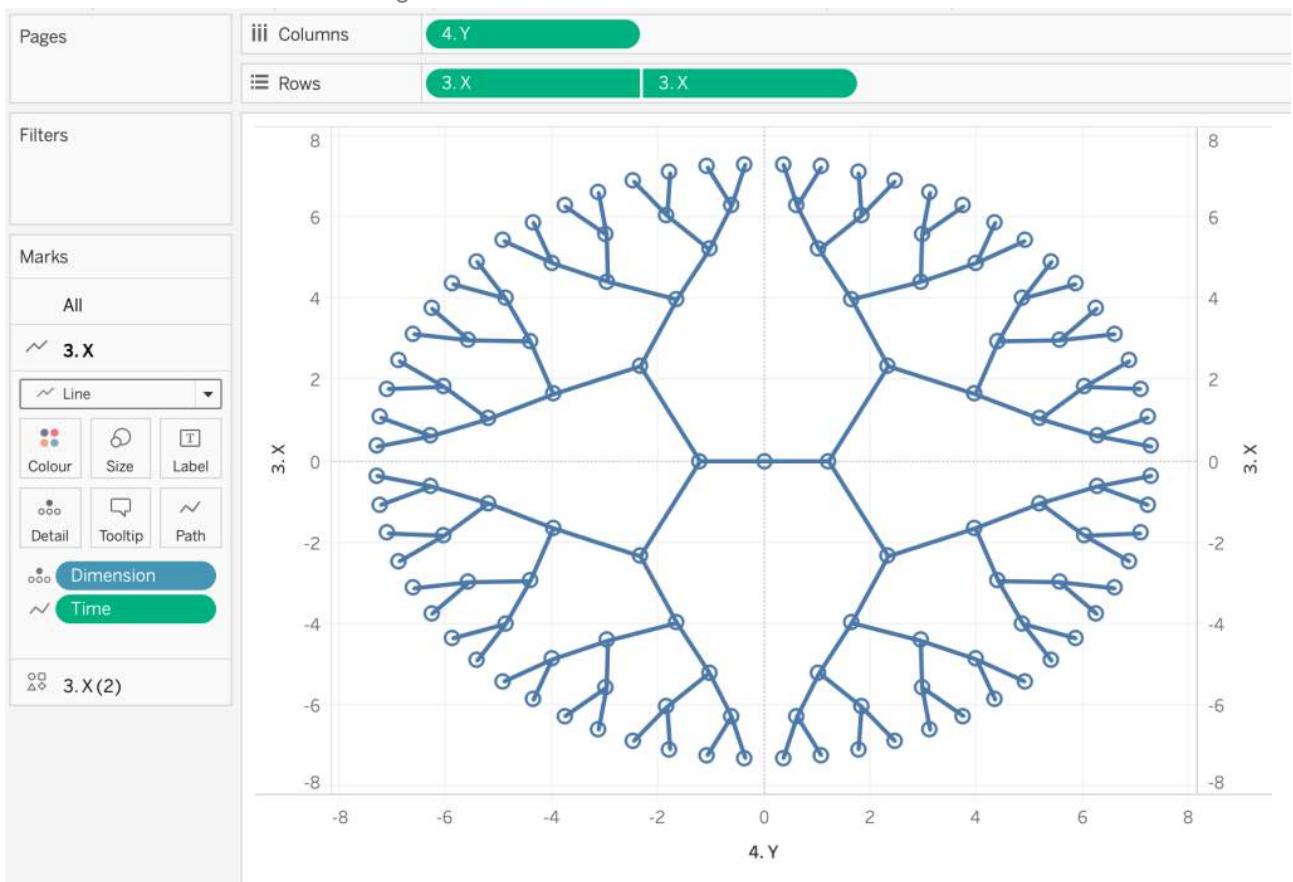


Drag the X pill again onto Rows. Make the axis dual axis, and synchronise the axis.

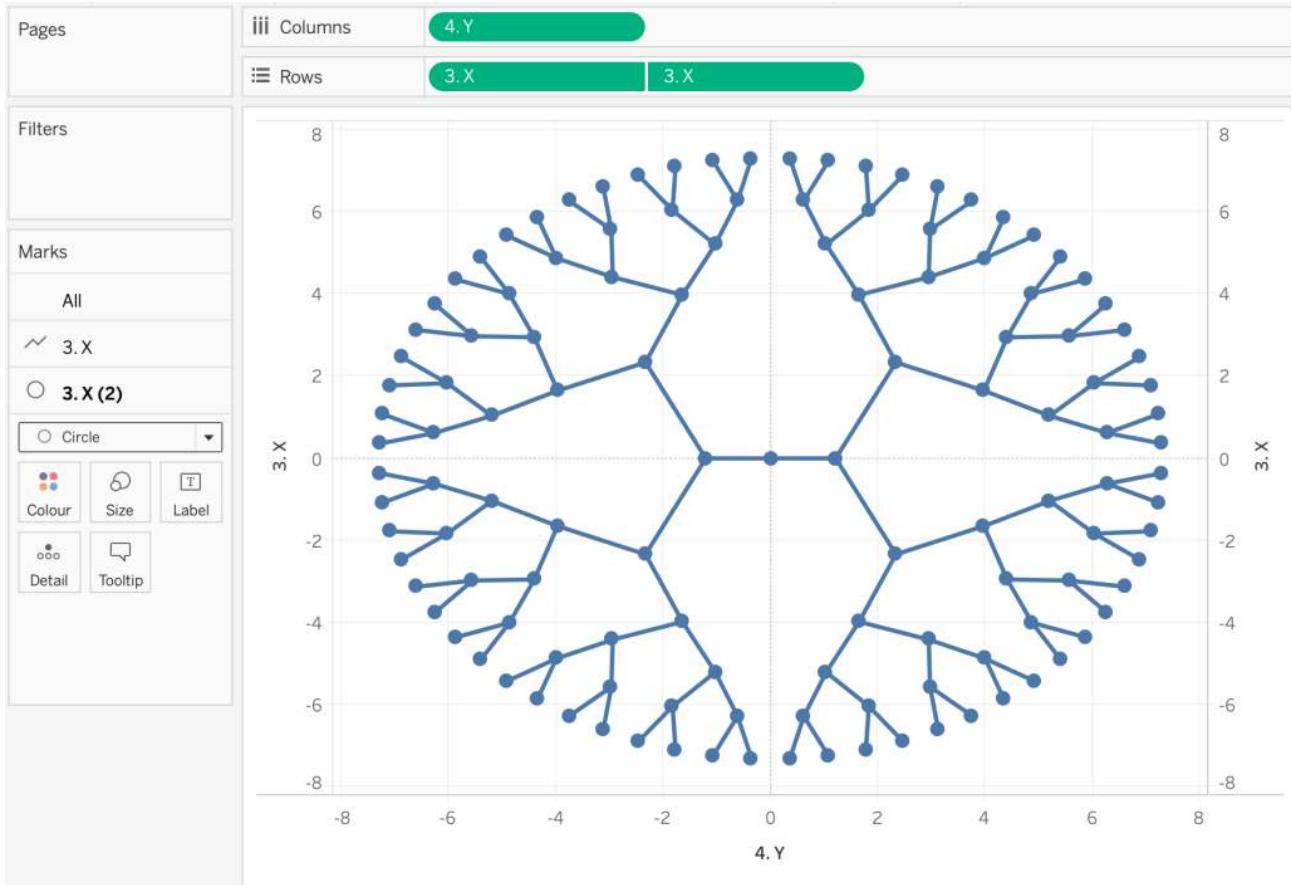


Step 2.
On the Marks card, go to the first X shown.

Change the mark to a Line.
Drag Dimension onto detail.
Drag Time onto Path. Make sure it is a dimension.



Step 3.
Go to the Second X Mark Card.
Make this a Circle.
Perfect! This is now our finished shape.



Step 4.

We now need to sort the colouring and tooltips.

Go to the Marks (All) Card.

Drag Dimension onto Colour.

You may now see that some of the circle colours show on top for some of the losing players/teams.

Sort [Dimension] X

Sort By ▼

Field

Sort Order

Ascending

Descending

Field Name ▼

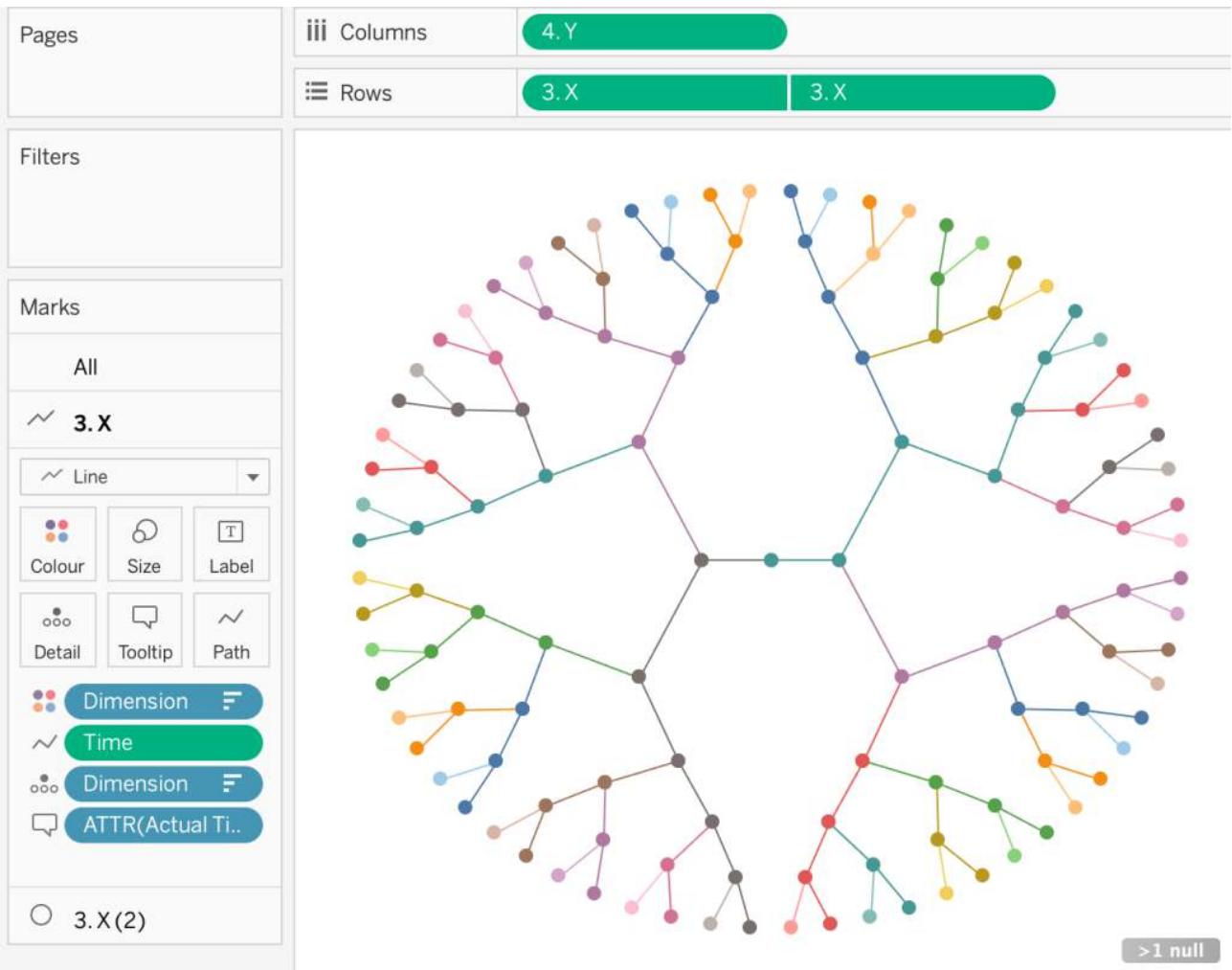
Time

Aggregation ▼

Maximum

↻ **Clear**

We can correct this by sorting by field. You will want to sort: Field name Time, aggregation Maximum Sort Order descending. This will allow for the winning team in each scenario to be circle colour shown on top.



You may wonder why there is one null value? Within the original data I include a row where Time = 8 that we do not use in 1.distance calculation. This is solely because I want the final dot to be the winner colour (maximum Time calculation). We do not use Time = 8 in any of our calculations. Do not filter it out, just hide the indicator.

Tooltips: We can tidy these up to have just the dimension (Team/Player), and Actual Time (What stage of the tournament was reached). Drag both these fields onto Tooltip on marks All. Feel free to add in any other tournament details!

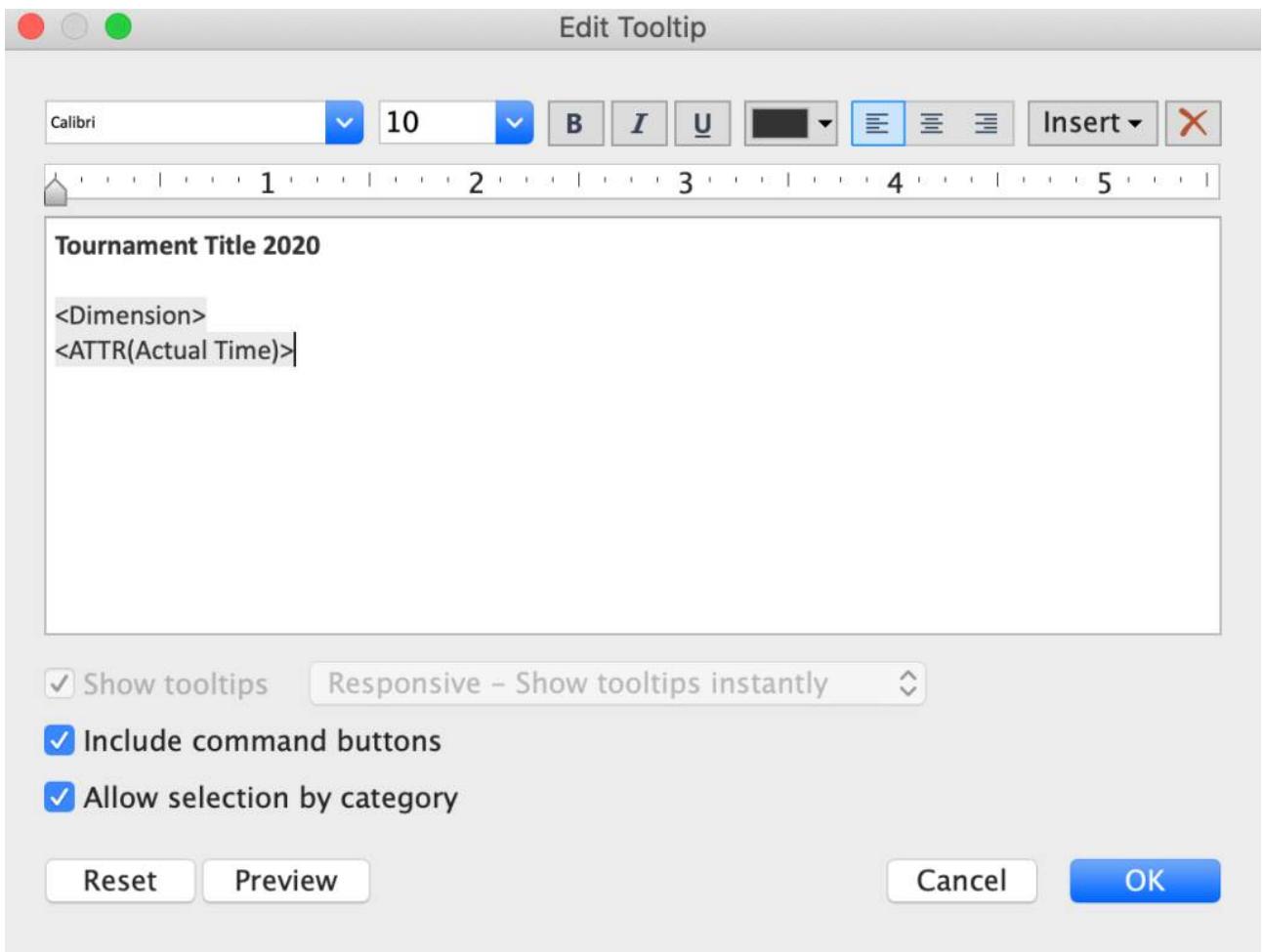
If you want, you can go back into the original data set (data tab) to amend the bracket to say Runner-Up and Winner where Time = 7. This will allow the user to know which player or team won the final match!

Previous:

TEAM 9	7	64	Finalist
TEAM 33	7	64	Finalist

New:

TEAM 9	7	64	Winner
TEAM 33	7	64	Runner - Up



& That's a wrap! We have finished the Radial Tournament Chart.

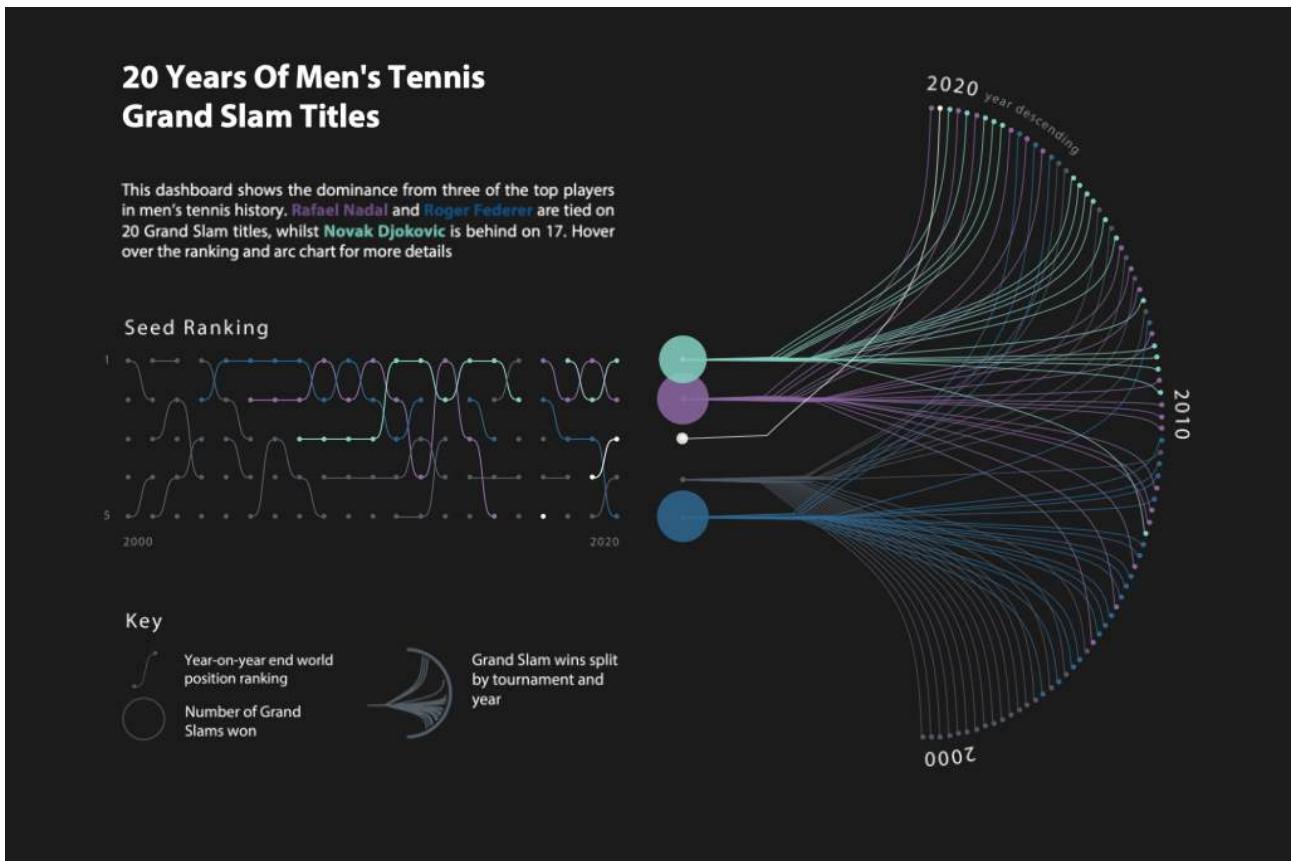
A fairly simple one to follow, I hope. As always, if you have any questions please reach out to me on [Twitter](#), or [Linkedin](#). I'm looking forward to seeing some winning vizzes.

Logging OFF.

CJ

WHY YOU SHOULDN'T MAKE THIS RADIAL GRAPH!

Having made this visualisation from scratch twice over I thought it deserved its own blog. Hopefully it goes some way into understanding how I created it, my thought process, as well as things to consider along the way.



This blog post is going to be a walkthrough of how I created my Grand Slam Tennis visualisation (#VOTD Makeover version). It actually follows different calculations to the original #VOTD from December 2020 but aesthetically looks quite similar.

You can find a copy of the original VOTD [here](#), and can see my new cleaned up version [here](#).

There's a few reasons why this is a run-through and not a template.

1. This works for my data and probably only my data. I hope this blog helps you understand how it works rather than just to refresh my workbook with your own data. This will become apparent the further you read.
2. Through understanding the calculations you will then be able to improve it! I am excited to see anyone that takes learnings from the blog, and implements them for their own unique visualisation.
3. User cases are far and few between. I was lucky the three tennis players I chose are so good, and win a lot! I'm not sure it would look as appealing with lots of start points (Players / Winner)
4. Covering my own back a little.... I made minor calculations for aesthetics to calculations that aren't the same as if you learn the theory; I wouldn't want to pass this on to others. There are also many different ways you could approach building this visualisation!

I think that is enough disclaimers out the way now. Outlined below is a step-by-step guide with explanations if you think you have a good user case for it.

Data Prep.

You will see I have two sheet tabs in the original excel. You can clone your own copy from my Github at the top of the page.

The first sheet is "Main Data"

Runner-Up, Score, Tournament	These fields aren't actually necessary - I just use them within the tooltips.
Winner	This is an important field. This is my starting points. I will create a case statement to mark the starting X and Y co-ordinate for my winners.
Year	The year is important because this is where my end points will be. I want the most recent competition (2020) to be the first marker, going clockwise radially to the furthest point in 2000.
Rank	Based on the year, therefore I assign each a rank number. You could do this in Tableau but I did it in excel for convenience. The rank is because my circle will start at 1 and increase as we move around the circle's edge.

The second sheet contains our T Values for data densification

T	Values from 0 to 100. To produce our curves to become curved.
---	---

Load the data and inner join Main Data to T sheet on a new calculation of $1 = 1$.

Main Data is made of 2 tables. ⓘ

Year	Main Data Rank	Tennis_data Rank
2000	83	1
2000	82	1
2000	81	1
2000	80	1
2001	79	1
2001	78	1
2001	77	1
2001	76	1
2002	75	1

CALCULATIONS

1a. Start X

0

1a. Start X @Main Data+ (Tennis_data) X

0

The calculation is valid. 5 Dependencies Apply OK

Explanation. Where on the X-axis you want your starting point. Visually I know I need my starting coordinates to be on a straight line going up. Therefore whatever this number they will all reside on the same X coordinate. Do note, I went back and forth amending some of these values to find what was appropriate.

1b. Start Y

case

```
When 'Novak Djokovic' then 2
when 'Rafael Nadal' then 0.75
when 'Dominic Thiem' then -0.5
when 'Roger Federer' then -3
```

else -1.8

END

```

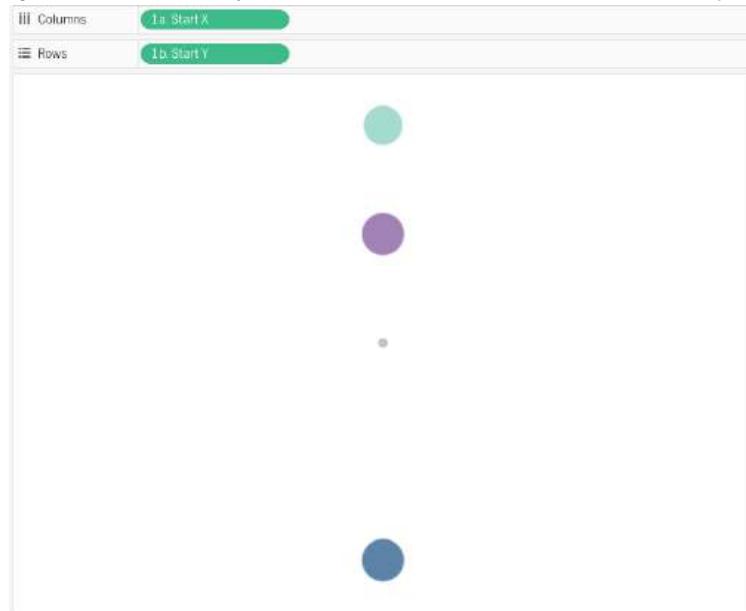
1b.StartY Main Data+ (Tennis_data) X

case
[Winner]
when 'Novak Djokovic' then 2
when 'Rafael Nadal' then 0.75
when 'Dominic Thiem' then -0.5
when 'Roger Federer' then -3
else -1.8
END

The calculation is valid. 4 Dependencies Apply OK

```

Explanation: I am manually creating the starting Y co-ordinates for my winner. Again these were amended at the end to align to my bump chart. Theoretically I started with Djokovic as 1 Nadal as 0 and Federer as -1. (That's because that's the order I wanted them listed in, as Novak is currently the best player in the world, followed by Nadal & Federer) If this is hard to visualise check out the photo below.



You will also realise you will want to adjust these in relation to the final circle points to sit roughly within the middle. Let's revisit this later....

1c. Max Points

// Maximum number of points in our densification data (T going from 1 to 100)
{FIXED: MAX ()}

```

1c.Max Points Main Data+ (Tennis_data) X

// Maximum number of points in our densification data ( T
{FIXED: MAX( [T] )}

The calculation is valid. 3 Dependencies Apply OK

```

Explanation: this is the maximum amount of points in our T, e.g. 100. I saw **Ken Flerlage** use this calculation so have kept it for safe-keeping ever since. If I were lazy I would just hard code the number 100.

2a. Angle (360/83)

The calculation is valid. 8 Dependencies Apply OK

```
(360/83)
//83 Records
```

Explanation: Speaking of lazy... I know there are 83 distinct tournament outcomes (outer points) I want to create. Therefore I want to space these evenly and create the angle between them as dividing 360 degrees of a full circle by 83.

2b. Rank Angle

$$(*)/2$$

The calculation is valid. 7 Dependencies Apply OK

```
([Rank]* [2a. Angle])/2
// We have hard coded the rank we want them in
// Each Category will positioned further along
```

Explanation: Lazy part two. We have made life easier by moving the rank into our excel document. We times the Rank by the Angle to find where each of the 83 points will sit along the 360 degree.

Why have I divided by 2? At the moment we have calculated the marks for a full circle.... I want to make them into a semi-circle so I divided by 2.

3a. End X

$$((\sin(\text{radians}())*10)) +10$$

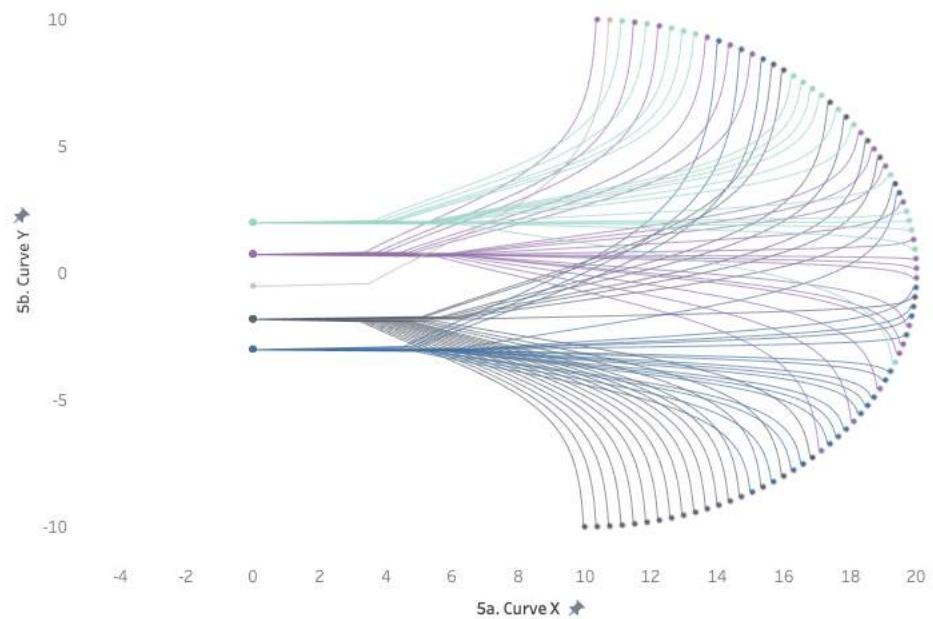
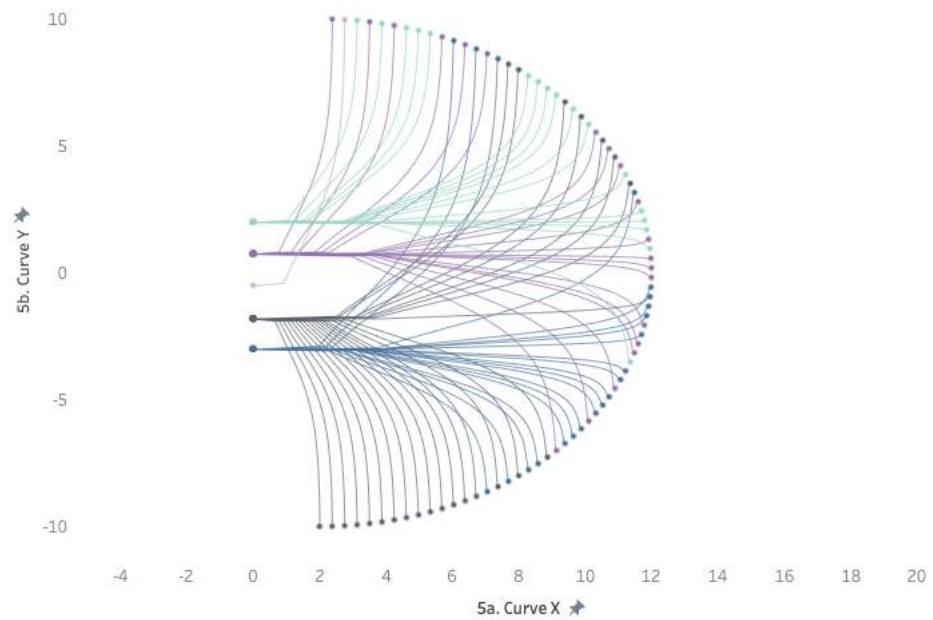
The calculation is valid. 4 Dependencies Apply OK

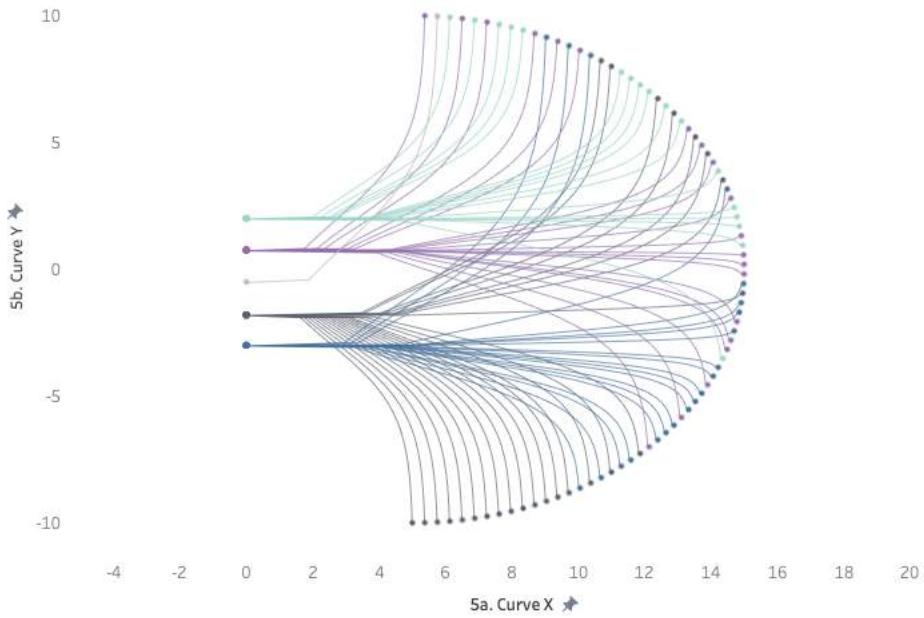
```
((\sin(\text{radians}([2b. Rank Angle]))*10))
+10
```

Explanation: We know that when we wrap the rank angle in radians and SIN it makes it the circle we want. So why have I multiplied and added 10?

The times 10 is going to be the from one side of the circle to the other (2 Radius lengths, or 2 times the distance from the edge to the centre point) E.g how big is the circle.

The plus ten amounts: The ten shifts the graph to the right by ten. The original centre of the chart would be at X = 0. Knowing where I have my start points of the winners, I want to make sure my end markers are to the right. Again, you can move this as far or close, as you'd like. Check the below to see what this looks like:





3b. End Y
 $(\text{COS}(\text{radians}()) * 10)$

3b. End Y Main Data+ (Tennis_data) X

$(\text{COS}(\text{radians}([2b, \text{Rank Angle}])) * 10)$

The calculation is valid. 3 Dependencies Apply OK

Explanation: We know that when we wrap the rank angle in radians and COS it makes it the circle we want. So why have I multiplied by 10? Same as above. We want the circle to be bigger we must keep the multiplied size in our End X as the same as our End Y or we will get an oval shape not circular one! I haven't added 10 to this calculation because we don't want our end points to be any higher up.

4a. Sigmoid X
 $(-1)^*(6/(100-1))-0.8$

4a. Sigmoid X Main Data+ (Tennis_data) X

//Sigmoid X
// Space our points out evenly from -6 to 6 in order to pr
 $([T]-1)*(6/(100-1))-0.8$

The calculation is valid. 4 Dependencies Apply OK

Explanation: This isn't the exact correct sigmoid function. Please check out my dashboards showing the true calculations of data densification and sigmoid functions [here](#). It has been adjusted for aesthetics slightly.

The original calculation, and one I would recommend starting with is:

$(T-1)^*(12/(-1))-6$

4b. Sigmoid Y
 $1/(1 + \text{EXP}(-))$

4b. Sigmoid Y

```
//Sigmoid Y
// Sigmoid calculation. Note: EXP gives us e to the power
1/(1 + EXP(-[4a. Sigmoid X]))
```

The calculation is valid. 3 Dependencies Apply OK

Explanation: Again if you'd like to understand more about the theory of sigmoid curves please check out the above. This is another use of **Ken Flerlage's blog** that I constantly refer to.

5a. Curve X

IF = 1 then

ELSEIF

> 1 and < 100

then

$$\left(\frac{1}{1 + e^{-x}} \right)$$

ELSEIF = 100

then

END

5a. Curve X

```
//CurveX
IF [T] = 1 then
[3a. Start X]

ELSEIF [T] > 1 and [T] < 100
then
(
[3a. Start X] + ([3a. End X] - [3a. Start X]) * [4b. Sigmoid Y]
)

ELSEIF [T] = 100
then [3a. End X]
END
```

The calculation is valid. 2 Dependencies Apply OK

Explanation: Where we have densified our data (100 points for each actual row) We set T = 1 for the start, T = 100 as our end point. For anything in between those values is the chord shape and style that we have just calculated in step 4a and 4b. Take the start position, the difference of each X co-ordinate multiplied by our curved adjustment.

5b. Curve Y

IF = 1 then

ELSEIF

> 1 and < 100

then

$$\left(\frac{1}{1 + e^{-x}} \right) + (-1)^{x-1} \cdot \frac{1}{1 + e^{-(x-1)}} \cdot \frac{1}{1 + e^{-x}}$$

ELSEIF = 100

```

then
END

5b. CurveY Main Data+ (Tennis_data) X

//CurveY
IF [T] = 1 then
[1b. Start Y]

ELSEIF [T] > 1 and [T] < 100
then
(
[1b. Start Y] + ([T]-1) * ([3b. End Y] - [1b. Start Y]) / ([1c. Max Points]-1)
)

ELSEIF [T] = 100
then [3b. End Y]
END

The calculation is valid. 2 Dependencies Apply OK

```

Explanation: We want the exact same for Y. The good news is, if you give this tutorial a go, you won't need to amend Curve X and Curve Y.

6a. Curve X

IF = 1 then

ELSEIF = 100

then

END

Explanation: I create a separate calculation for the start and end points as I wanted to make them circle. Probably quite old fashioned now but I used the dual axis. Therefore I'll make the start ($T = 1$) a circle, as well as ($T = 100$)

```

6a. CurveX Main Data+ (Tennis_data) X

//CurveX
IF [T] = 1 then
[1a. Start X]

ELSEIF [T] = 100
then [3a. End X]
END

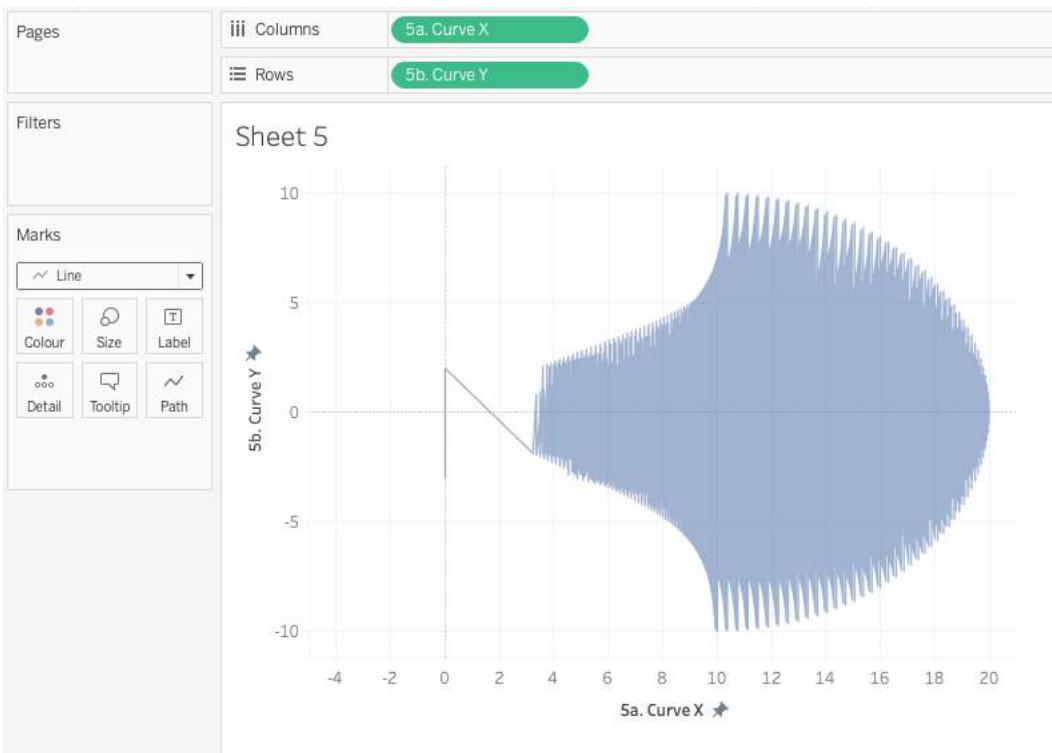
The calculation is valid. 2 Dependencies Apply OK

```

THE BUILD

Drag 5a. Curve X onto Columns and make it a dimension.

Drag 5b. Curve Y onto Rows and make it a dimension.

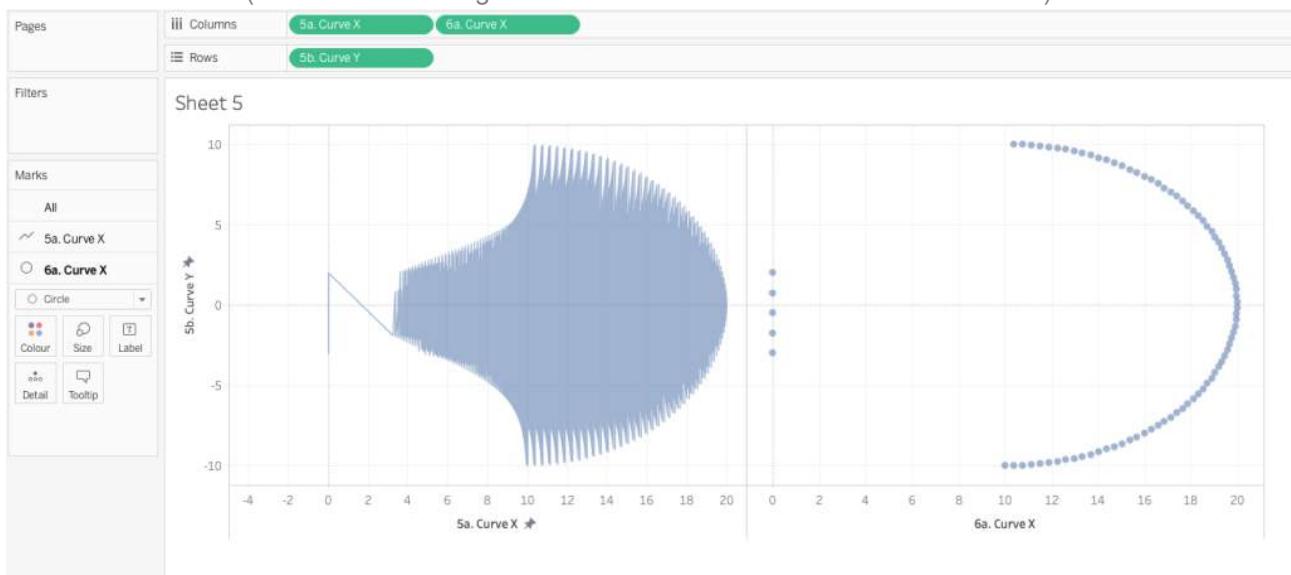


I like to make my axis fixed to fit the feel and shape. For my work this was, -11 to 11 for curve Y. This was -5 to 21.5 for X. Logically you just need to look at what works best. It'll also depend on where you moved your start points from and how big you decided to make your semi-circle.

Drag 6a. Curve X onto Columns and make it a dimension and change the mark card to a circle.

Make the axis dual axis, and synchronise the axis.

(If measure names goes onto the colour mark remove this from ALL)



Change the Marks to a Line and Drag T onto curve.

Drag Winner, Tournament, Score, and Runner-up onto detail.

We need to do this for the LOD of the lines! Otherwise you get a hot mess of thick lines all over the place.



Finally, It is a case of cosmetics.

Remove gridlines, background colour, and hide axis.
Add some colour.
Add some sizing to your circles.

I created a colour calculation:

7a. Colour
case

When 'Novak Djokovic' then 'Novak Djokovic'
when 'Rafael Nadal' then 'Rafael Nadal'
when 'Dominic Thiem' then 'Dominic Thiem'
when 'Roger Federer' then 'Roger Federer'
else 'Other'
END

7a. Colour: Main Data+ (Tennis_data) X

```
case
[Winner]
When 'Novak Djokovic' then 'Novak Djokovic'
when 'Rafael Nadal' then 'Rafael Nadal'
when 'Dominic Thiem' then 'Dominic Thiem'
when 'Roger Federer' then 'Roger Federer'
else 'Other'
END
```

The calculation is valid. 3 Dependencies ▾ Apply OK

Explanation: I'd encourage individuals to amend the opacity on their line marks curve. I also sorted the colours manually this was preference.

8a Size
IF = 1 and =
'Novak Djokovic' then 17
ELSEIF = 1 and = 'Rafael Nadal' then 20

```
ELSEIF = 1 and = 'Dominic Thiem' then 1  
ELSEIF = 1 and = 'Roger Federer' then 20  
else 10  
END
```

Explanation: Dragging size onto the circle marks card allows for some reshaping. I want the start points to be the number of Grand Slam wins, and then each of the outer points I made just a relative size, this probably isn't best practice.

To end, Let's revisit a few calculations for explanation.

Start X.

Now we've finished the build it may be more apparent why I set X to zero, and shifted the circle to the right.

Theoretically you could approach this in a different way and move the start point to the left of the build of your semi-circle.

Start Y.

You can see that the centre point of the circle sits at zero of the Y-axis. As the top and bottom of my circle sit at -10 and 10, I want my start points to sit within those points. For me I liked the feel of having them distributed only slightly above and below zero.

& That's a wrap. Hopefully somewhat useful. I really enjoyed making this visualisation. It's actually my favourite one I've made so far. I won't expect to see many of these made in the future but hope it offers a small insight into my brains approach! As always any questions please do note hesitate to message me on

Twitter [@_CJMayes](#).

LOGGING OFF.

CJ

DESIGN WITH JOSH HUGHES

Welcome to the February edition of "*What's Good?*".

Month two! Can you believe how quick the time is going? Each month will have a tailored theme, this months is Design.

I am delighted **Josh Hughes** joins me today to talk about Design thinking behind a dashboard. Josh was recognised early during his Tableau Public career due to his beautiful design and the way he can captivate viewers through the way he tells the story. It is the perfect blend between data and art. You can also check out an awesome introduction blog of Josh over on **Simon Beaumont's site**. (The blog today will differ as there will be no mention of Portsmouth Football club over on this site, sorry Simon!)

If you haven't already, please check out his Tableau Public page [here](#). Here are a few below.

The Digital Gender Gap

In 2020, nearly half of the world remains offline with no access to internet, primarily in **LICs** and **LMICs**.

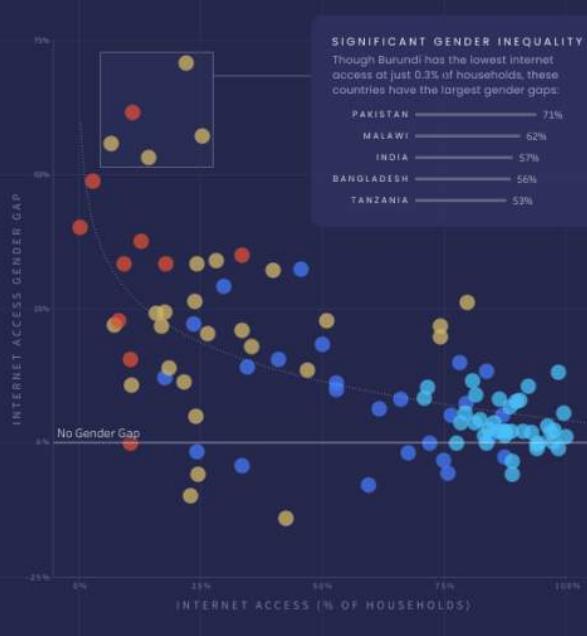
Women are disproportionately affected by a lack of internet access - again, particularly in countries with less developed economies.

The digital gender gap means women and girls will be disconnected from the myriad of social, financial, and educational opportunities offered by the internet.

HICs not only have more access to the internet, but also for narrower gender gaps. **UMICs** have a wider spread in terms of access, but generally also have slightly less of a gender gap than LICs and LMICs.

OPERATION FISTULA

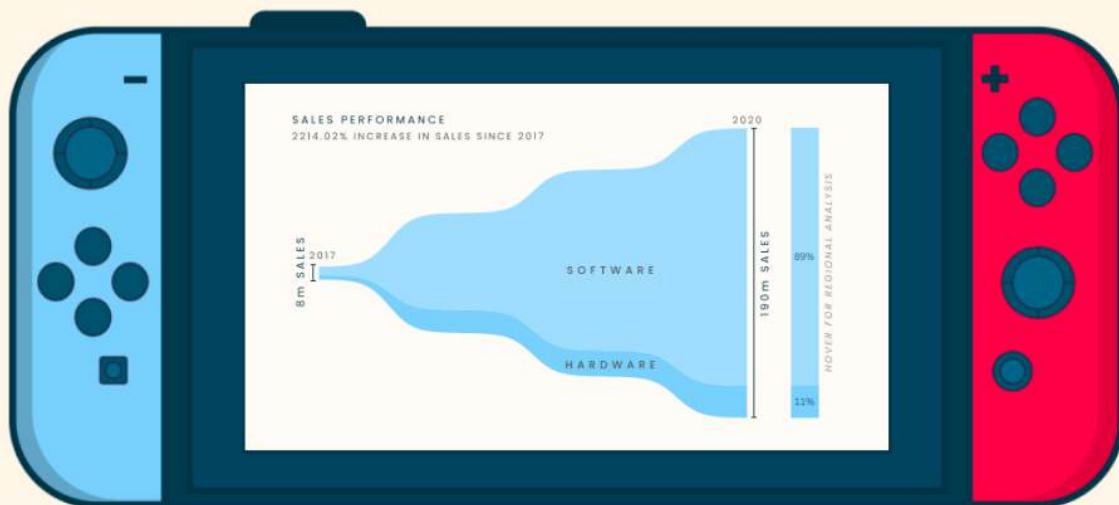
DESIGN | @DATAJOSHH
DATA | THE INCLUSIVE INTERNET INDEX



NINTENDO SWITCH SALES

Nintendo Switch sales have increased over 2,000% since 2017, reaching 190 million total sales in 2020. When you think of the Switch you immediately think of the console itself, but 89% of sales in 2020 were actually for Nintendo Switch software.

The Americas have always been the biggest market for the Nintendo Switch, and continue to lead sales in both hardware and software again in 2020. Hover over the stacked bars on the right hand side below to view regional performance.



DATA | NINTENDO INVESTOR RELATIONS DESIGN | @DATAJOSHH



CJ: Josh, welcome. Thanks for joining me on my blog super excited to have you on here. I first came across your work when Judit Bekker gave it a shout-out on Twitter, and now seem to be in awe of your visualisations every time you submit to MakeoverMonday. Is your background in Data & Design?

JH: Hi CJ, thanks for having me! I'm very excited to be a part of your new blog. Even though it's only been launched a few weeks, you're already having a huge impact on the #datafam with your tutorials – can't wait to see it go strength to strength from here!

I'd say my background is pretty much entirely data. My first job coming out of University was as a data analyst for a small fintech startup, before going on to join the NHS initially a data analyst, then later as a senior data analyst and now as a senior BI developer. So lots and lots of working with data, Excel spreadsheets, SQL, and now BI tools.

In terms of design, I think that's just something I have a personal obsession with as opposed to having a working background in it. I did learn a little bit about web design at University, and have worked on a few projects with design teams doing A/B testing of websites to improve conversion rates, but that's about it. I love reading about good design though and am constantly browsing **Dribbble** and **Behance** for ideas and inspiration.

CJ: You joined Tableau Public and Twitter back in July, what prompted the move?

So I started this new job as a BI developer earlier in the year, and after wrapping my head around how to use Power BI I wanted to take some time to focus on developing my storytelling and design skills. After browsing around for resources online, I stumbled across a few that were massively helpful for improving these less technical skills, such as **Storytelling with data**, browsing submissions in the **Information Is Beautiful awards**, and of course the visualisations being produced by the Tableau community and datafam on Twitter.

After seeing the quality of work being published under the various Tableau community initiatives and seeing the feedback and guidance being given to newcomers, I knew it would be a great place for me to practice and build my skills up – despite the fact it would mean picking up another new BI tool.

But I'm so glad I did! 6 months down the line and I continue to participate in #MakeoverMonday every week because I'm still seeing development in my design and storytelling skills. The ongoing feedback and support from the community is incredibly useful and motivating, and I've been able to work with tools like Tableau and Figma that I otherwise wouldn't have touched.

CJ: You're a BI Developer in your day to day, what's the split between Power BI and Tableau?

JH: At work it's 100% Power BI, which we have just moved across to having previously been using QlikView. It's a really exciting time in the BI development team as we're able to build out our reporting suite from the ground up with this new tool, and I have to say I'm really impressed with Power BI so far.

Tableau is for me something I'm trying to learn on the side in my own time, and a place for me to be a bit more creative outside of work. It's actually quite nice to have that balance between Power BI for more traditional business dashboards, and Tableau there to experiment with new design ideas, long-form content and more 'infographic' style vizzes.

CJ: One of your first vizzes that really caught my eye was your Aguero visualisation inspired by **Jeff Plattner**. What other authors have inspired your journey?

JH: Too many to list! That's the great thing about the datafam – there's so many talented people contributing to the community to learn from and be inspired by.

I particularly love the work of **Judit Bekker** and **David Borczuk**, who are just on another level when it comes to their design skills. Both have this really clean, modern style that's instantly recognisable, and that's influenced my work massively.

I'll also mention **Simon Beaumont**, **JR Copreros**, **Sam Parsons**, who are all insanely talented and have put out consistently fantastic work this year that I've enjoyed digging into and learning from.

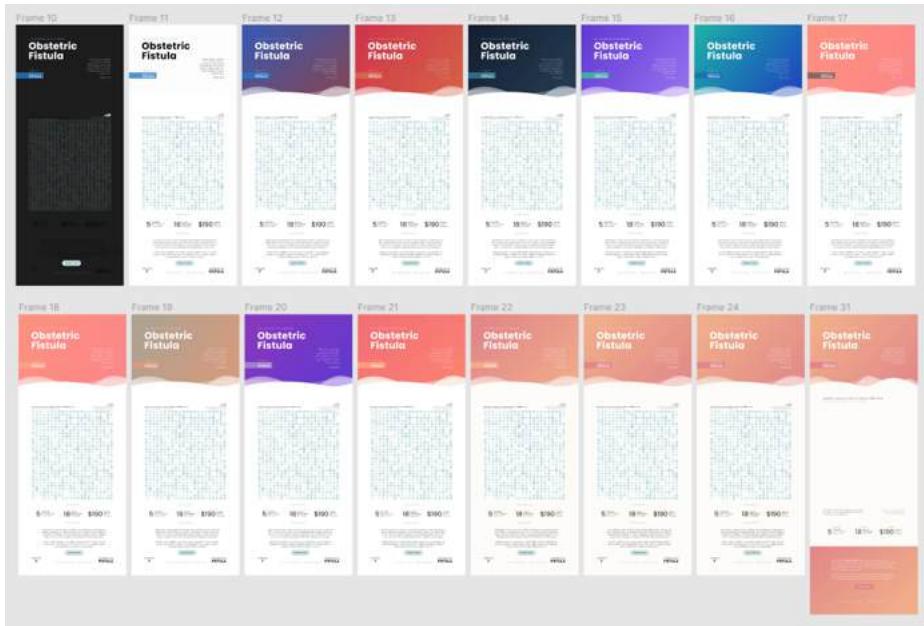
But really, in every community initiative you'll be able to find a dozen or so submissions that go on to influence and inspire you, so there's hundreds of authors to thank for playing a part in my journey so far. It's crazy how much talent and inspiration this community has to offer.

CJ: Another favourite of mine was the Obstetric Fistula visualisation from its soft colour palette and use of rounded edges. How important is it to consider your colour palette?

JH: I think colour is so important to the effectiveness of a data viz both in terms of the overall look-and-feel, but also in helping to support an ongoing theme or message in the piece, and it's something I spend a lot of time trying to get right in my work.

In fact, in my Obstetric Fistula viz for example, I went through over a dozen different colour scheme iterations before landing on that final one (hopefully I'm not the only person who spends an unreasonable amount of time obsessing over colour like this!).

I needed something that was clean, modern, and aesthetically pleasing, but at the same time something that also supported this incredibly positive underlying message of "wow, look how many women this program has been able to help". Whilst you can't portray this message in colour alone, I do think it plays a part in creating the right setting for this story to be told.



Colour scheme iterations I went through for the Obstetric Fistula viz

In terms of creating a good colour scheme, I do rely an awful lot on trial and error until something looks half-decent, but I've found sites like **Dribbble** and **Behance** are great places to browse for inspiration if you ever get stuck for ideas. Most of the content on these sites is more focused on web design as opposed to data visualisation, but the palettes and colour combinations can serve as a great jumping off point to take away and play around with. This Obstetric Fistula viz is again another good example for this. Some of the colour schemes I tried out were based on things from Dribbble I thought looked cool, with the palette on the right ending up being the foundation of the colour scheme I built out and used in my final viz:



Use existing colour schemes to kickstart your own colour palettes

CJ: What have been some of your favourite Vizzes in the community from this year? What did you like about them?

David Borczuk – Design Census

An absolutely brilliant viz, particularly from a design perspective. There's so many little touches built into it – those gridlines running down the page, little highlight lines above the key metrics, drop shadow on the viz cards – it all works so well. And it doesn't just look fantastic, it also clearly walks us through an interesting story about the gender pay gap for design professionals using a variety of engaging visualisations along the way.

Liz Bravo – Apparel export to US

One of my favourites from MakeoverMonday because it's ridiculously inventive. At first you're like "what on Earth is this, textile sketches?", but then you zoom in and once it clicks you can't help but enjoy the genius of it. It works SO well for the data we were given, and it's hands down one of the most creative data vizzes I've seen.

Judit Bekker – Couchella

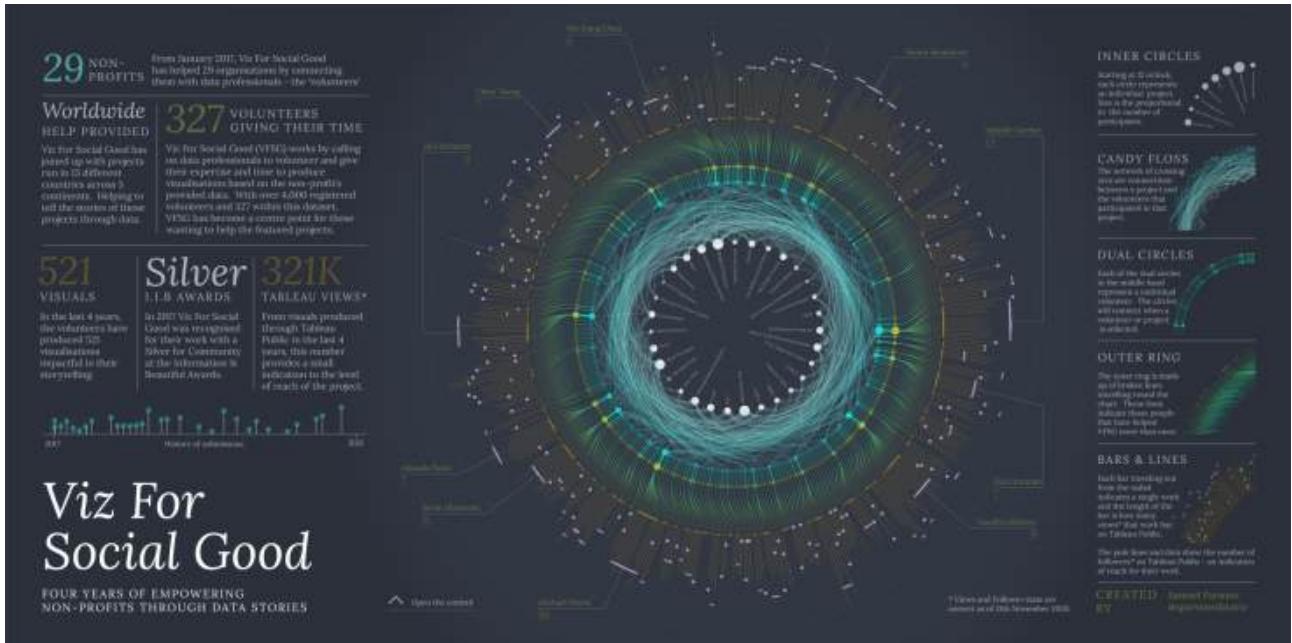
The name alone is genius enough, but it's beautifully designed – as you can say for all of Judit's work. I find dark colour schemes so hard to get right but this viz nails it, it looks like it could be a poster! The sankey style works really well for the subject at hand, and the border with the section labels is a really clever idea too.

Baljinnyam Enkhtur – Pele goals

This ones an absolute work of art! Again, another viz that wouldn't look out of place as a poster. It's a really well-constructed, intricate, eye-catching design that brings Pele's goalscoring record to life. The 8 goals in a game always makes me laugh, and rightly stands out from the other 1374 games he played in.

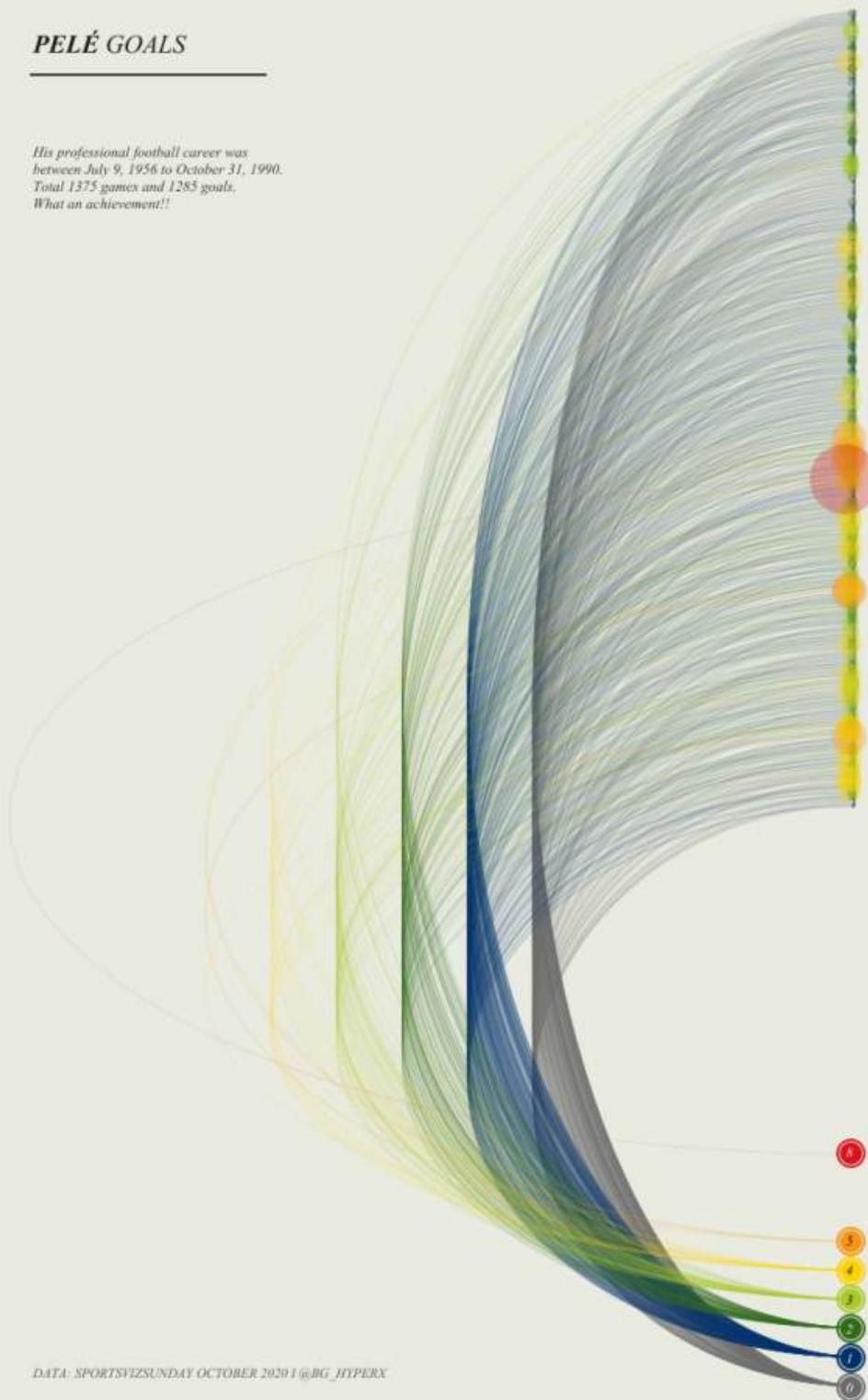
Sam Parsons – #VizForSocialGood

Probably my favourite from the year all things considered. There's just so much depth to it, and obviously it's incredibly visually striking but at the same time it's actually really accessible and fun to dig into. I loved looking into the vizzes that were getting way more views than the author's social reach would indicate – what a fun little insight to build into it! A technical masterpiece matched with brilliantly executed design.



PELÉ GOALS

*His professional football career was
between July 9, 1956 to October 31, 1990.
Total 1375 games and 1285 goals.
What an achievement!!*

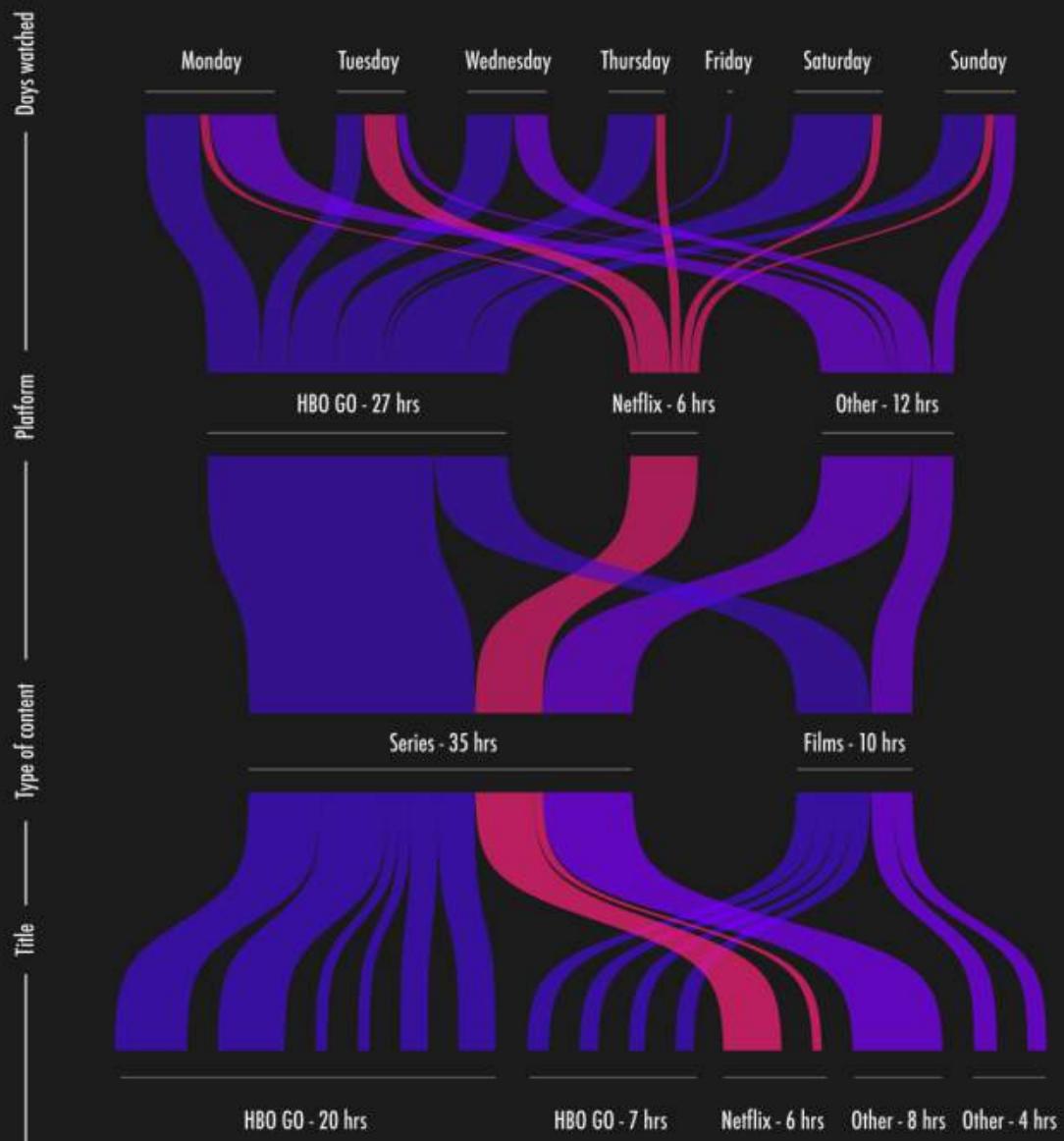


DATA: SPORTSVIZSUNDAY OCTOBER 2020 I @BG_HYPERX

COUCHELLA

THE 2020 BINGE FEST

I'm not proud of myself for watching more than 45 hours of content in 3 weeks, but desperate times call for desperate measures. I even saw a film called "What Men Want" and I still don't have the slightest clue. Hover for details!



Author: Judit Bekker



Apparel Exports to US

W43

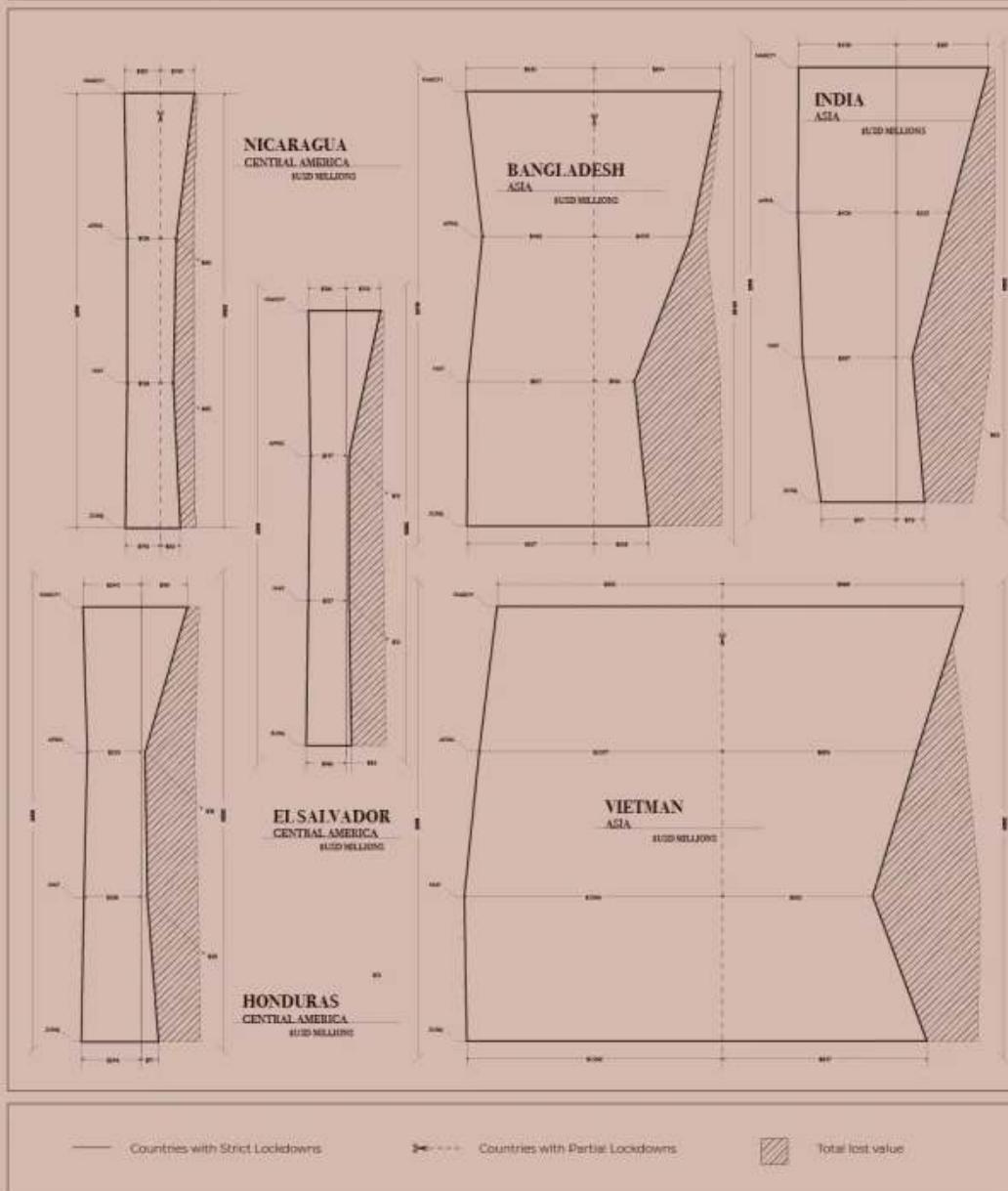
Economic impacts of covid-19, March - June

Data source: OTEXA.

#MakeoverMonday

The visualization compares the Central America countries vs. Asia countries, between 2019 and 2020, with the lockdowns variation to evidence the significant loss in value due to order cancellations by the covid-19 impact.

Design:
Uz Bravo



©librevob

Design Census | About the Survey | About AIGA

Design Census

2019

Take Survey

Design Censuses

The American Institute of Graphic Arts' 2019 Design Census is a survey of working designers about their professional careers, work habits, and more. Participants helped to develop the 2019 survey by providing insights from different perspectives and experiences across many industries.

55%

Of designers have worked in the industry for 10+ years.

48%

Of designers have received at least one job offer throughout their creative careers.

64%

Of designers are between 23 and 35 years old.



22% of designers make more than \$100k/year, but there exists a gender gap.

CJ: You've received two VOTD's – what do you think makes them stand out to Tableau Public?
JH: It's hard to say really, but it's always such a massive complement when you do have something selected by Tableau as VOTD. It puts your work in front of a much wider audience too – to think nearly 10,000 people have viewed my Nintendo Switch viz still seems insane to me!

I'd like to think these vizzes were chosen because they're quite well thought-out, eye-catching designs, that tell a simple story that people can glance at and understand. Though, that being said, I do see some more complex visualisations selected as well, so who knows! I wish I knew the secret recipe so I could get myself a third!

CJ: What design tools do you consider when creating a visualisation?
JH: All of my design work is done in Figma, which I picked up after seeing quite a few people in the community recommend it. I absolutely swear by it now I've used it for a few months and whole-heartedly encourage everyone to check it out.
I'm not sure whether it's better than some of the products available in the Adobe suite, but if your alternative is basic shapes in Powerpoint (as mine was) then it's really a no-brainer. It's such a powerful design tool, which might seem a bit intimidating to newcomers, but it's free to use and really easy to pick up and play with.

CJ: What top tips would you give to those who want to concentrate more on their design and storytelling?
JH: In terms of design, I think it's just a case of practice makes perfect. You're not going to get any better at something unless you put the hours in, so make sure you're taking part in community initiatives on a regular basis, and keep pushing yourself to try out new ideas.

Experiment with different layouts, different styles, different colour schemes – not everything's going to look great, but try and reflect on what did and didn't work in each of your projects and carry those lessons forward with you into the next one. Eventually things will start to click and you'll develop the right instincts you need in

The amount of time spent in a work week did not impact this trend

Things started falling into place for me when I really focused my efforts on using consistent alignment (grids in Figma are a huge help with this one), using an appropriate amount of whitespace/padding so each element on the page has room to breathe, and picking an effective colour scheme. Once I was able to nail these three things more consistently, designing things that didn't look terrible became a lot easier!
Another tip would be to sketch out ideas on a piece of paper before actually trying to build anything. Going into the design phase with a general structure or layout already in mind is such a timesaver, and makes the blank canvas in Figma look a lot less intimidating.

Also make sure you take some time to allow yourself to be inspired by others. We're all so fortunate to be involved in this incredibly talented community, so take the time to really assess why your favourite authors or favourite vizzes stand out so much to you, and try to incorporate some elements of that into your own work.

In terms of storytelling, that's still something I'm trying to get much better at myself, but I have found it beneficial to develop an understanding of the subject matter as a whole (and not just the data) before trying to create anything. This makes it easier to plan out which elements of the data to focus on and which visualisations I can use to convey this story most effectively.

I'd also say that using text appropriately within your viz plays a huge part in storytelling. This could be an explanatory paragraph at the top of your viz that helps to provide context to the data, or just highlighting a specific point in a chart with a small annotation next to it, but explaining the story by using text in a viz can work really well.

CJ: Could you walk us through your design thinking process and any tips you have for building your Gender Inequality visualisation?

Conclusion: It's still bad.

In 2019, women still receive pay disparities between male and female colleagues, regardless of the industry and the gender identity of the individual. This is a problem that needs to be solved.

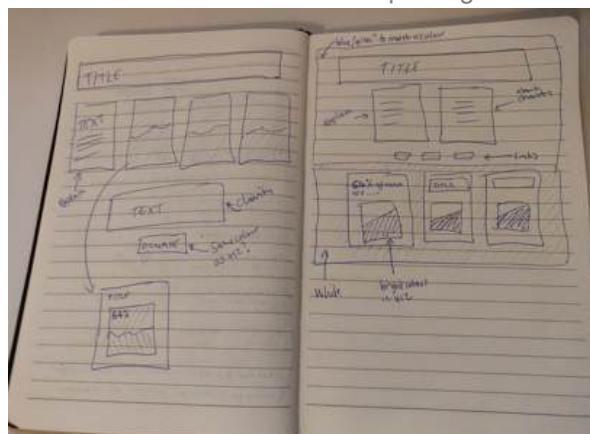


I tend to follow the same sort of workflow for every viz I take on: explore the data, establish the story, select which visualisation(s) to use in order to tell this story effectively, create visualisation(s) in Tableau, brainstorm layout ideas, design in Figma, create dashboard in Tableau. So before even starting to think about design,

I've already got the charts built and can use this to get the ball rolling on ideas about layout.

Let's use my recent '**gender inequality in adolescents with HIV viz**', which perhaps isn't my most popular viz or the most interesting design, but I do think it's quite instructive in terms of my overall design process.

As mentioned in a previous question, I'll start things off by brainstorming ideas on a piece of paper. Getting the trial and error of layouts out of the way early makes the actual design work a lot more efficient. In this case, I had three charts in Tableau I wanted to use, a title, two paragraphs of text, and a 'donate' button to build around. Here's two of the less scribbly design ideas I had, with the one on the right pretty much being the structure I ended up using:



Then I'll jump into Figma, build a grid for alignment purposes, put the basic shapes and text boxes in to create my layout, and implement a colour scheme (usually inspired by something I've seen on Dribbble or in another viz, and followed by a significant amount of time tinkering until I'm happy with it). So this part of the process will look something along the lines of this image below:



Obviously I've reverse engineered this example from the final version so you're missing several stages of resizing everything, playing around with drop shadow on the chart boxes, adding a gradient to the background blue to break it up a bit, making the background line up perfectly with the 50% mark on the final charts – but you get the idea.

And then from there, it's writing the text, putting in the details on the chart backgrounds (leaving enough padding around the elements to look uncluttered, whilst still maintaining consistent alignment), exporting the final background image and buttons from Figma, and then importing into Tableau:



Easy as that! The result is quite a nice, modern, professional looking viz without doing anything complicated at all. The focus is just on, as mentioned in the earlier question about design tips, consistent alignment, use of whitespace, and using a nice colour scheme. And whilst this is quite a simple example, I'll apply the same sort of design process to the more complicated vizzes as well, just with a lot of trial and error along the way.

CJ: What does 2021 have in store for you?

JH: I do plan on continuing to work on my design skills, but I also really want to get much more proficient in using Tableau. So lots of reading blog posts and watching YouTube tutorials over the next few months I'd imagine.

On my to-do list is learning how to build more technically challenging visualisations, figuring out what the hype is about tiled layouts as opposed to floating, experimenting more with mobile design, and getting better at doing my data prep in Tableau.

In addition to that, I'd like to follow your lead CJ and get a blog up and running to give something back to this amazing community. I'm not sure I'd be able to advise much on the technicalities of building cool vizzes like you do, but something about design in data would really interest me and hopefully be something a little bit different.

CJ Round Up: Josh alludes to finding passion in what you are doing at the start of the blog. If you don't find love in what you are creating, it'll show in your dashboards! Tableau is, and is meant to be fun. Enjoy the process.

It was interesting to hear Josh is a PowerBI'er (If I can call it that?) in his day-to-day. PowerBI is something fairly new to me, however I've been loving the #WorkoutWednesday's. It's great to see people in the community really experiment with other tools.

Josh rightly mentions authors in the community who's impact on design in Tableau has been unparalleled. I wanted to follow up and recognise a few more beautiful designs from authors in the community.

Design seems like a bit of a tough one at times in Tableau. We see more and more people turn to using multiple products to produce an eye-catching visualisation. If you want to see how data and art can be blended better outside of Tableau some of my favourite people to follow for inspiration are: **Bo Platinga**,

Robert Janezic, and **Matt Miller**. Check them out and you'll know why I am in awe of what they produce.

Here are some Tableau Authors with some great visualisations:

Patrick Sarsfield (USA) – Check out Patrick's **Anthony Bourdain's Travel #VOTD**. To get images and data to compliment each other, is hard to do in a visualisation sometimes, as odd as that may sound? Patrick has found the perfect balance. I love his use of colour against the dark map.

Alicia Gamez Belmonte (France)- Alice recent "**Dance – the most common injuries**" really blew me away. It's rare you come across the polygon technique being used. It looks so simple on the surface but to create the shapes can be a pain! I'd recommend using this "**Wrestling with Tableau Polygons blog**", by Darcy Vance if you want to emulate the style of this viz. Keep up the fantastic work Alice.

Kimly Scott (Australia) – Kimly has constantly produced aesthetically great visualisations. As a huge fan of radial vizzes, i really dig her **Climate Change Makeover Monday** and her **KeepSake map template**. I love the way she has experimented with different design styles and colour palettes. What a great portfolio.

Neil Richards (UK) – Okay this one is a little obvious, but if you haven't seen Neil's vizzes you've been seriously missing out. He sports a cracking portfolio of over 290 vizzes. My favourites include recents: **Number ones of the 1980's**, **Premier League Profiles**, as well as **Contraception Choice for Women**.

Bold Batdorj (Australia) – This man is three for three when it comes to vizzes I like. A relatively small portfolio but can't wait to see how this grows. Fantastic. Check out his interpretation of **US public debt** here.

David Krupp (USA) – Check out **Women Make Gains in Parliament Around the World**, and **Pew Research Survey Design Poster**. The poster / website design feel to these is fantastic. David's work puts real emphasis on how to excel at letting your visualisation breathe. Long form vizzes are also hard to master in terms of alignment.... Nice one David.

Aparna Shastry (India) – I adore her **Space Exploration** visualisation. Mobile visualisations are hard enough at the best of times! Credit to **Sarah** for running an **#IronQuest** on it last year. What makes this visualisation so good is the clear attention put into its functionality, space typeface and cool use of vectors.

Sifeng Zhu (China) – The **restaurants in Shanghai** viz is a thing of beauty. I love the radial map, as well as the fading gradient bars. This viz has everything, from nice framing, colour, and readability.

Krishma Shah (USA) recently made a great visualisation using the Canva design tool, an alternative to Figma. You can read all about it on **Rajavel's blog**. Thanks for sharing this insight with us Krishna, awesome design!

If you have any others that you have thought are particularly great why not tag them in the replies? That way I'll know you managed to get to the end of the blog post too.



Finally, this has been my blog views as of the end of January, by country. (WordPress has some cool stats features) Nature of the beast means I end up interacting day to day with predominantly UK, (& US folk). A goal of mine is to get a viewer from every corner of the earth, even if it's just one. But with this comes promoting talent from all corners of the earth too. So, Let's discover talent together!

Thanks as always to Josh for his time, I can't wait to see that Blog come to fruition. Finally, March's "**What's Good?**" will be on Women In Data, coinciding with International Women's Day on the 8th! Got something creative planned.

LOGGING OFF

CJ

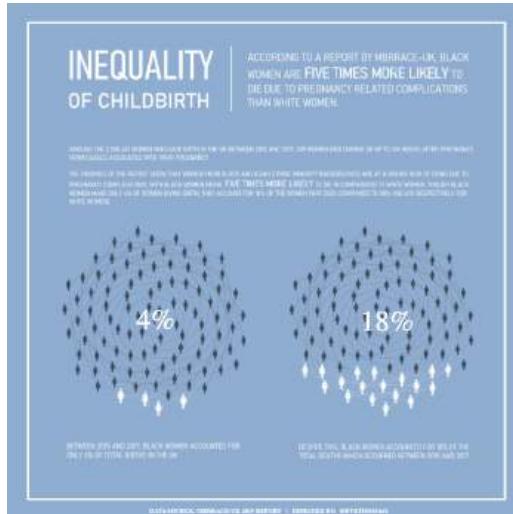
A CONVERSATION WITH EVE THOMAS

Welcome to the "**What's Good?**" blog. The aim is to run one of these a month. I'll be asking (*begging*) people

to come showcase some of the fantastic stuff they are doing in the world of data. Predominantly these will be Tableau focussed to start, but I hope to get some input in later months that explore topics further afield. Each month will have a tailored theme, this months is Initiatives and Community.

I am delighted **Eve Thomas** accepted to be the guinea pig for the first trial run. I was fortunate enough to sit alongside Eve in the same cohort of Tableau Featured Authors in October of 2020. It is coincidentally Eve's birthday today (25th January), so happy birthday Eve! Eve can be found on [Twitter](#) and [Tableau](#).

Eve has been a fantastic member of the community and in the past year and co-leads on the #DiversityInData (with Autumn) and #VizToEducate (with Vinodh) initiative. One of her recent favourite visualisations of mine was her #DiversityInData The Inequality Of Childbirth visualisation. I love the contrast of the white and black as well as the additional touch of the lines interlinking each individual.



Now onto some questions!

CJ: You've been part of the community for a few years now, how has the community changed? Is there anything that particularly keeps you here?

Eve: I think the online community has really grown over the last year which is fantastic. Overall I've seen more creativity within the data community that has really inspired me in my own work.

The people are what keep me here. Over the last year, despite a worldwide pandemic and what feels like constant lockdown in the UK, through the community I've met friends from all over the world – something I know wouldn't have been possible if I wasn't a part of it. I love the fact that everyone is so supportive – during lockdown it's felt as though I have had an extra support bubble, which has been really wonderful.

I also enjoy participating in community run initiatives such as #SportsVizSunday, #Ironquest, and #MakeoverMonday – It's a great way for me to map my improvement and continue learning week on week.

Sam Parson's "What's going on Data" is my go-to when I'm trying to figure out my next viz! It's a great resource to tap into if you're looking to find some inspiration as it lists the latest topics for all of the recognisable initiatives within the community.

CJ: What impact has Tableau Public had on your career and journey in data?

Eve: I don't come from a data background, having previously worked in Teaching and HR/Recruitment and so for me, Tableau public was the springboard, which enabled me to launch my career in data. It also led me to the Tableau online community which played an integral role in helping me build on my skills and improve via feedback. This enabled me to apply for my current role as a data visualisation consultant with The Information Lab – It's no exaggeration to say that I wouldn't be where I am today in my career without Tableau Public!

Coming from a teaching background, teaching tableau is something I really enjoy both in my current role and in my spare time. One of my favourite aspects of Tableau Public is that the community can use it as a learning platform. When I was first discovered Tableau, one of the main ways I learnt was to download complicated workbooks from other Authors, take them apart, and figure out how they worked. For that reason, I love it when people are inspired by my own work and use it to improve in Tableau – for me it's a way to give back to the community that has taught me so much!

Becoming a Tableau Featured Author in 2020 definitely had a big impact. Not only did it give me more confidence in my own work, but it also helped me to connect with more people within the tableau community. Becoming a featured author has also introduced me to other projects such as #Vizconnect which I have been able to get involved with.

CJ: You've got 4 VOTD's – what do you think makes a dashboard stand out?

Eve: It's interesting for me looking back at my previous VOTDs, just because they are all completely different both in terms of topic and design-style. I think the commonality is that in each case I was passionate about what I was vizzing and I had a lot of fun creating them. I think when you have a passion for something and you enjoy doing it, that passion and joy is reflected in your work and will be felt by others.

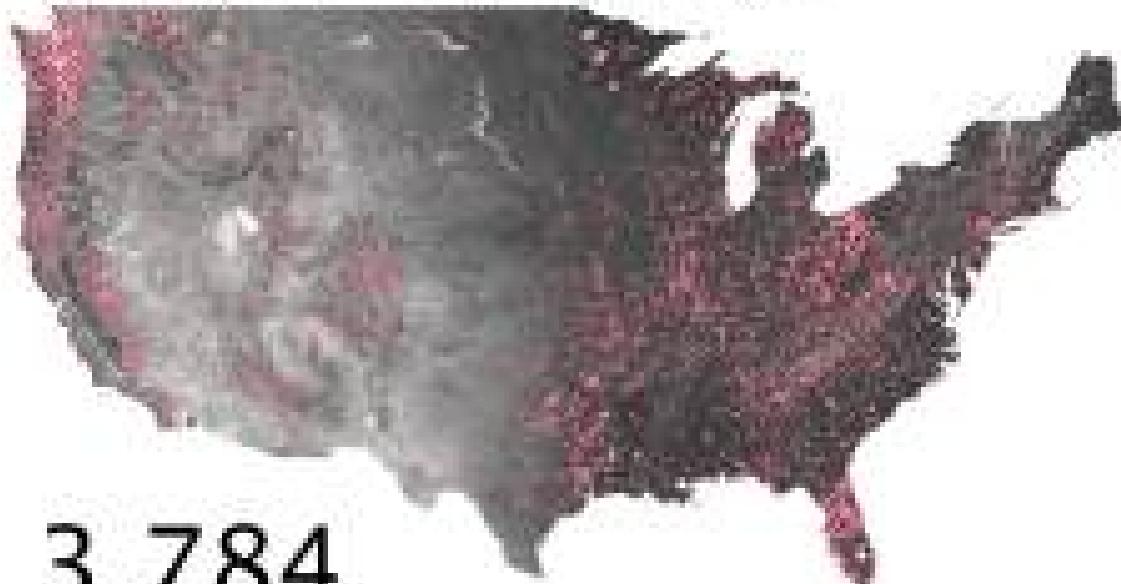


BIGFOOT SIGHTINGS

In mid-September 2009 or 2010, the "BigFoot" first escaped into the public consciousness, starting in Andrew Colvin of the Humboldt Times. Highlighting a few, if journalistic acceptable, tales from a recent alleged sighting in northern California, with "discovered cryptidously large humanoid footprints that were a massive 36 inches long, Dennis Johnson wrote, "Maggie put down a footprint at the Abundantable dispensary of the Hibernaplex." The giant Northern California moniker was the first to give the mysterious animal that made the prints its nickname – "BigFoot" – and the name stuck.

About one-third of all reported BigFoot sightings are located in the Pacific Northwest (though no official inventory exists, the most current consensus includes the Canadian province of British Columbia, and the US States of Idaho, Oregon, and Washington) with the remaining reports spread throughout the rest of North America. Most reports are eyewitness sightings or theories, even the most government-like was still BigFoot.

The debate over the existence of BigFoot continues to rage on like wildfire, and BigFoot has been reported as the very leading environmental concern of preoccupation in American culture.



3,784

Sightings were recorded in the US between Jan 1990 and Dec 2010.



(Click on the
background to
learn about 30
of the most
Famous BigFoot



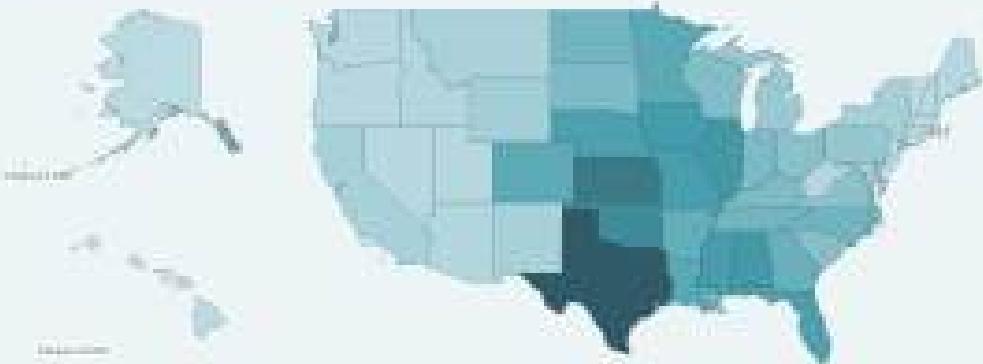
—

TORNADO

A tornado is a violently rotating column of air that extends from a thunderstorm to the ground. Every year in the United States, tornadoes do about \$500 million in damage and kill about 70 people on average. The most violent tornadoes are class F5 supercells, large thunderstorms that form while already in rotation. About one in a thousand storms becomes a supercell, and one in five of its supercells spawns off a tornado.

Where do tornadoes occur?

Tornadoes have been reported in all 50 U.S. states, territories, and other locations, leading to total losses over the United States during 1991–2010. The map shows estimated tornadoes per year from 1991 to 2010. The inset shows data for 1991 and the first seven months of 2011.



Are the number of tornadoes increasing?

Source: NOAA National Climatic Data Center

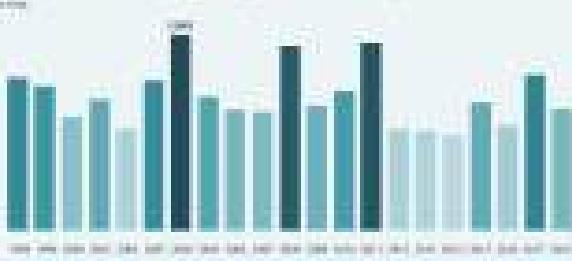
Although the number of tornadoes seems to have increased since 1950, there hasn't been a consistent increase. It may not even be safe to conclude that an increase in higher-order events like龙卷风 is related to the increase in low-order events. Tornadoes are measured by different methods at different times, which makes it hard to compare data sets. For example, the way we detect tornadoes has changed over time. In the 1950s, people relied mostly on reports from people who saw them. Now, people rely mostly on radar and satellite imagery.



When do tornadoes occur?

In 1991, David Ringerink, then the longest-standing editor of *Severe Weather News*, hypothesized that tornadoes were seasonal, peaking later during the summer. While some studies support this hypothesis, others find no seasonal pattern. One study found that the peak in the United States occurs in April, while another found that the peak occurs in June. Another study found that the peak occurs in May, while another found that the peak occurs in July. These results are likely due to differences in how each study defines a "tornado."

Source: NOAA National Climatic Data Center
Note: The bar chart shows a seasonal trend, with the highest frequency occurring in spring and early summer, followed by a decline in summer and early fall, and then a rise again in autumn and winter. The data is based on the National Climatic Data Center's monthly climate report.



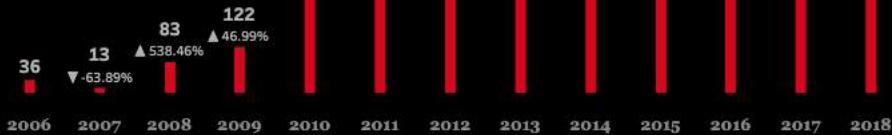
RHINO POACHING



SOUTH AFRICA

"While this may look like progress on paper, it's overshadowed by the fact that rhino populations are still in critical danger ... A small drop in yearly poaching statistics doesn't tip the scales against the imminent threat of extinction."

~ Jimmiel Mandima of the Nairobi-based African Wildlife Foundation



Designed by Eve Thomas | Data Source: Department of Environmental Affairs - www.savetherhino.org - National Geographic



STOP AND SEARCH

LONDON MET AND CITY OF LONDON POLICE STOP AND SEARCH STATS

Between Jan - May 2020, **39.1%** of stop and searches carried by the London Met and City of London police forces were carried out on **black people**. This is **highly disproportionate** when compared to the **black** population in London, which currently stands at only **13.3%** >2011 United Kingdom census

% Ethnicity Split

As defined by the arresting officer

4.6%

Other

16.9%

Asian

37.2%

White

39.1%

Black

% Split Outcome:

stop and search of people of
Black ethnicity

3.4%

Caution, Penalty Notice or Summons

6.2%

Community resolution

11.0%

Arrest

79.5%

No further action disposal

Of the total number of **black people** who were stopped and searched, **79.5%** ended with a no further action disposal. Only **11%** ended in arrest - **0.4% LOWER** than **white people** over the same period.

Designed by: EveThomas1
Data Source: data.police.uk/data/

Some advice for those just getting started or wanting to improve...

- Have a clear goal in mind – it is good to know roughly where you are going when you start a new project – even if this is something as simple as wanting to answer a question about your data/ highlighting a particular trend
- Research your topic. This is so important! Are you using appropriate language? Are you using the correct units/ currency – have you added enough context for the user? Making sure you have these points nailed will really take your viz to the next level!
- Always ask for feedback – Don't be afraid to request feedback or adopt feedback given to you by others in the community. In my opinion this is definitely one of the best ways you can improve in Tableau – I will discuss this in more detail later on!
- It's okay to take a break – If you start getting stressed then please take a step back – you won't be able to create your best work if you aren't able to enjoy the creative process
- And lastly (and most importantly!) celebrate the small wins – it's not all about getting #VOTDs!! Celebrate nailing that chart, completing that tough #MakeoverMonday and make sure you don't forget to acknowledge your own improvement!

CJ: What have you seen in the community recently that you like?

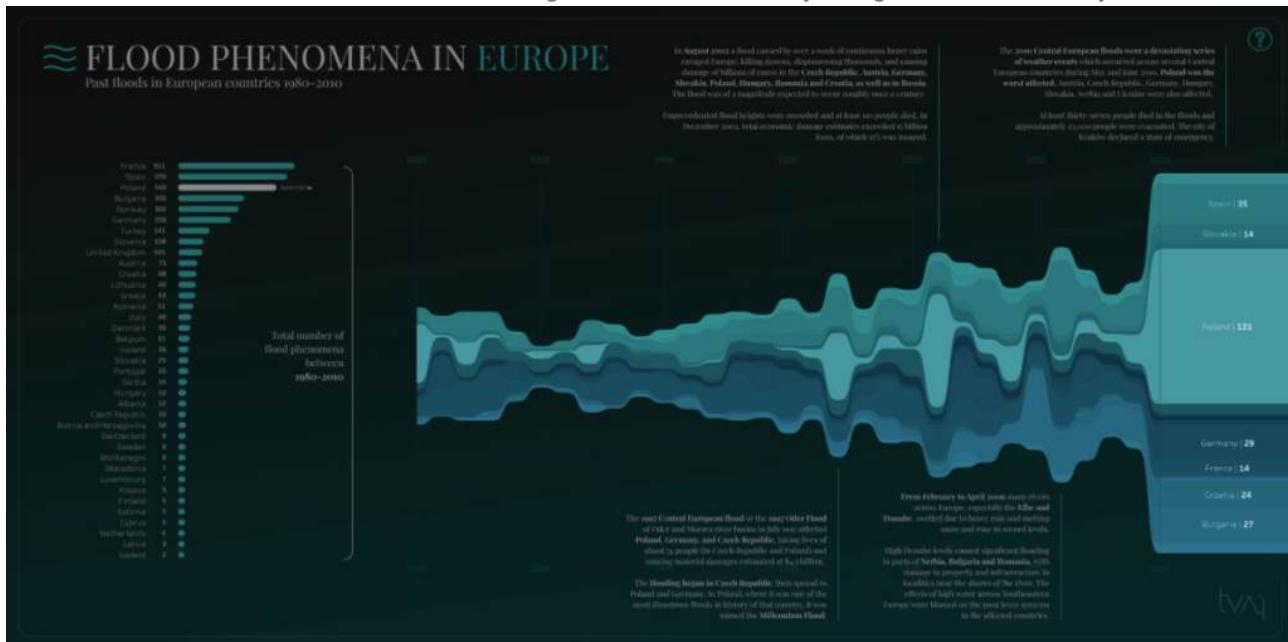
Eve: I like seeing new community events/ projects. One of my favourites this year was the **Christmas card exchange** organised by **Autumn** and **Michelle**. It was lovely to reach out to the online community in a different way. For me receiving a Christmas card with a hand-written message seemed so much more personal somehow, and I think it brought joy to a lot of people who perhaps were unable to spend Christmas as they had originally planned.

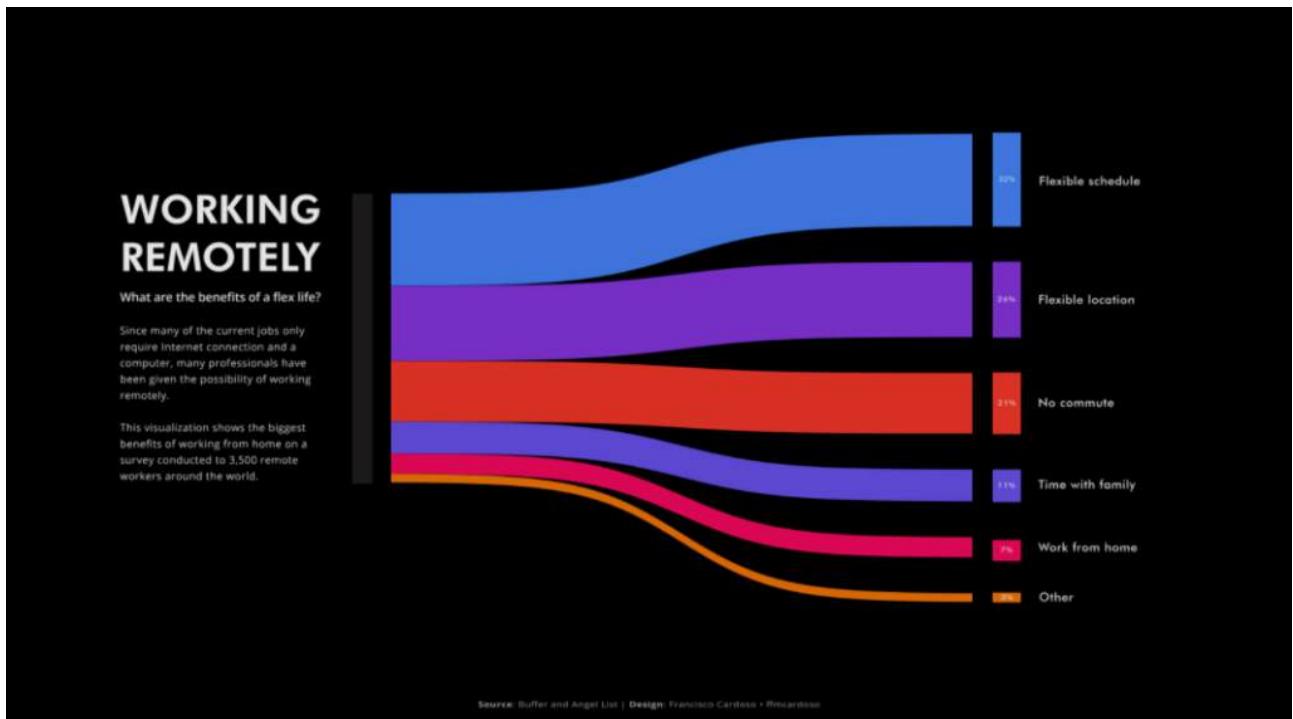
CJ: You've got such a range of topics and visualisation styles on your profile, what do you use for inspiration?

It sounds so cliché but usually I'm just inspired by the world around me. Newspapers, articles, magazines ... discussions in the office – also films. Something will usually spark and I'll be off searching for data – if it exists then I'll viz it! I like to experiment with different styles – I've recently started to try and be more adventurous with colour palettes (deviating from my usual black backgrounds!). I also often take inspiration from members of the community. I'm not ashamed to admit that I am a self-professed CJ fan – not only in terms of his epic portfolio, but also for his innovation in chart design. His new blog in particular has really encouraged me to step outside of my comfort zone and build on my tableau charting skills.

Francisco Cardoso's is another inspiration within the community – his **Working Remotely** viz is one of my all-time favourites! The bright colours of the Sankey against the black background, contrast beautifully with the minimal white text to create impact. For me Francisco's classic style is clean, simple and so effective.

Tamas Varga is another source of inspiration that I just had to include in this list. His innovative, striking designs always leave me in awe. One of my favourites was his **Flood Phenomena** viz. I love how the use of a steam chart here mimics a river bursting its banks. Beautifully designed and beautifully executed.





CJ: What were your favourite visualisations of 2020?

Naresh Suglani is an author who I only just recently discovered. His viz **Earthquakes recorded between 1898 to 2019** for #Viz2educate was an example of impressive slick design. He has produced some incredible work over the past year which in my opinion haven't yet received enough recognition. I know that the teachers and students of #Viz2educate are going to be as blown away as I am.

I mean of course this work of art from **Sam Parsons** had to make this list – there is nothing that I don't love about his **VizForSocialGood** viz. The attention to detail is incredible and I particularly love the 'how to read' section.

Steven Shoemaker created one of the most beautiful maps I've seen created in Tableau – it tells a compelling story. Not just of city buildings and roads, but of a city of the people who are working, living and co-existing together. I love how the beauty of the map serves as a stark contrast to the underlying story of segregation within a city that is celebrated for its diversity (named the fifth most diverse city in the U.S. in 2018)

Damola Ladipo is another author whom I've only discovered in the last month or so. He's already produced some incredible work. His **Food Apartheid in Washington DC** viz was nothing short of outstanding. Beautifully designed, it highlights how income, race, and geography impact social and racial inequalities in the DC food system. A WORK OF ART.

Lastly I couldn't not pick one viz from #Diversityindata – **Chimdi Nwosu's Fortune 500 Women CEOs** was one that really stood out to me. The layout of this viz makes the data sing... also anyone who can elevate the humble waffle chart to this level can't not make this list!

FOOD APARTHEID IN WASHINGTON DC

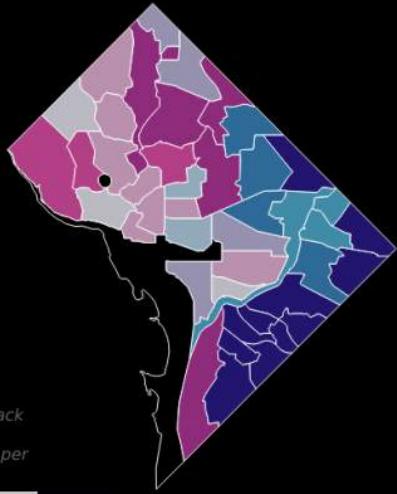
A look at the food system of income, race, and geography

Select an analysis:

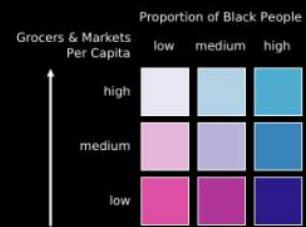
Race & Stores Race & Income

Stores & Income Geography

PROPORTION OF BLACK
POPULATION
&
GROCERY STORES and
FARMERS MARKETS PER
CAPITA



This map shows the proportion of black people compared to the number of grocery stores and farmers markets per capita in neighborhood clusters.



Food apartheid looks at the whole food system and takes into account **income**, **race**, and **geography**. It encompasses the social and racial inequalities that are at play in our food system. It recognizes that the systems in place are what make it difficult for people living in low-income areas to access fresh, healthy food.

- The Green Urban Lunchbox

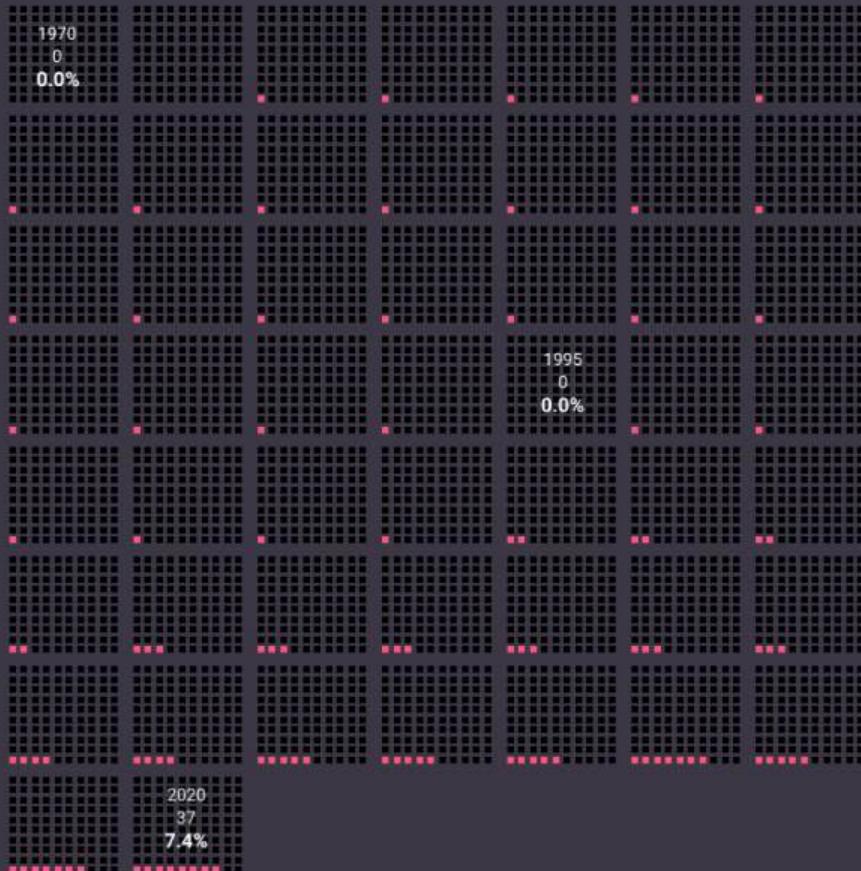
© 2021 Mapbox © OpenStreetMap

Data Source: Open Data DC, ArcGIS, Greater DC, DC Fiscal Policy Institute, DC School Reform, Investopia | Designed By: Adedamola Ladipo

FORTUNE 500 WOMEN CEO'S

1970 - 2020

The Fortune 500 is an annual ranking of America's largest companies by total revenue. In 1970, there was no female Fortune 500 CEO. Over time, very few women have been given opportunities to lead, and in 1995, the number of female CEO's dropped back to zero for the first time in a while. Though there has been an increase in female CEO's since then, only 7.4% of Fortune 500 CEO's were women in 2020.



Datasource: Fortune.com | Design: Chimdi Nwosu @menscuriosa

Dallas, in Color

By: Steven Schmid

A city is not just a collection of buildings. It's not just a criss-crossed network of roads. It's something more - it's the people. People of different ethnicities living together and moving towards a common purpose.

Dallas is a beautiful city made up of many people - you can find diversity in food, culture, and thought. This map showcases just one of these dimensions - ethnicity - and in that dimension you can see that even a city like Dallas moves towards separation - rather than integration.

Each dot represents one person of various ethnicities.

Click the legend to highlight a specific ethnicity.



From January 2017, Vic For Social Good has helped 29 organisations by connecting them with data professionals - the 'volunteers'

**Worldwide
HELP PROVIDED**

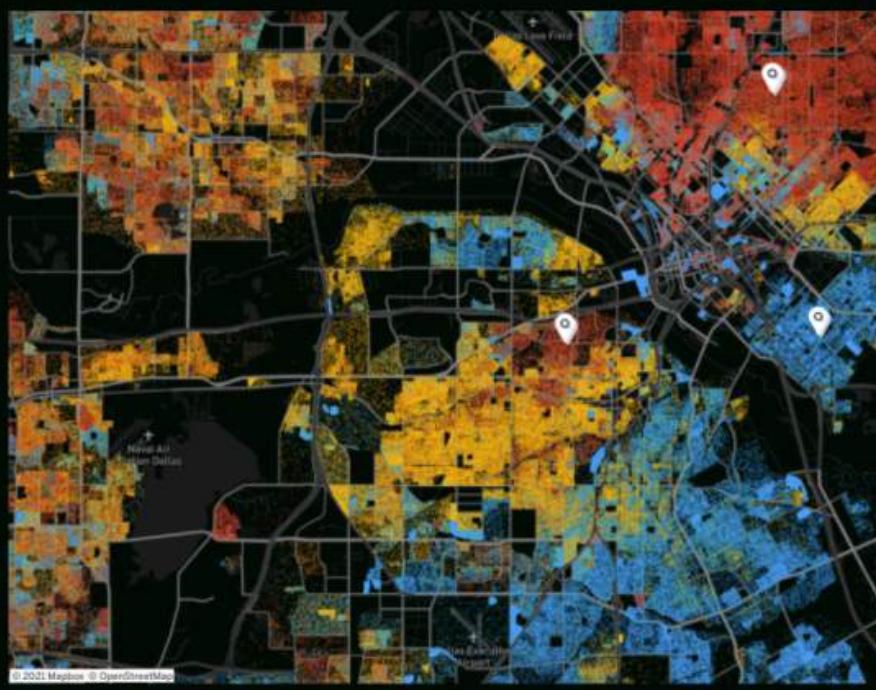
Via For Social Good has joined up with projects run in 19 different countries across 5 continents. Helping to tell the stories of those

VISG has become a centre point for those wanting to help the featured projects.

In the last 4 years,
the volunteers have
produced 523
visualisations
impactful in their
storytelling.

Silver

From visuals produced through Tableau Public in the last 4 years, this number provides a small indication to the level of reach of the project.



Viz For Social Good

Four years of empowering non-profits through data stories

29 NON-PROFITS
From January 2017, Viz For Social Good has helped 29 organisations by connecting them with data professionals - the volunteers' Worldwide HELP PROVIDED

327 VOLUNTEERS GIVING THEIR TIME

Viz For Social Good (VFSG) works by calling on data professionals to volunteer and give their expertise and time to produce visualisations that tell the project's provided data. With over 4,000 registered volunteers and 327 within this dataset, VFSG has become a centre point for those wanting to help the featured projects.

521 VISUALS

In the last 4 years, the volunteers have produced 521 visualisations, many of which are impactful in their storytelling.

Silver 321K TABLEAU VIEWS*

In 2017 Viz For Social Good was recognised for their work with a silver award for Community Impact at the Information is Beautiful Awards.

2017 History of submission 2021

INNER CIRCLE
Starting at 0 o'clock, each circle represents an individual project. Size is proportional to the number of volunteers.

CANDY FLOSS
The network of crossing lines between a project and the volunteers they've recruited to that project.

DUAL CIRCLE
Each of the dual circles represent the work done by an individual volunteer. The circles will connect when a volunteer's project is selected.

OUTER RING
The outer ring is made of a series of broken lines connecting people to a chart. These lines indicate those people that have worked with VFSG more than once.

BARS & LINES
Lies far outwards from the radial lines, representing a single month and the size of the bar is how many "views" the work has had on Tableau Public.

* Views and follower stats are current as of Fall Semester 2021.

CREATED Submitted Projects

Open the control

EARTHQUAKES

RECORDED SINCE 1890 | BY MAGNITUDE AND LOCATION

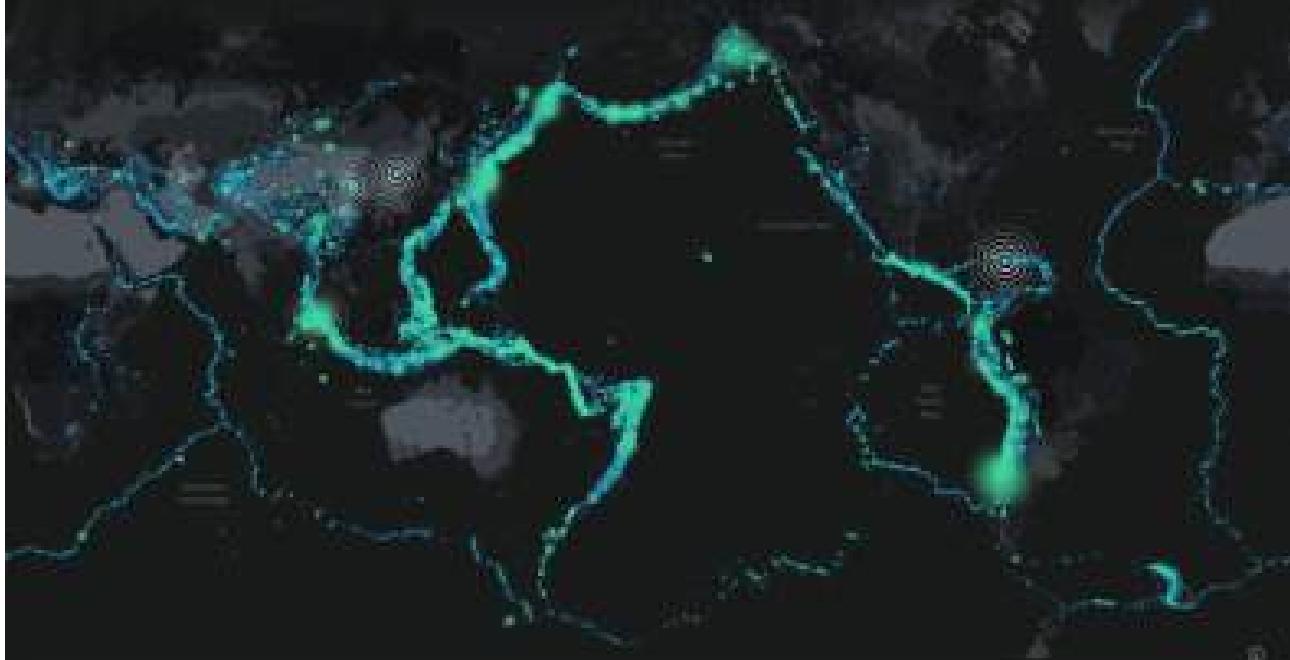
NUMBER OF EARTHQUAKES
432,523

NUMBER OF DEATHS
18140

NUMBER OF INJURIES
2.21M

NUMBER OF HOMES DESTROYED
13.6M

NUMBER OF CITIES DESTROYED
139



DEFINITION OF EARTHQUAKE

An earthquake is a sudden, rapid shaking of the ground caused by the movement of tectonic plates beneath the earth's surface.

DEFINITION OF TSUNAMI

A tsunami is a series of waves caused by the displacement of a large volume of water, typically by an underwater earthquake or landslide.

DEFINITION OF VOLCANO

A volcano is a vent or fissure through which molten rock, ash, and gases erupt onto the surface of the Earth.

DEFINITION OF METEORITE

A meteorite is a piece of rock or metal from outer space that has landed on the Earth's surface.

NUMBER OF EARTHQUAKES BY DEPTH

The following table shows the number of earthquakes recorded since 1890, categorized by depth:

Depth Range	Number of Earthquakes
0-10 km	120,000
10-20 km	80,000
20-30 km	60,000
30-40 km	40,000
40-50 km	30,000
50-60 km	20,000
60-70 km	15,000
70-80 km	10,000
80-90 km	8,000
90-100 km	5,000
100-110 km	3,000
110-120 km	2,000
120-130 km	1,000
130-140 km	500
140-150 km	300
150-160 km	200
160-170 km	100
170-180 km	50
180-190 km	30
190-200 km	20
200-210 km	10
210-220 km	5
220-230 km	3
230-240 km	2
240-250 km	1
250-260 km	1
260-270 km	1
270-280 km	1
280-290 km	1
290-300 km	1
300-310 km	1
310-320 km	1
320-330 km	1
330-340 km	1
340-350 km	1
350-360 km	1
360-370 km	1
370-380 km	1
380-390 km	1
390-400 km	1
400-410 km	1
410-420 km	1
420-430 km	1
430-440 km	1
440-450 km	1
450-460 km	1
460-470 km	1
470-480 km	1
480-490 km	1
490-500 km	1
500-510 km	1
510-520 km	1
520-530 km	1
530-540 km	1
540-550 km	1
550-560 km	1
560-570 km	1
570-580 km	1
580-590 km	1
590-600 km	1
600-610 km	1
610-620 km	1
620-630 km	1
630-640 km	1
640-650 km	1
650-660 km	1
660-670 km	1
670-680 km	1
680-690 km	1
690-700 km	1
700-710 km	1
710-720 km	1
720-730 km	1
730-740 km	1
740-750 km	1
750-760 km	1
760-770 km	1
770-780 km	1
780-790 km	1
790-800 km	1
800-810 km	1
810-820 km	1
820-830 km	1
830-840 km	1
840-850 km	1
850-860 km	1
860-870 km	1
870-880 km	1
880-890 km	1
890-900 km	1
900-910 km	1
910-920 km	1
920-930 km	1
930-940 km	1
940-950 km	1
950-960 km	1
960-970 km	1
970-980 km	1
980-990 km	1
990-1000 km	1

NUMBER OF TSUNAMIS

The following table shows the number of tsunamis recorded since 1890, categorized by cause:

NUMBER OF VOLCANOES

The following table shows the number of volcanoes recorded since 1890, categorized by type:

NUMBER OF METEORITES

The following table shows the number of meteorites recorded since 1890, categorized by size:

NUMBER OF EARTHQUAKES BY DEPTH

The following table shows the number of earthquakes recorded since 1890, categorized by depth:

Depth Range	Number of Earthquakes
0-10 km	120,000
10-20 km	80,000
20-30 km	60,000
30-40 km	40,000
40-50 km	30,000
50-60 km	20,000
60-70 km	15,000
70-80 km	10,000
80-90 km	8,000
90-100 km	5,000
100-110 km	3,000
110-120 km	2,000
120-130 km	1,000
130-140 km	500
140-150 km	300
150-160 km	200
160-170 km	100
170-180 km	50
180-190 km	30
190-200 km	20
200-210 km	10
210-220 km	5
220-230 km	3
230-240 km	2
240-250 km	1
250-260 km	1
260-270 km	1
270-280 km	1
280-290 km	1
290-300 km	1
300-310 km	1
310-320 km	1
320-330 km	1
330-340 km	1
340-350 km	1
350-360 km	1
360-370 km	1
370-380 km	1
380-390 km	1
390-400 km	1
400-410 km	1
410-420 km	1
420-430 km	1
430-440 km	1
440-450 km	1
450-460 km	1
460-470 km	1
470-480 km	1
480-490 km	1
490-500 km	1
500-510 km	1
510-520 km	1
520-530 km	1
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660-670 km	1
670-680 km	1
680-690 km	1
690-700 km	1
700-710 km	1
710-720 km	1
720-730 km	1
730-740 km	1
740-750 km	1
750-760 km	1
760-770 km	1
770-780 km	1
780-790 km	1
790-800 km	1
800-810 km	1
810-820 km	1
820-830 km	1
830-840 km	1
840-850 km	1
850-860 km	1
860-870 km	1
870-880 km	1
880-890 km	1
890-900 km	1
900-910 km	1
910-920 km	1
920-930 km	1
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940-950 km	1
950-960 km	1
960-970 km	1
970-980 km	1
980-990 km	1
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NUMBER OF TSUNAMIS

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The following table shows the number of meteorites recorded since 1890, categorized by size:



CJ: Do you have a particular topic you love to visualise the most?

Eve: I like to visualize topics that promote awareness.

Particularly after the events of this year, I have found myself wanting to do more when it comes to helping support underrepresented groups. I think this is what led both **Autumn** and I to start an initiative that will hopefully help us to do just that, with the help of the wider data community.

CJ: I see you've just released your new initiative – what are you most looking forward to seeing from it?

Eve: **Autumn** and I are so excited about the launch of #DiversityinData. Personally, I feel that recent events in the USA and across the world have shown us that promoting awareness and equality is more important than ever, and that this initiative is something which is really needed within the community.

For anyone who has missed it, #DiversityinData is an initiative that is centred on data, equity, diversity and awareness. Each month we provide the community with data that we hope you will help us to visualize.

This month's challenge involves 3 different **datasets**, which we would love you to help us visualize:

Gender equality within the Fortune 500 CEOs since 1970
Inequality in HR – survey data from 108 white and 110 ethnic minority HR professionals working in the UK
Inequality of Childbirth – looking at maternal mortality in the UK

I am looking forward to the community participating with us and helping us spread much needed awareness. All three datasets are very simple to work with, which we hope will encourage people of all levels within the data community to take part! I believe that it's so important that everyone has a voice and that their stories are being spoken about in the open. I hope this initiative will go some way in helping to facilitate people tell those stories.

Give us a follow on [Twitter](#) for regular updates and the latest datasets!

CJ: You just finished your round up of geography as part of #VizToEducate, it looked like a massive success. Was there anything that particularly stood out?

Eve: The range of submissions both in terms of subject matter and design was just fantastic – I feel like there is something there for students of every age. Think [Kevin Flerlage's](#) viz [the Lorax](#) was one that particularly stood out for me – in this visualisation Kevin uses one of Dr. Suess' best loved characters to discuss the devastating impact of deforestation on our planet. For me, this was a brilliant example of both storytelling and design, which engages and inspires both older and younger audiences alike (coming from a background in teaching, I can tell you that it's just as important to inspire the worlds teacher's as well as their students!). Another Viz that really stood out to me was [Petroleum Microbiology](#) by [Young Song](#). This viz genuinely looks like it has just jumped out of the coolest geography textbook ever – perfect for an education initiative! It's packed with information not only making it an ideal supporting resource for teachers to use alongside the set syllabus, but also ideal for those students who have limited access to expensive textbooks.



The LORAX

An environmental fable by Dr. Seuss



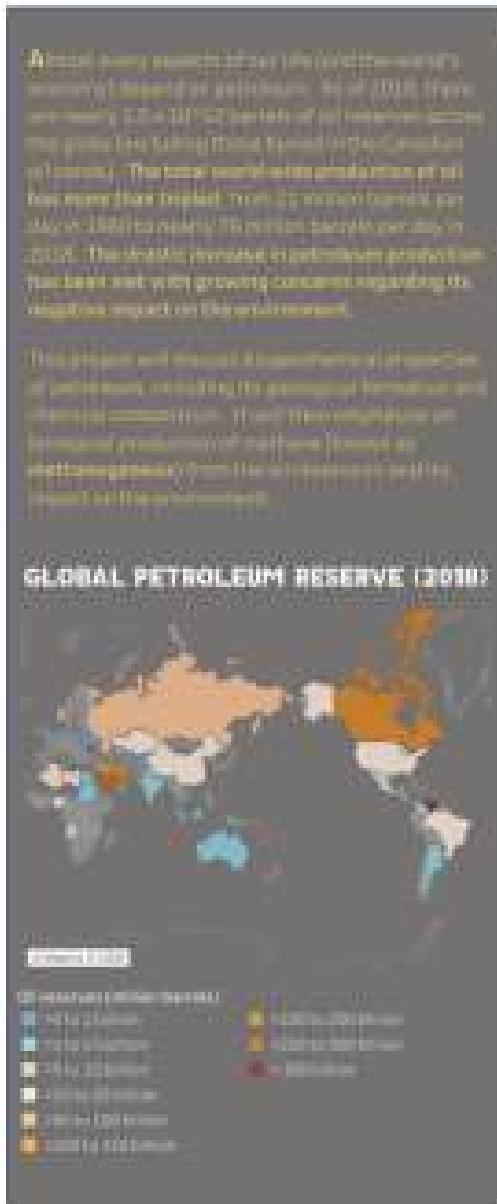
THE TREES



THE PAST



PETROLEUM MICROBIOLOGY

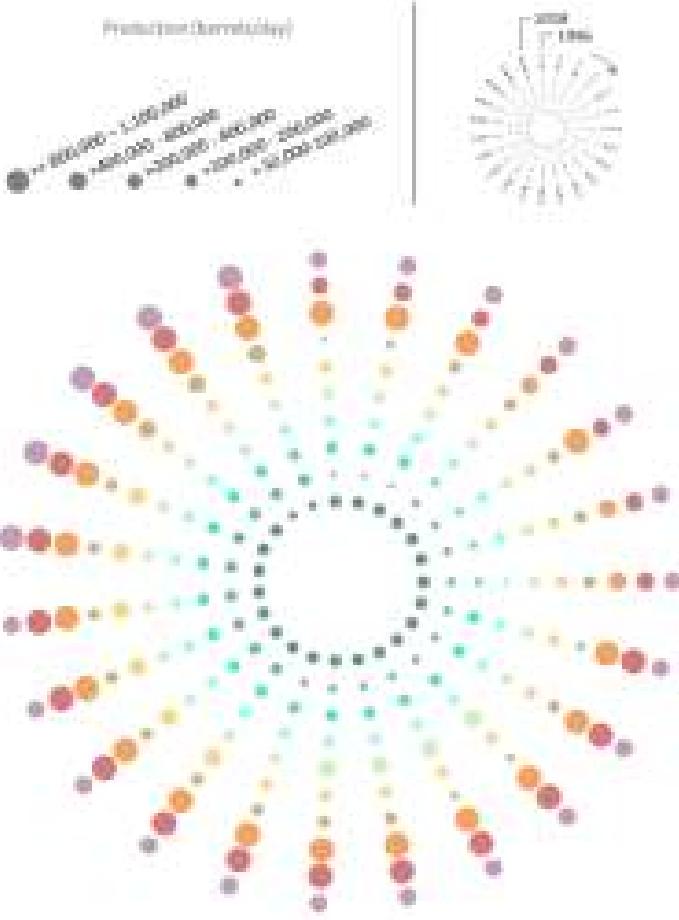


WORLD'S PETROLEUM PRODUCTION (1996–2018)

A summary of petroleum production from top ten^{*} OPEC member nations.

* Top ten producers in 2018

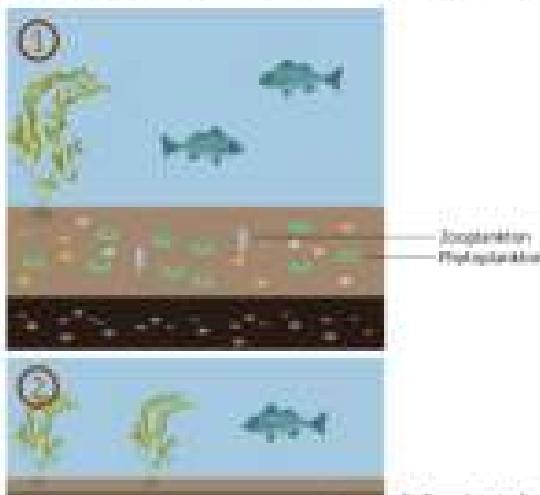
● USA ● Saudi Arabia ● China ● UAE ● Brazil
● Russia ● Iraq ● Iran ● Kuwait ● Mexico



THE ORIGIN OF OIL

Formation of petroleum began millions of years ago, when organic matter called plankton sank into the surface of the ocean sediments. Over time, these organic matters mixed with inorganic materials that entered the ocean by rivers. (Panel 1 of the figure on the right-hand side). This process has led to the formation of sedimentary rock. The sediment rock containing the organic matters is known as a shale (Panel 2 of the figure). Due to its location in the Earth's interior, the shale's temperature and pressure increased, transforming it into a material known as kerogen. If the temperatures of the kerogen are between 30 to 150 degrees Celsius, the transformation to oil and natural gas (Panel 3 on the figure). Any temperature greater than 200 degrees Celsius transforms the kerogen into natural gas only. The oil with a remained form is known as crude oil. There are many chemical compounds that re-

FORMATION OF LIQUID ENERGY



CONTENTS OF CRUDE OIL

The main components of crude oil are carbon, hydrogen, sulfur, nitrogen

For those of you who don't know, #Viz2Educate is an initiative that focuses on creating a high-quality bank of educational resources for teachers worldwide. Our main goal is to create an online gallery of educational resources for teachers and students to access for free. For this month the topic is Zoology and we'd love for the community to get involved! Please check out our [website](#) for more details on how to take part.

CJ: You recently tweeted that you had 100's of hidden visualisations on your page, what process do you undergo when deciding a Viz being finished?

Eve: Aha I did tweet that didn't I!?

I have Hidden vizzes for a mixture of reasons. Sometimes I have an awesome idea for a viz which I start but can't quite finish – usually this is due to lack of data in the public domain. I keep them hidden just in case I come across that last piece of the data jigsaw that I need! Other times I just have too many ideas and so I'll make three versions of the same viz and pick my favourite to share with the community... The last reason (which is definitely the most common!) is I make something and in all honesty, it looked so much better in my head!

I think it's so important to be open to feedback – in my view it is one of the best ways you can improve. The reason I often post my amendments is mainly to map my own improvement for myself, but also to show others in the community that it's a positive thing to take on advice/feedback and learn from each other.

If you want to get some feedback on a viz but re unsure how then I would advise reaching out to the online community. One way you could do this would be by simply tweeting with the hashtags #DataFam and #Datafamfeedback – if you aren't quite ready to go public however you could also reach out to community members directly. This is something that I do often (I will now take this opportunity to say my heartfelt thanks and apologies to [Kevin Flerlage](#), [Adam Mico](#), [Sam Parsons](#), [Ghafar Shah](#) for my incessant feedback requests!)

CJ: Do you have any new visualisations in store for 2021?

Eve: I'm hoping to be putting out some awesome vizzes for #Viz2Educate and #DiversityinData – we have some really exciting collabs coming up with other community initiatives so watch this space!

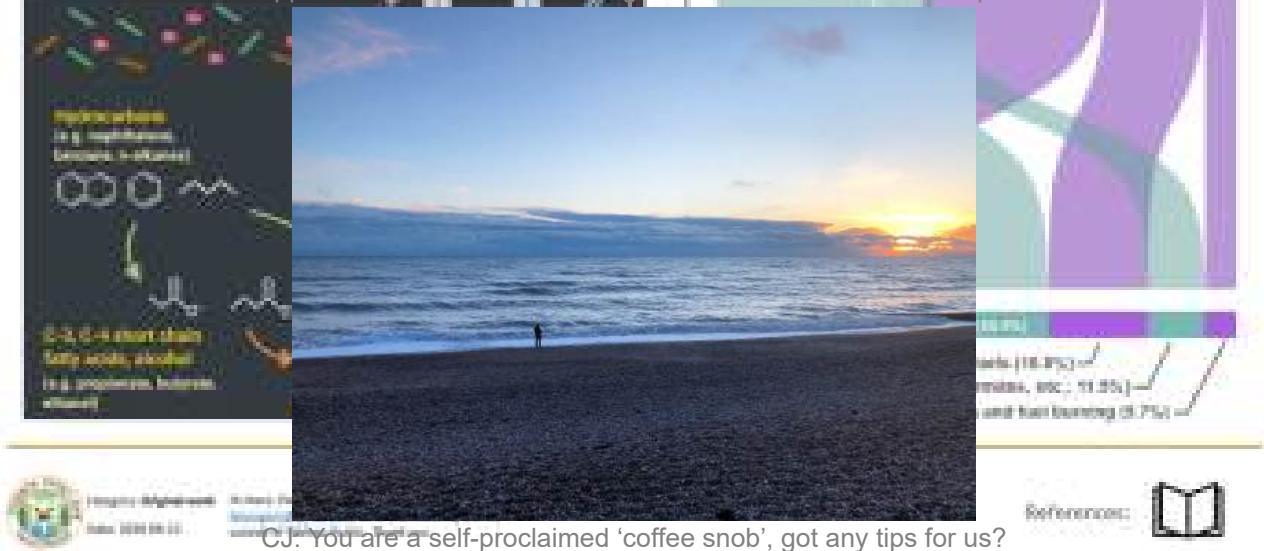
CJ: What do you do when you're not making vizzes?

Eve: When am I not making Vizzes?!

During lockdown I've been really careful about going out and so haven't been able to enjoy a lot of things I like doing outside of Tableau – for this reason I've been spending more time vizzing!

I like running when the weather is nice – particularly when I'm down in Brighton as I can run along the seafront! I also enjoy just walking around London and taking in the sights – sometimes it's really fun just being a tourist for the day and snapping some great shots. I love to ski when I get the opportunity.

I also enjoy art and music – when I'm home in Brighton I usually dust off the piano keys and then feel disappointed at how much I've forgotten! I also like to draw and paint.



CJ: You are a self-proclaimed 'coffee snob', got any tips for us?

Eve: Okay so coffee is one of those things that I spend far too much money on. I calculated that whilst training at DataSchoolUK I spent around £9.00 A DAY on coffee... that's almost 5 cocktails a week!

That first taste of coffee on my tongue is the highlight of my morning.

Making my coffee black, no sugar – fancy syrups have no place where coffee is concerned in my view. I also very much judge a person by how they take their coffee. You have been warned!

CJ: A few quick fire questions to end:

Iced Coffee or Hot Coffee? Hot – black – no sugar – preferably extra large

Winter or Summer? I'm a keen skier so I'm going to have to say winter....

TV Shows or Movies? Bridgerton is my latest obsession. Where is my duke at!?

Twitter or LinkedIn? Ooooooooompa have to say Twitter I think

Save or Spend? Not that we have a massive amount of choice right now, but try to strike a balance each month and save as much as I spend.

Early bird or night owl? Definitely a Night Owl. – If I manage to switch off Tableau before Midnight then we're doing well!

Dog or cat? Crazy cat lady and proud!

CJ: Eve will hate the fact that my favourite drink is a Caramel Iced Latte. I did laugh how she converted her expenditure on coffees whilst training at the data school into the equivalent of cocktails. On a more serious note, Eve alludes to VOTD not being the be all and end all of success. People should find comfort in the fact they are better today than they were yesterday! I think that is a wonderful thing. Once again, a massive thank you to Eve and make sure to check out some of the cool initiatives going on throughout the year!

Finally, February's "Whats Good?" will be on the topic of design! I am super excited for it. Stay tuned because my organisational skills aren't quite at the point of knowing which week they get released on.

Logging OFF.

CJ

DRAWING CURVES ON A MAP: RADIAL CONCEPT

This blog outlines steps as to how to make a radial map. The original data is attached within the blog.



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CJ MAYES

Hello! Back again with a visualisation that can only be described as 'marmite' best practice. This time, looking at curved lines on a map. Through endless scrolling on Pinterest, mixed with a clear love for radial

vizzes, I was trying to piece together a few ideas before remembering the perfect guest blog by **Wendy Shijia** on the **Flerlage Twins** site.

This blog will cover a run-through of how I created a recent “A night in Paris” visualisation. It is by far my least “favourited” visualisation on Tableau Public... seems marmite is less liked than I first thought!

Nonetheless, If you’d like to follow along, take a copy of my dataset from my repo. This is an adapted dataset of the original from **AirBnB**.

As a pre-requisite, do visit **Ken’s** fantastic blog on the concepts of data densification [here](#). It’s so easy to follow and will help understand some of the calculations seen below. Before making this visualisation I ended up deconstructing Ken’s work to gain a better understanding how the data densified points spacing, and sigmoid curve worked. You can find these two downloadable workbooks on my profile under **Data Densification (Development)** and **Data Densification (Development V2)**.

The two workbooks are meant to be progressive so that you initially understand data densification between two points. Then apply these techniques radially. Finally the blog below adjusts a lot of the calculations to be applied to a map scenario with adjustments made to Longitude and Latitudes!

Wendy’s original blog builds a foundation for the first few steps required in terms of data prep. I’d recommend seeing if you can navigate your way through this tutorial first. It also offers a fantastic explanation of how the Mercator map works in terms of projection of Latitude and Longitudes. Thank you to both **Ken** and **Wendy** for their super useful insights.

Getting Started: Data Prep

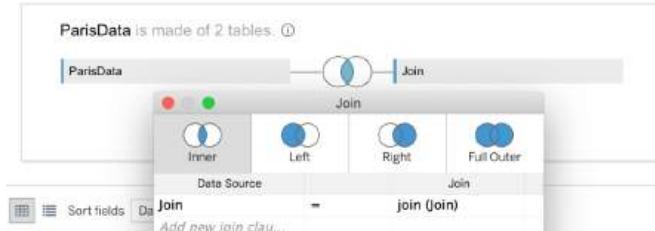
Sheet: ParisData

1. What is important in this dataset is to have our Start X and Start Y (Longitude and Latitude) co-ordinates for where their initial position (Airbnb rooms) will start on the map.

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Start Y	Start X	Host Id	Host Name	Id	Name	Neighbourhood	Price	Reviews Per	Room Type	Year of Last Review	Availability 365	Available Category	join
48.87363	2.29155	366671454	Casimir Herve	46147402	Location Avenue Victor Passy		1500		Entire home/apt		365	A	link
48.87719	2.29298	22375907	Arnaud & Gary	45148943	Amazing Luxury Triplex Batignolles-Monceau		500		Entire home/apt		0	C	link
48.87075	2.29683	318660519	Tushita	43006495	AVE GEORGE V&MONT Passy		500		Entire home/apt		365	A	link
48.87519	2.29972	24082525	Elaine	42604018	champs élysées	Elysée	500		Private room		0	C	link
48.87254	2.29636	33889201	Veeve	42595462	Lovely 2BR in the 16th,	Elysée	939		Entire home/apt		364	A	link
48.87033	2.29422	61980761	Alexandre	42552967	350M2 TRIPLEX 4BR/ 31 Passy		950		Entire home/apt		180	B	link
48.87072	2.29557	156409454	Lorenz	41227378	350M2 LUX. 4BR TRIPLEX Passy		845		Entire home/apt		0	C	link
48.87654	2.29572	39299009	Lucie	40688810	a prestigious address nt	Batignolles-Monceau	800	0.08	Entire home/apt	2019	269	A	link
48.87296	2.29216	21875675	Félix	40342090	LUXURY FOCH-ARC ELY: Passy		1250		Entire home/apt		364	A	link
48.87271	2.29735	270933095	Emmanuelle	39687459	En famille, espace, élég	Elysée	800		Private room		364	A	link
48.87132	2.29842	270933095	Emmanuelle	39686203	Familie et Amis, Luxe et Elysée		850		Private room		365	A	link
48.87657	2.29152	21527101	Yohann	38743073	HORIZON HOUSE - 120	Batignolles-Monceau	595	1.22	Entire home/apt	2020	365	A	link
48.87375	2.29074	137094377	Veeve	37829115	Stunning 3BR terrace b/ Passy		737		Entire home/apt		289	A	link
48.87568	2.29755	21527101	Yohann	37233375	Maison Spacieuse a 10E Elysée		650	0.37	Entire home/apt	2020	0	C	link
48.8709	2.29903	270933095	Emmanuelle	36012446	Appartement 5 person	Elysée	850	0.08	Entire home/apt	2019	365	A	link
48.87245	2.29302	257762335	Cyril	34538778	Appartement de Luxe -	Passy	1347		Entire home/apt		90	B	link
48.87228	2.28896	92417478	Maria	33302814	Amazing apartment inc	Passy	695	0.81	Entire home/apt	2020	359	A	link
48.87098	2.2935	31871811	Elegant & spacious 3BR Passy				573		Entire home/apt		0	C	link
48.87582	2.29153	33889201	Veeve	30061331	Yves Klein Blue Dream	Batignolles-Monceau	622	0.25	Entire home/apt	2019	0	C	link
48.87721	2.29344	203691535	Marc Et Jeanne	27082094	Amazing Studio III - Plai	Batignolles-Monceau	9280	1.45	Entire home/apt	2020	365	A	link
48.87495	2.29949	48710161	Eric	23972594	LUXURIOUS PARIS APARTÉ	Elysée	800		Entire home/apt		178	B	link
48.87013	2.29387	40963222	Pam	19382375	Designers apartment Pr	Passy	700	0.33	Entire home/apt		88	B	link
48.87452	2.29884	2667370	Parisian Home	4876447	208005 - A large opulent	Elysée	647	0.76	Entire home/apt	2020	0	C	link
48.87565	2.29238	23973004	Omarie	4629066	Cosy flat in the heart of	Batignolles-Monceau	1000	0.03	Entire home/apt	2018	183	A	link
48.87403	2.29813	7399919	Sebastien	1363359	Champs Elysées, Royal	Elysée	662	0.04	Entire home/apt	2017	0	C	link

2. We will want to also consider what our end points will be. For my user case I split the rooms offered by availability. E.g. each room will then draw a curved line to one of three places. It doesn’t matter how many categories you have, as we will adjust for this in the workbook calculations. You may notice we do not have an End X and Y location, because we will be creating these!

3. The last important thing is that we will want our lines between the start and end points to be curved. This requires an inner join between the Paris Data Sheet and Join Sheet, using the join column. We will be creating 100 points between the start and end point, along a curve. This is why we have the Join Sheet with values of T running from 1 to 100.



Once we have the data prepped we can start to create the calculations needed

Workbook Calculations:

1a. AVG Centre X { FIXED : AVG() }

```
1a. AVG Centre X X  
  
// This will give us what we will use as the centre point for the radial  
{ FIXED : AVG([Start X]) }  
  
The calculation is valid. 10 Dependencies Apply OK
```

Explanation: This is the average of all the X points. We will want to offset our final points when it comes to the circular calculations by this amount to find the end points.

1b. AVG Centre Y { FIXED : AVG() }

```
1b. AVG Centre Y X  
  
// This will give us what we will use as the centre point for the radial  
{ FIXED : AVG([Start Y]) }  
  
The calculation is valid. 9 Dependencies Apply OK
```

Explanation: Same theory as above but for Y. We want to offset our co-ordinates to be adjusted around our map points.

Category End CASE

when 'A' then 1 when 'B' then 2 when 'C' then 3 END

```
Category End X  
  
case [Available Category1]  
when  
'A'  
then 1  
when 'B' then  
2  
when 'C' then  
3  
END  
  
The calculation is valid. 17 Dependencies Apply OK
```

Explanation: We want the rank to be numbers, with 1 being the first, going radially round. This is a bit messy on my part but hopefully makes sense that the order you want the categories to go round clockwise will be dependent on the case statement you build here with the rank numbers.

1c. Rank

1c. Rank

```
[Category End]
// This is the different end flow categories.
//We will need these as ranks to split going radial]
```

The calculation is valid. 16 Dependencies Apply OK

Explanation: This is the different end flow category. We will need these as ranks to split going radial

1d. Angle
360/3

1d. Angle

```
360/3
// 3 categories
// we want the outer circle evenly spaced
```

The calculation is valid. 14 Dependencies Apply OK

Explanation: We want to divide a full circle evenly into our three categories. Here we will need to adjust if you have less or more categories. Play around with this value once you've created your viz to see how it impacts end parts of your visualisation. This in effect is the spacing between your end categories around the edge of the circle.

1e. Rank Angle
(*)

1e. Rank Angle

```
([1c. Rank] * [1d. Angle])
// Each Category will positioned further along
```

The calculation is valid. 13 Dependencies Apply OK

Explanation: We multiply the rank by the angle to find the positioning around the edge of the circle. Again play around with this calculation at the end to see how it adjusts the end points. I decided to edit this calculation to make all my end points stay on the right side of the viz.

2a. End X
 $(\sin(\text{radians}())^* 0.031)$
+

```
2a. End X
(sin(radians([!e, Rank Angle]))* 0.031)
// produces our end points radially
+ [!e, AVG Centre X]
// we then need to offset the circle to be in line with the average of the start points
```

The calculation is valid.

8 Dependencies

Apply

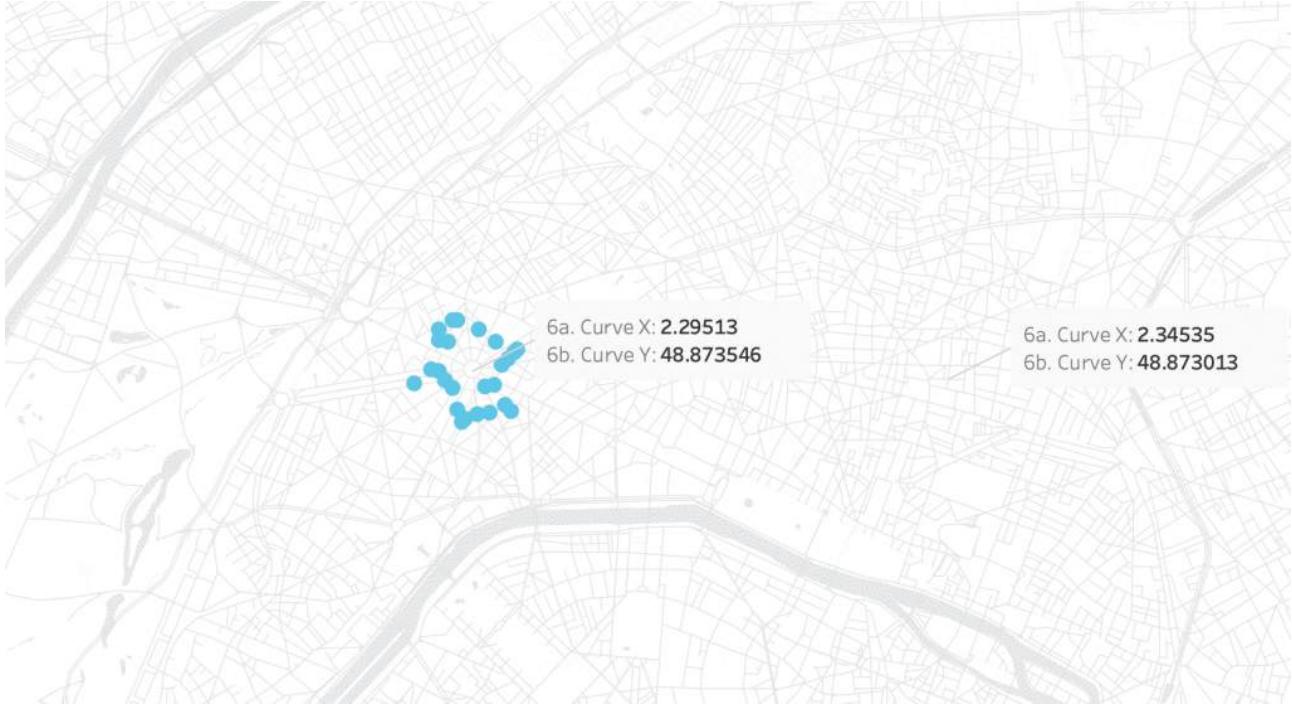
OK

Explanation: The radians and sin part of the equation makes our end circular points. The *0.031 is discretionary based on how far out you want the radius to be. E.g. this will depend on the size of your map. Personally, I would recommend plotting on a map where you want to have the edge of the circle reach, and then minus the average Centre X from this to find the value. E.g. the length of the radius around the centre point! Check out the below:

2b. End Y

$(\text{COS}(\text{radians}())*0.0205) +$

Explanation: The radians and cos part of the equation makes our end circular points. The *0.0205 is discretionary i had to adjust these slightly after the final build to fit the design of my workbook but the logic remains the same as above. Check out the below print screen that highlights the radius concept.



3a. Max Points

{**FIXED**: MAX()}

Explanation: This is the number of points we create between the start (room locations) and the end (outer circle point) to make curved lines. In our dataset we have 100 T values, so this calculation will be 100.

```
3a. Max Points
// Maximum number of points in our densification data ( T going from 1 to 100)
{FIXED: MAX([T])}
```

The calculation is valid.

12 Dependencies

Apply

OK

3b. X Gap

{**FIXED** : AVG((-)/(-1))}

Explanation: All of our start points (room locations) will have a different distance between it and the edge of the circle. Therefore we want to find the distance for each Id between them. We want this value split evenly for each of the 100 points we will create between them. This will help for the chord that sits between the start and end point.

```
3b: X Gap
{ FIXED [Id1]: AVG([2a, End X]-[Start X])/([3a, Max Points]-1))
// for each ID, find the fixed difference between the start and end X
// We will want this as a proportion of all the points!
```

The calculation is valid.

1 Dependency ▾

3c. Y Gap

{ FIXED : AVG((-)/(-))}

```
3c: Y Gap
{ FIXED [Id1]: AVG([2b, End Y]-[Start Y])/([3a, Max Points]-1))
// for each ID, find the fixed difference between the start and end X
// We will want this as a proportion of all the points!
```

The calculation is valid.

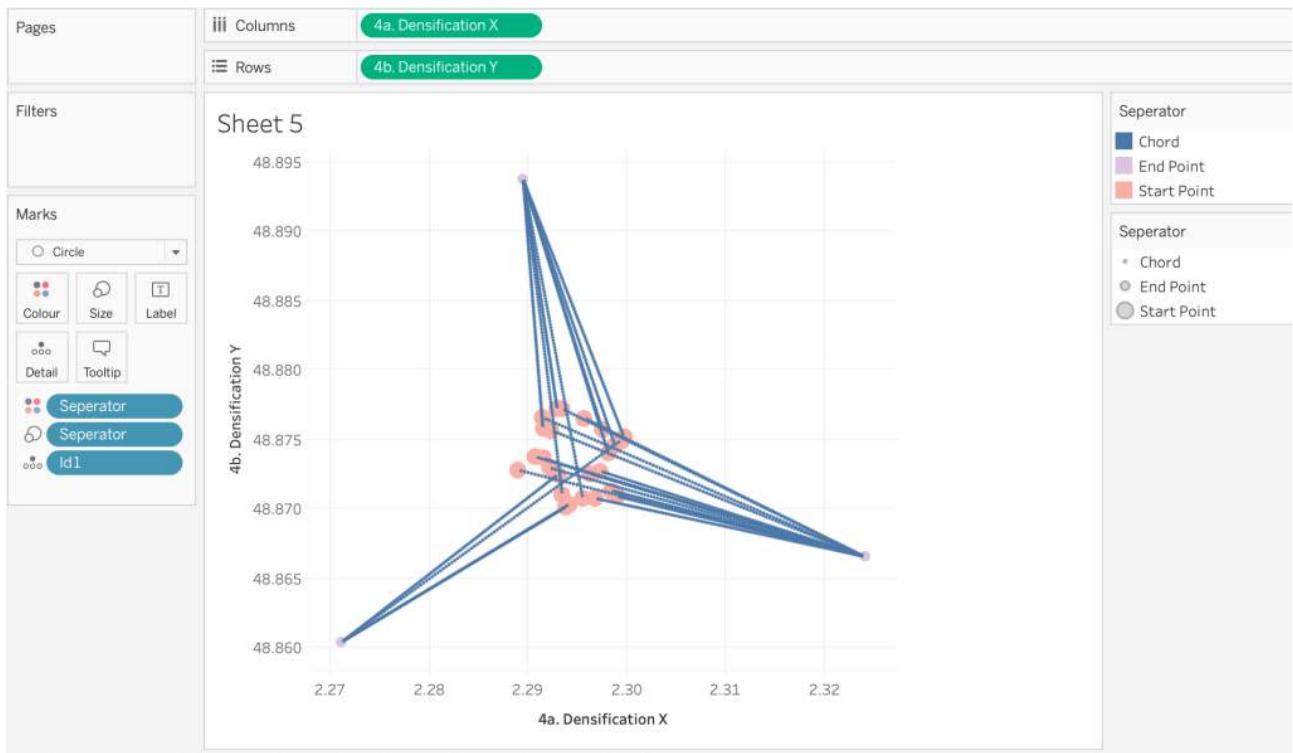
1 Dependency ▾

Explanation: Same as above but for Y. Again, this helps plot the spacing for each of the 100 points of our chord between the start (room locations) and the outer edge of the circle.

To slightly digress, The workbook next contains. 4a. Densification X and 4b. Densification Y

Straight Y -1)*[3c. Y Gap])	for a Straight X equation -1)*[3b. X Gap])
ded to the begining to find the starting x co-ordinate for e s adding on the spacing onto the previous value ion along we want to create the gap from the start point ded to the begining to find the starting x co-ordinate for e s adding on the spacing onto the previous value ion along we want to create the gap from the start point	ded to the begining to find the starting x co-ordinate for e is adding on the spacing onto the previous value tion along we want to create the gap from the start point

1 Dependency ▾ 1 Dependency ▾



These calculations theoretically aren't needed but are good to check if you have managed to get the points to work. If you plot these points you will see how data densification works along a straight line. You could now imagine how a circle would wrap around these outer points? Realistically we want these points to have a curve between them. That's why we use the following two calculations instead.

5a. Sigmoid Calc 1

$$(-1)^*(12/(-1))-6$$

```
5a. Sigmoid Calc 1
//Sigmoid X
// Space our points out evenly from -6 to 6 in order to produce a nice smooth curve.
([T]-1)*(12/(3a. Max Points)-1))-6
//CURVES TIME
```

The calculation is valid.

6 Dependencies

Apply

OK

5b. Sigmoid Calc 2

$$1/(1 + EXP(-))$$

```
5b. Sigmoid Calc 2
//Sigmoid Y
// Sigmoid calculation. Note: EXP gives us e to the power specified.
1/(1 + EXP(-[5a. Sigmoid Calc 1]))
// CURVES TIME
```

The calculation is valid.

5 Dependencies

Apply

OK

Explanation: Part of the sigmoid curve theory, please re-visit Ken's tutorial if this doesn't make complete sense.

6a. Curve X

IF = 1 then

```

ELSEIF
> 1 and < 100
    then
        (
        + ( - ) *
        )

```

```

ELSEIF = 100
    then
END

```

6a. Curve X

```

//CurveX
IF [T] = 1 then
[Start X]

ELSEIF
[T] > 1 and [T] < 100
then
(
[Start X] + ([2a, End X] - [Start X]) * [5b, Sigmoid Calc Z]
)

ELSEIF [T] = 100
then [2a, End X]
END
// Take the start position, the difference of each X co-ordinate multiplied by our curved adjustment!

```

The calculation is valid. 4 Dependencies Apply OK

Explanation: This calculation will plot the start point for where T = 1, the Chord for where it is between 2 and 99 and then the end point where T = 100. How the curve works is that it takes the start position, the difference of each X co-ordinate multiplied by our curved adjustment!

6b. Curve Y
IF = 1 then

```

ELSEIF
> 1 and < 100
    then
        (
        + (-1) * ( - ) / (-1)
        )

```

```

ELSEIF = 100
    then
END

```

6b. Curve Y

```

//CurveY
IF [T] = 1 then
[Start Y]

ELSEIF
[T] > 1 and [T] < 100
then
(
[Start Y] + ([T]-1) * ([2b, End Y] - [Start Y]) / ([3a, Max Points]-1)
)

ELSEIF [T] = 100
then [2b, End Y]
END

```

The calculation is valid. 4 Dependencies Apply OK

Explanation: Create a similar calculation for Y! This calculation will plot the start point for where T = 1, the Chord for where it is between 2 and 99 and then the end point where T = 100.

Separator
IF = 1 then
“Start Point”

ELSEIF > 1 and T < 100 then “Chord”

ELSEIF T = 100 then “End Point”

END

```
if [T] = 1 then
"Start Point"
ELSEIF [T] > 1 and T < 100 then "Chord"
ELSEIf T = 100 then "End Point"
END
```

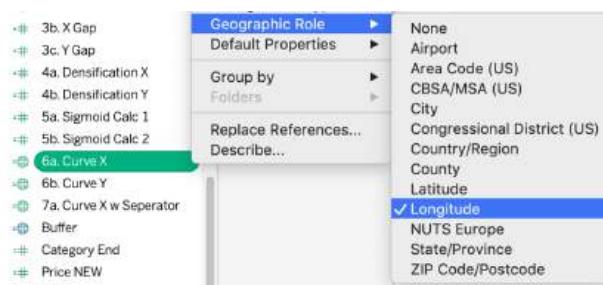
The calculation is valid. 4 Dependencies ▾ Apply OK

Explanation: Finally, create a separator to be able to show your start, chord and end points separately.

The Build Phase.

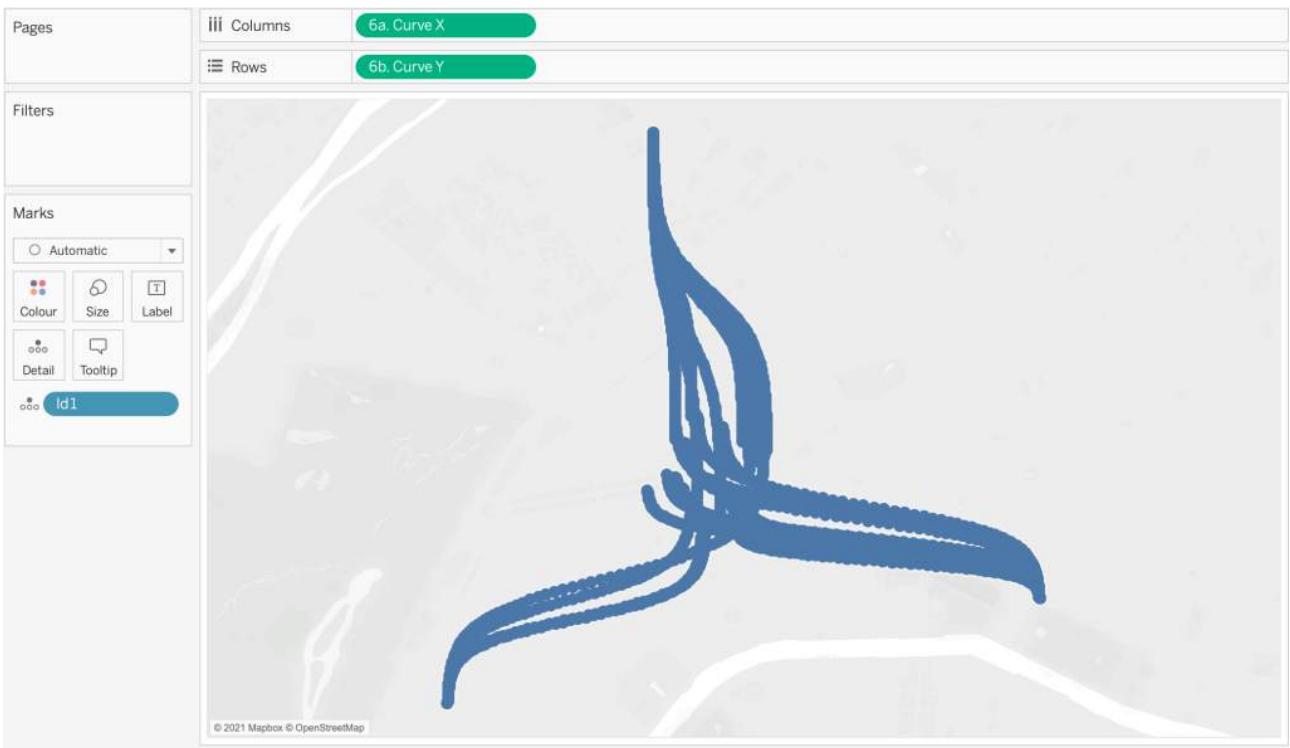
Change 6a. Curve X to a geographic role of Longitude.

Change 6b. Curve Y to a geographic role of Latitude.

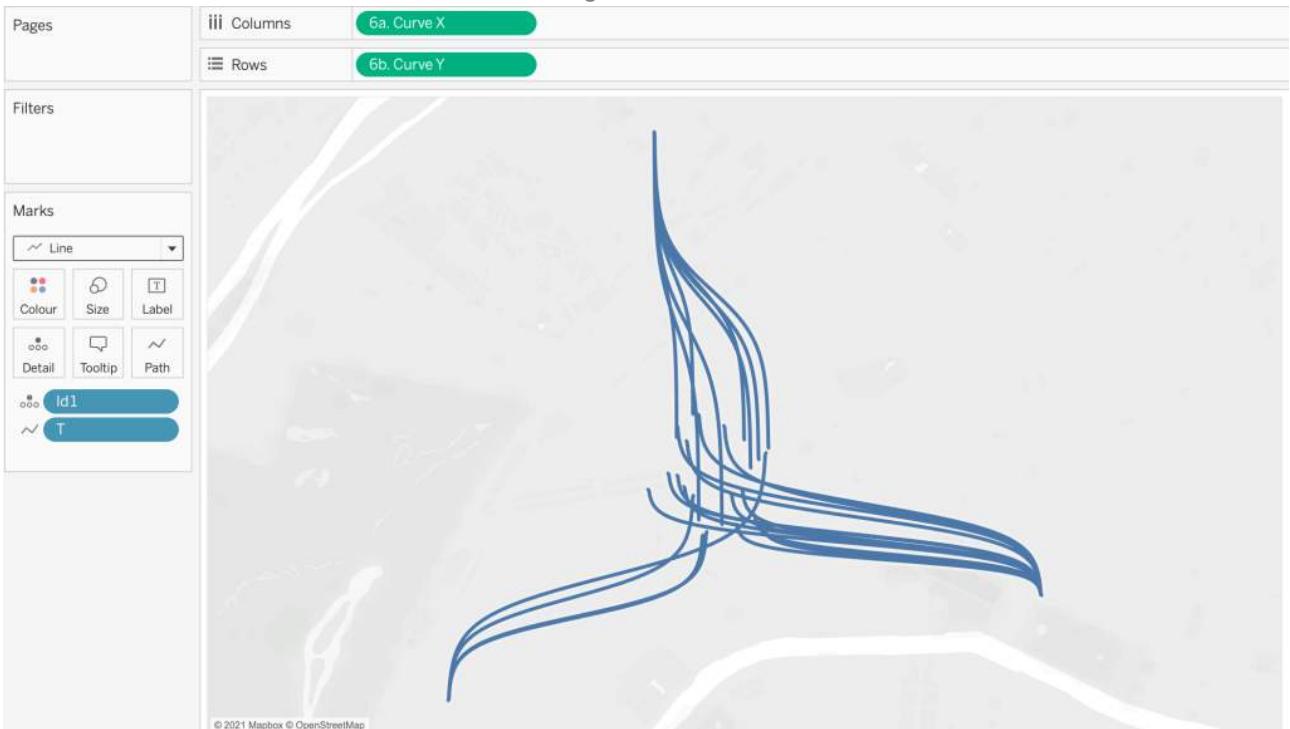


Drag 6a. Curve X to Columns. Make sure it is a continuous dimension.

Drag 6b. Curve Y to Rows. Make sure it is a continuous dimension.

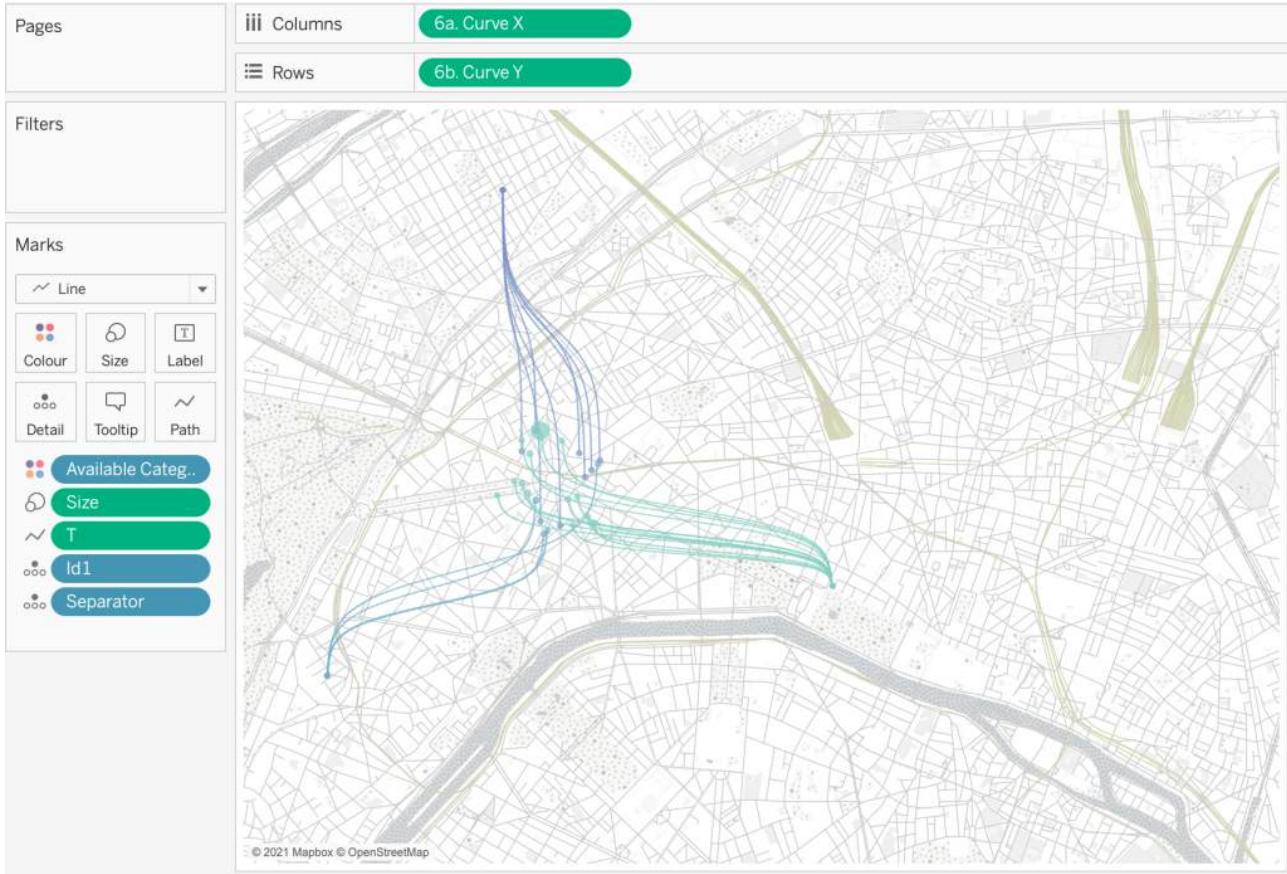


Drag ID to detail. Change the marks type to a Line.
 Drag T onto Path.



Drag Available Category to colour
 Drag Separator onto detail.

Finally i created a size calculation to resize the start and end points rather than create a dual axis for the chord and start/ends.

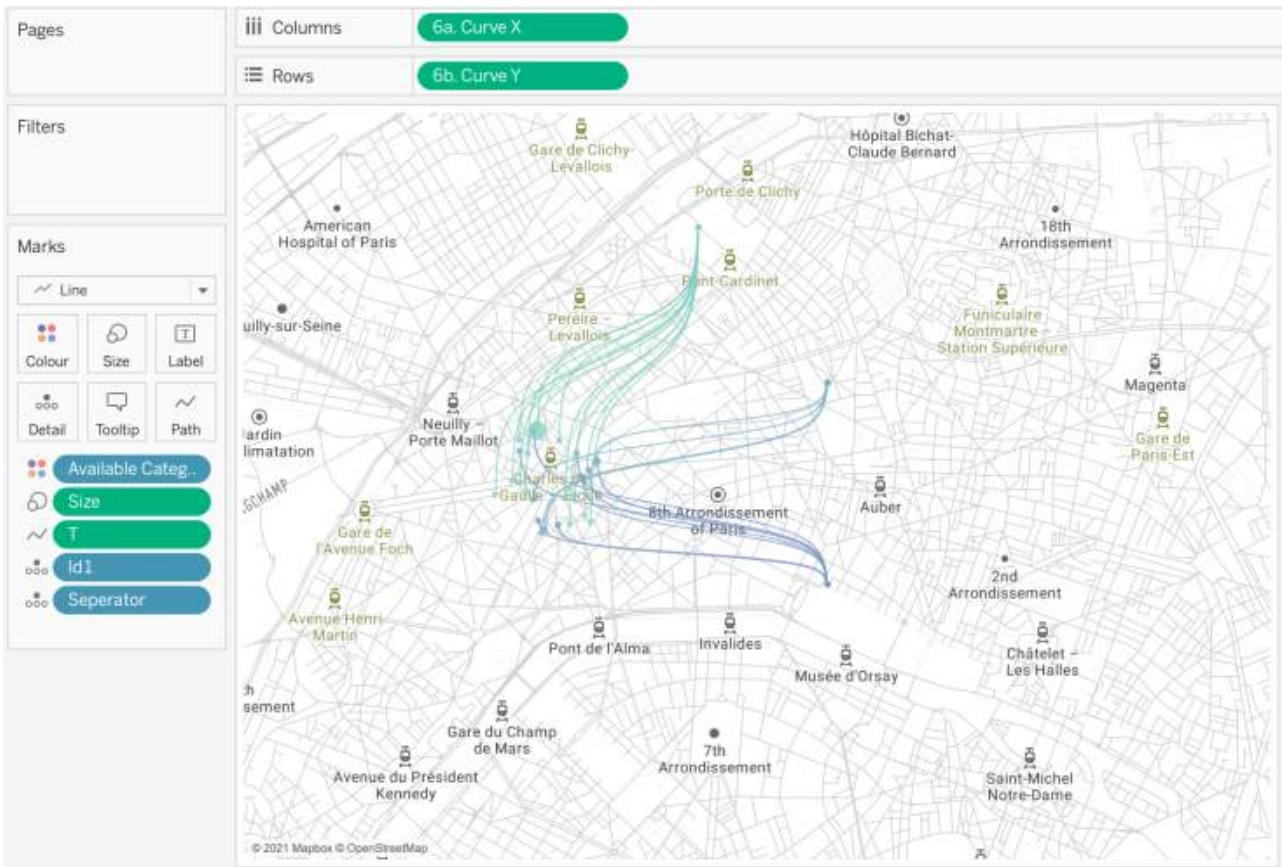
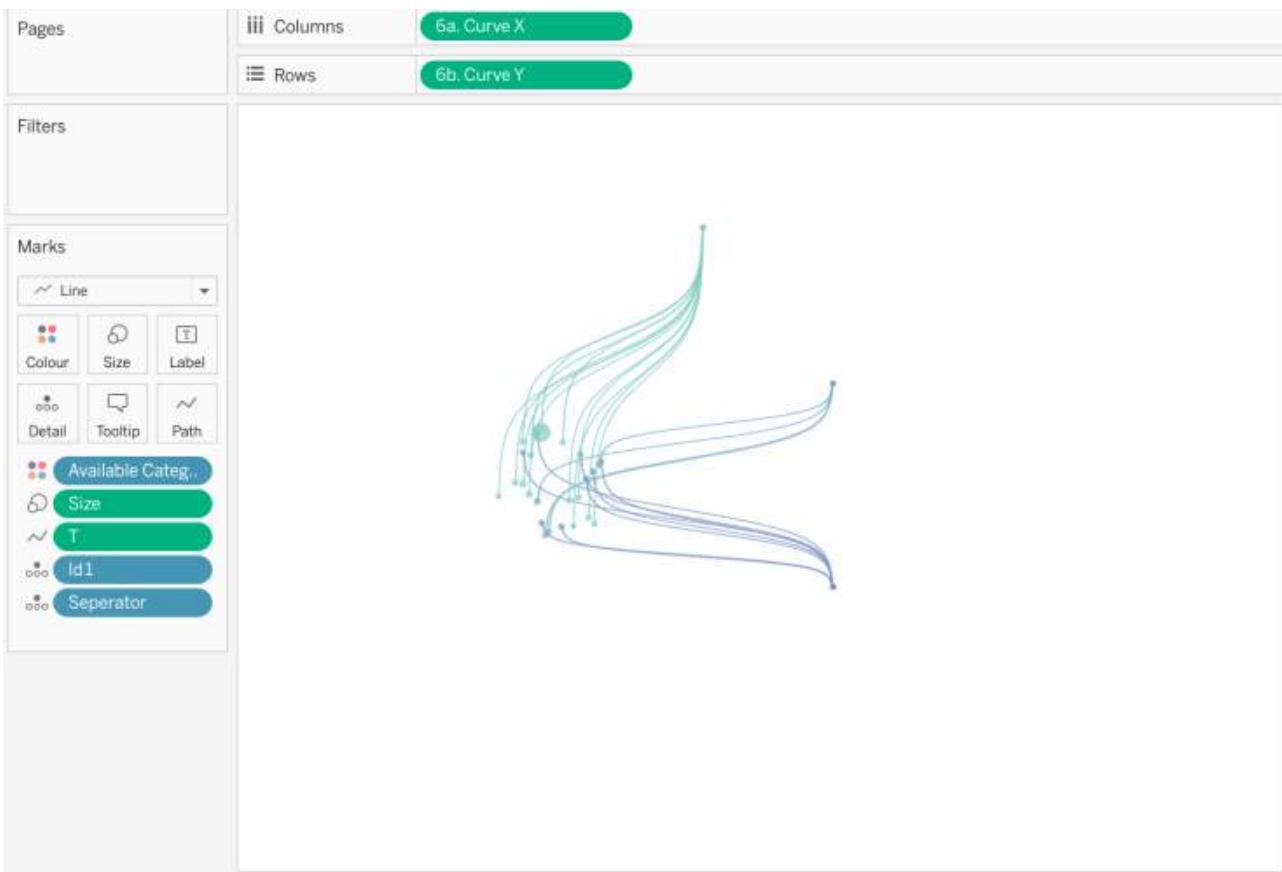


This really is the end point of the build – Hopefully you managed to follow along. It definitely was a challenging one. You might be wondering... wow this doesn't look like a circle. It is a little underwhelming right?

The rest of the dashboard is a matter of cosmetics and housekeeping that really draw the piece together. I'll briefly explain my thought process below for the layering and creating a circle to encapsulate each of the end category points. It would probably be most useful to download the workbook and have a look through the various layers.

Tips:

1. This is the same map, one has all the map layers turned off and has washout set to 100%. The other is what it would look with as a normal map. This was super useful for layering. You can find this control panel in MAP – Map Layers. Remember to right click and remove the background in the formatting area too.

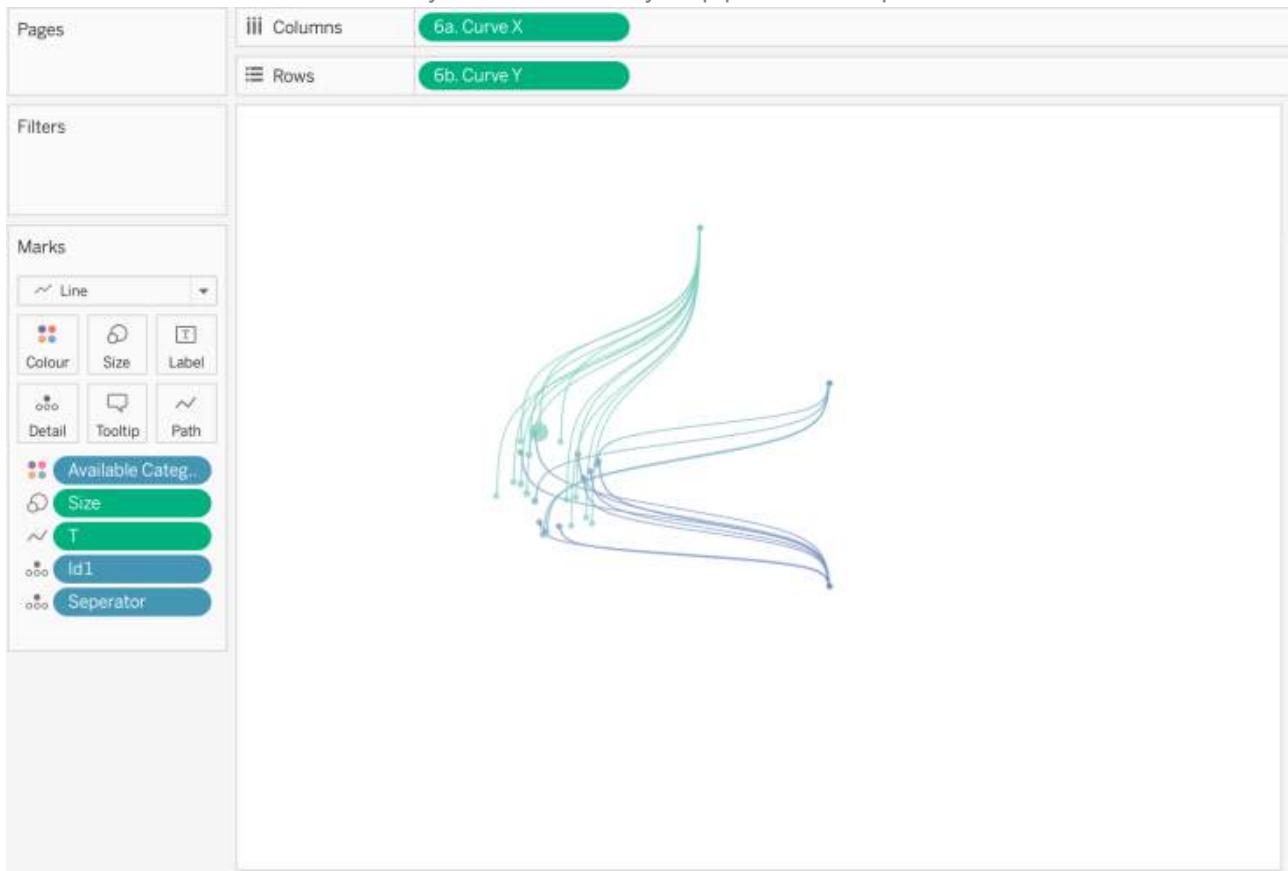


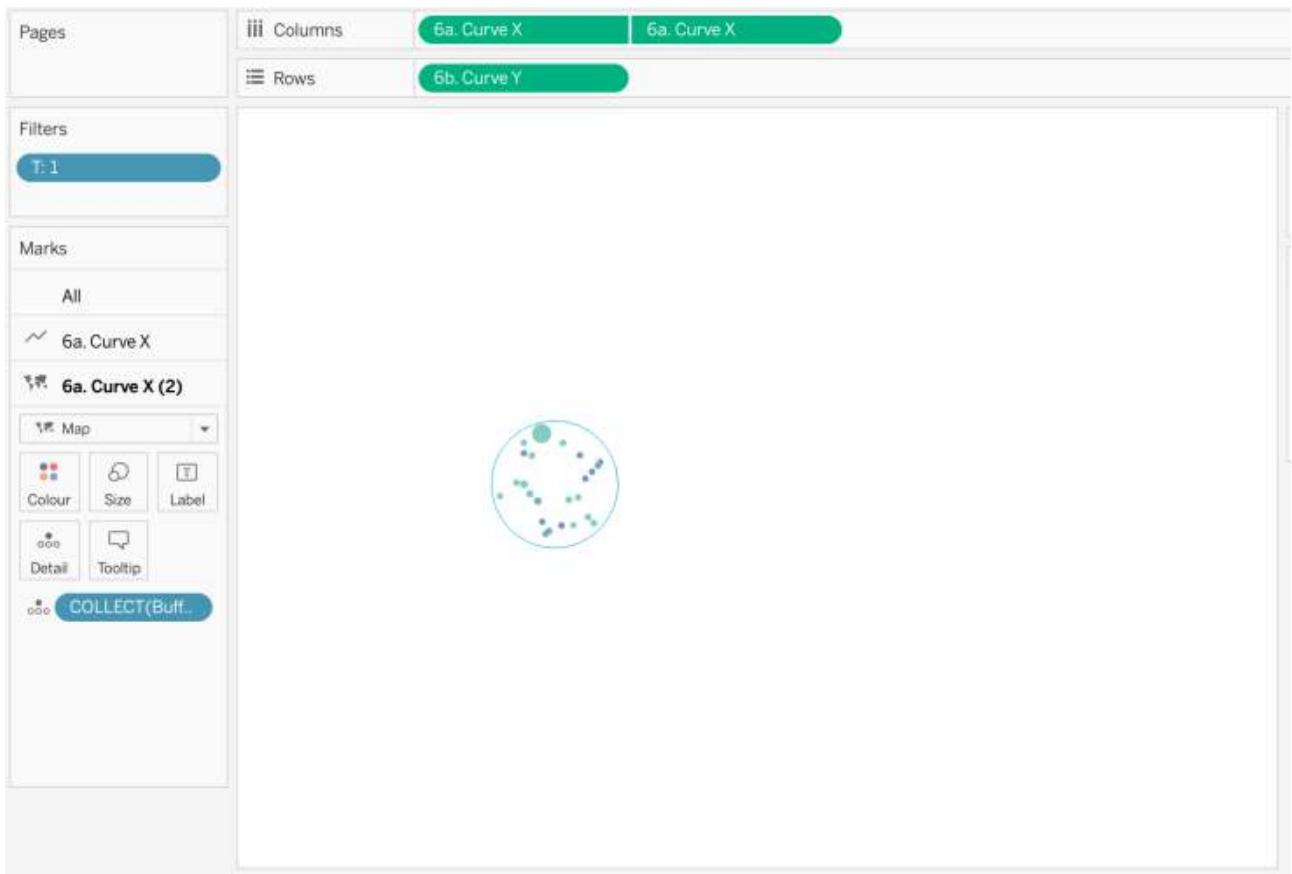
2. I'd recommend making the map with the layers showing and get it on the dashboard how you want it. Turn off the map options in MAP – Map Options, this will stop the pan & zoom controls. Also make sure this is set

at the dashboard level. I was reminded about this by **Fred** and **Adrian**, so thanks to them!

3. Get your design hat on – It was a lot of back and forth with Photoshop to create the layers the way i

wanted them. I'm not too much of a whiz at Adobe, but managed my way to making these. I'm sure something similar might be possible in Figma, or Powerpoint. What i found quite useful was laying out the final map on the dashboard, exporting the image and then creating a circle for the dashboard from that. That way i could ensure my map points lined up.





MORE THAN HALF THE YEAR



LESS THAN HALF THE YEAR
UNAVAILABLE

This dashboard looks to explore the top 25 most expensive AirBnB's in a 0.3 Mile radius of the Arc de Triomphe.

The Arc de Triomphe honours those who fought and died for France in the French Revolutionary and Napoleonic Wars.

Being one of the most famous monuments in Paris brings with it increased nightly rates.

One studio apartment was even listed at over £9000 a night in the Batignolles-Monceau neighbourhood. Excluding this outlier, of the remaining 24 properties on the list, the average nightly stay was £800.

The original dataset can be found on insideairbnb.com (December 2020)



The inner circle is the buffer limit. The outer circle splits the properties by annual availability. Circle size refers to price.

CJ MAYES



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The workbook is made up of three sheets and two layers of design still images. The order of these are important. First I have my background image and background map (filled), then the text layer with a transparent background (not white!). Following this I overlay my final map, that has the lines coloured but the background mapping washed out. This is because i want the tooltips to be able to be hovered over.

Finishing Touches and Comments:

I ended up playing round with a buffer, as my initial dataset was within a 0.3 Mile radius of the In retrospect, If design isn't your strong point and you want another method of creating a circle around your end points, you could theoretically use a buffer!

Buffer (New for radius)

IF = 1

then

(

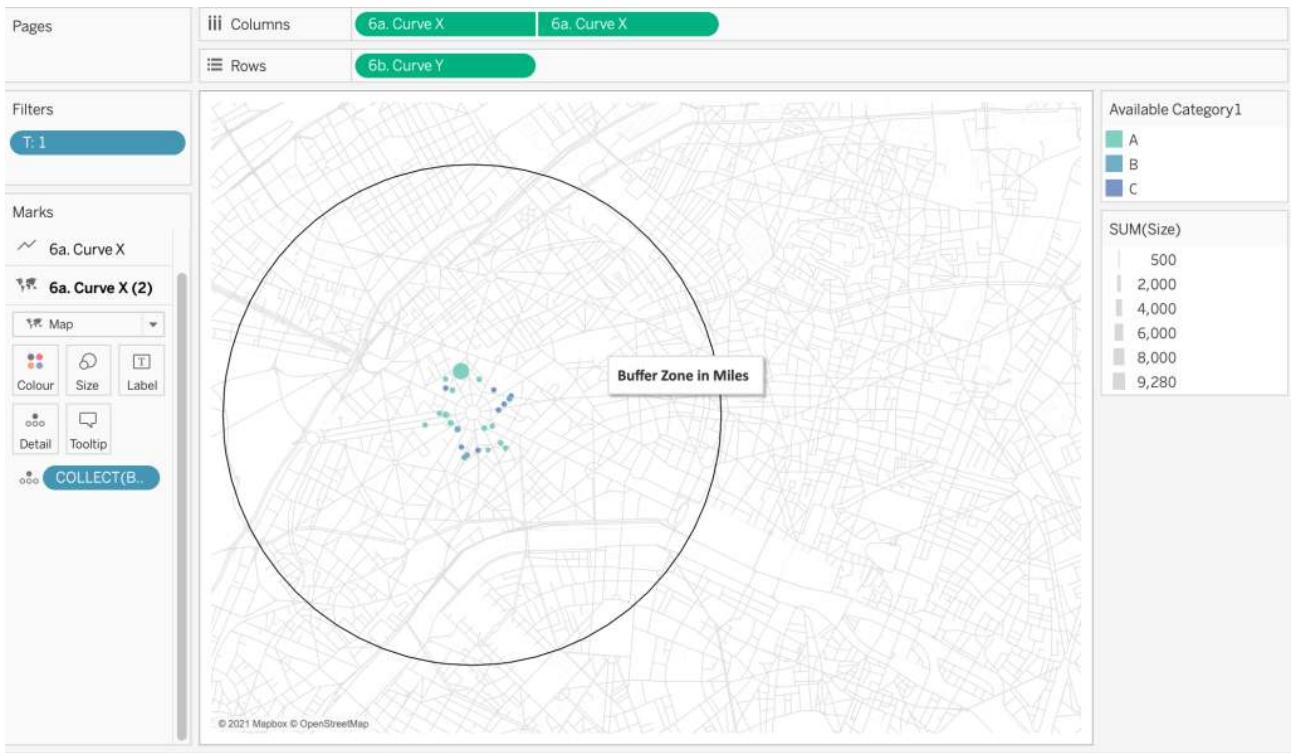
BUFFER(MAKEPOINT(,),1.42,"Miles")

)

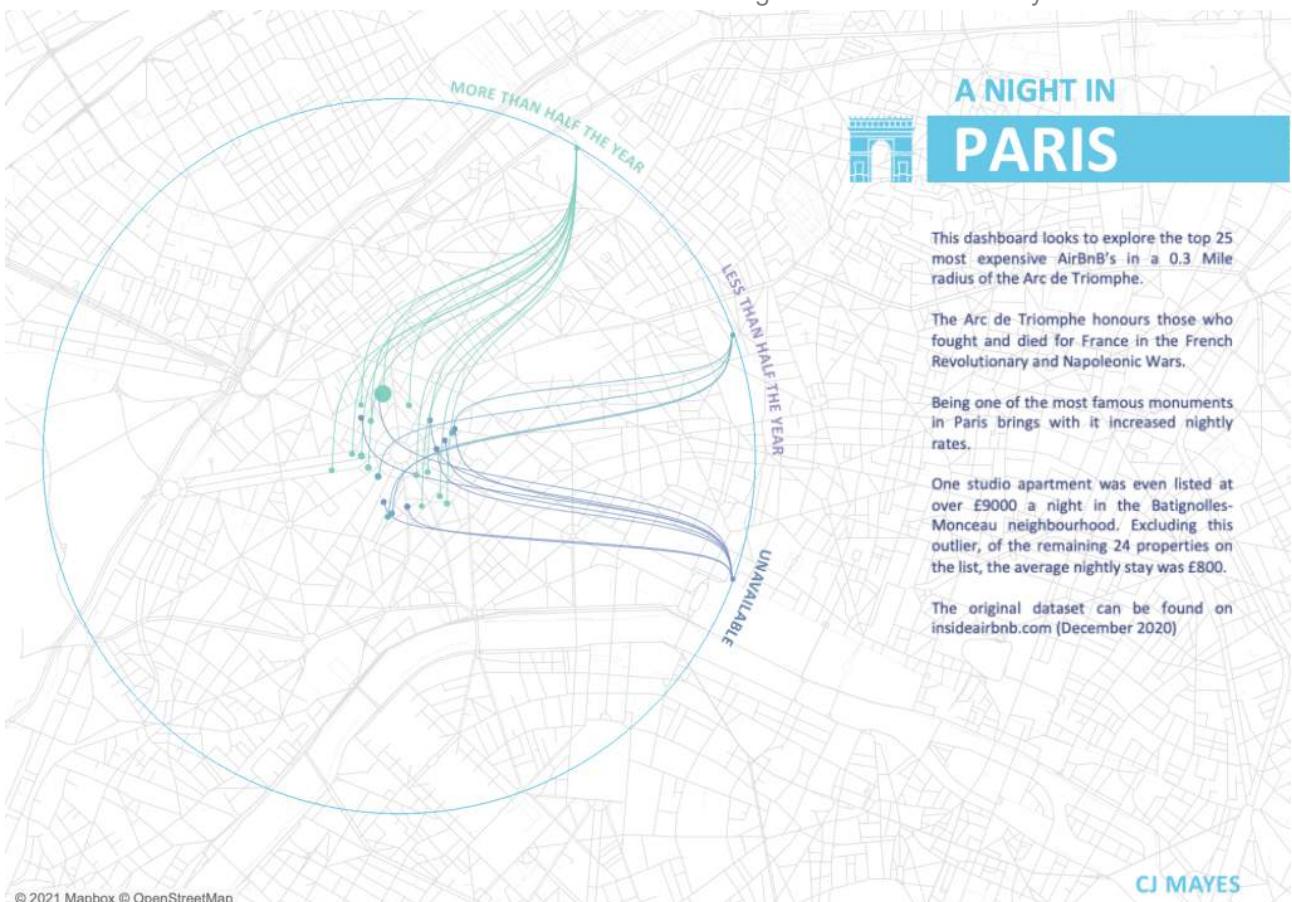
ELSE null

END

Explanation: You will want to play around with the number here to get it to the correct radius, but it is drawing a radius perfectly around the centre points used earlier. Create this in a separate sheet.



This is what the visualisation looks like using a buffer as a boundary:



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Finally a few shout outs. Firstly to **Judit Bekker**, Judit helped me understand the different map layer background and washout techniques. I messaged her at a point where i was going to give up and admit defeat on the idea, so I'm very pleased she pulled through! Judit recently shared with the community a design tip that will be useful in terms of layering which can be found [here](#), for a video walk-through. Similarly shout out to **JR Copreros**, I am in love with his **VOTD** "City and Colour: Income Inequality in Toronto" I'd love to emulate more of this style moving forward. It was a huge inspiration for the dashboard design.

Update 18/02/2021: (@nathanadams_viz) Nathan messaged me after reading my tutorial and noticed that to get the same effect of my viz you didn't need as many layers as I put in it. He made the equivalent of the above by making a circle fully transparent and then the block colour 50% transparent, allowing for the map to show through ever so slightly. Because the map has washout features too it means that you actually only need two layers instead of the three or four within my visualisation. Thanks Nathan for the tip!

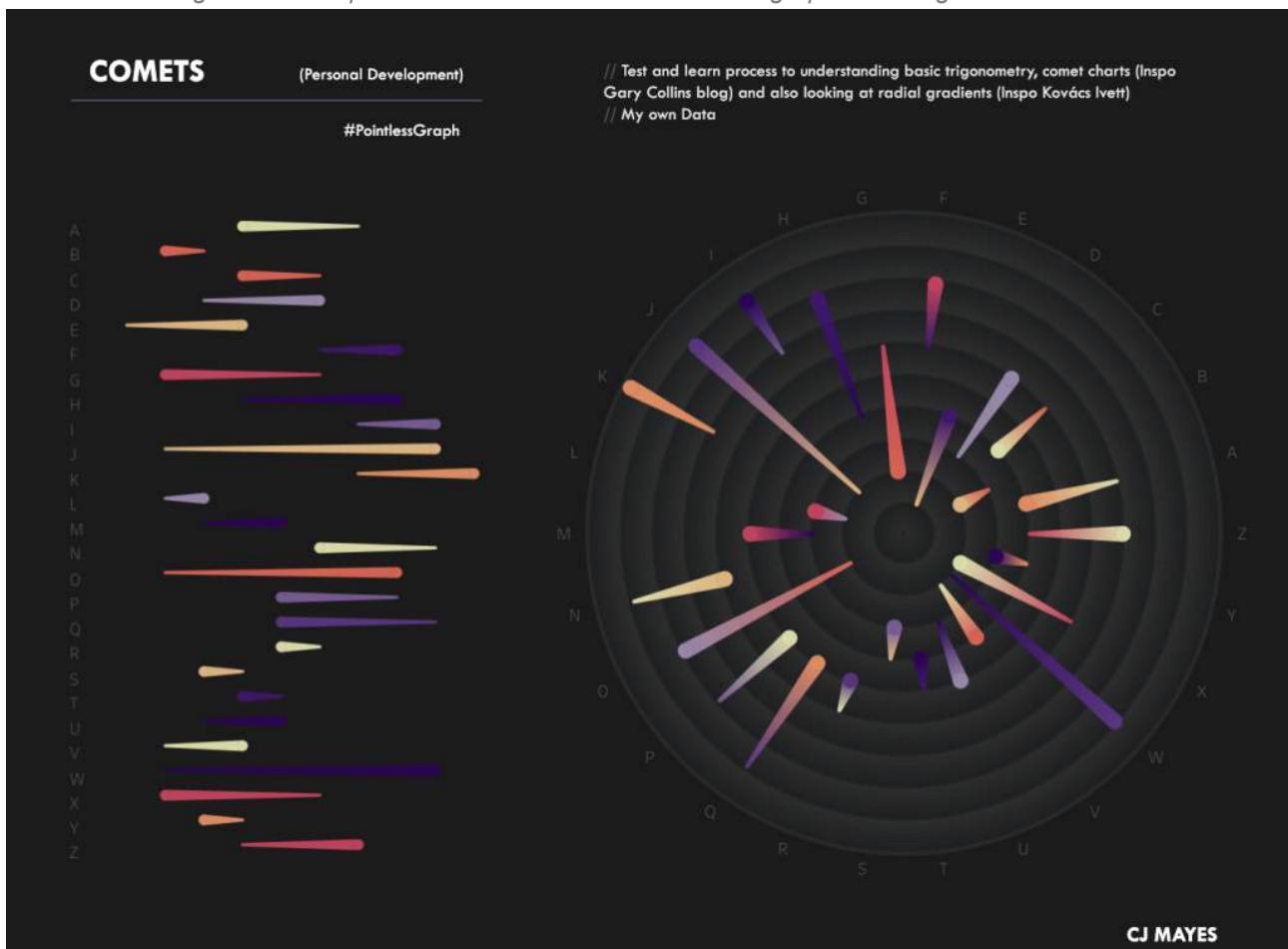
Bit more of a challenging visualisation! Let me know if you have any questions, and feel free to reach out to me on [LinkedIn](#) or [Twitter](#).

Logging off.

CJ

RADIAL COMET GRAPH

This blog outlines steps as to how I made a radial comet graph. The original data is attached.



Before diving into the build I want to say a thank you to **Gary Collins**, I spent some time bouncing ideas off of Gary to get the visualisation to a place I was happy with which included sending a workbook back and fourth. Gary was the inspiration behind building the visualisation, having read his blog on comet charts [here](#). As a side note, do check out Gary's profile [here](#). I am a huge fan of his work – especially the **Tableau Darts dashboard** and his **Iron Quest submission** on relaxation.

When is a Comet Chart useful?

Comet charts are a useful way traditionally to show change, as well as direction of movement. They can be also used to compare across categories when comparing the length of each comet. Typical similar graphs to a comet may include the barbell chart and dumbbell chart variations. Alternatively a bar graph with current year, with vertical marker overlays for previous year may be appropriate.

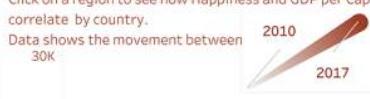
The comet therefore is composed of a line between a "Then" and "Now", length based on the change. The direction of the movement will have the thicker end at the "Now". We can then use further sizing and colour to bring in other attributes we'd like to show.

In Gary's **blog post** dashboard, the use of the comet graph has some clear takeaways:

Does Money Buy Happiness?

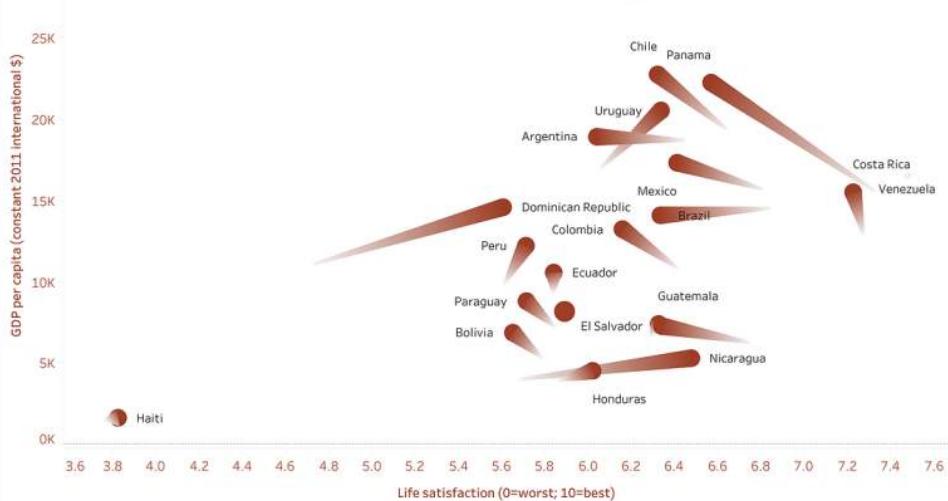
Click on a region to see how Happiness and GDP per Capita correlate by country.

Data shows the movement between 2010 and 2017



Average Life Satisfaction for 2017

North America	7.2
Europe	6.2
South/Latin America	6.0
Asia & Pacific	5.4
Middle east	5.3
Arab States	5.1
Africa	4.4



#makeovermonday2020 week 11

Data | World Bank

Design By | Gary Collins

- 1.
- 2.
- 3.
- 4.

The thicker sized end being 2017, the former being 2010.
The X & Y axis showing Life satisfaction and GDP per capita, therefore we can see where a country has increased or decreased.
The magnitude of change.
The change of these countries relative to each other.

Gary's blog covers these pointers off in greater detail.
So why *ruin* the Comet Chart by making it radial?

- 1.
- 2.
- 3.

Keep your best practice for the workplace.

Circles are fun.

We may lose some sense of the impact of X & Y axis, but bringing the comets close together in some ways makes them easier to compare.

Disclaimer: I'd highly recommend against using this if we are talking best practice, but for something purely experimenting with design, I really enjoyed it. Some possible user cases may include YoY change, progress in metrics, (such as the Human Development Index), and changes in table positioning.

Calculations

The starting methodology is an adapted version of what can be found on **Tableau Magic** for the radial bar chart. I'd recommend starting with trying to recreate this using the superstore data beforehand just to understand some of the underlying logic. Therefore thanks goes to **Toan Hoang** for the technique around duplicating the data.

If you'd like to follow the build, you can download a copy of the excel template I made from the repo at the top of the page.

But if not, below is a screen shot of the original two data sheets:

Position
1
2

Letter	Previous Year Value	Current Year Value
A	7	4
B	3	2
C	6	4
D	3	6
E	1	4
F	6	8
G	6	2
H	4	8
I	7	9
J	2	9
K	7	10
L	2	3
M	3	5
N	9	6
O	2	8
P	8	5
Q	9	5
R	6	5
S	4	3
T	5	4
U	3	5
V	2	4
W	2	9
X	6	2
Y	4	3
Z	4	7

Step 1. Connect to the data. We will want to create an inner join between our data sheet and the positions sheet using $1=1$.

#	Rank	Letter	Position	Value
1	A	1	7	4
1	A	2	7	1
2	B	1	3	2
2	B	2	3	1
3	C	1	6	4
3	C	2	6	1
4	D	1	3	6
4	D	2	3	2

This duplicates our dataset for each “Position”. As you can see in the print screen each letter now has two associated rows with it, one with Position = 1, one with Position = 2.

Step 2. Open a new sheet and create the following calculations:

The first is to be able to create an equal distanced angle between each comet. If you use your own dataset, you will need to adjust this calculation with respect to the distinct ‘Letters’ field. As I have 26 Letters in my data template, I hardcoded the 26.

Angle:

```
angle
```

Data+ (cometChartTest) X

360/26
// 26 letters



The calculation is valid.

14 Dependencies ▾

Apply

OK



To find the position of each letter moving round radially we will need to create a radial angle calculation.
Rank Angle:

```
Rank Angle
```

Data+ (cometChartTest) X

[Rank] * [angle]



The calculation is valid.

10 Dependencies ▾

Apply

OK



We then will want to create our X and Y co-ordinates radially using the cosine and sine functions.

X:

```
X
```

Data+ (cometChartTest) X

```
IF [Position] = 1
then
(
SIN(RADIANS([Rank Angle])) * [Previous Year Value]
)

ELSEIF [Position] = 2
then
(
SIN(RADIANS([Rank Angle])) * [Current Year Value]
)
END
```



The calculation is valid.

2 Dependencies ▾

Apply

OK



Y:

Y Data+ (cometChartTest) X

```

IF [Position] = 1 then
(
COS(RADIANS([Rank Angle])) * [Previous Year Value]
)

ELSEIF
[Position] = 2 then
(
COS(RADIANS([Rank Angle])) * [Current Year Value]
)
END

```

The calculation is valid. 2 Dependencies ▾ Apply OK

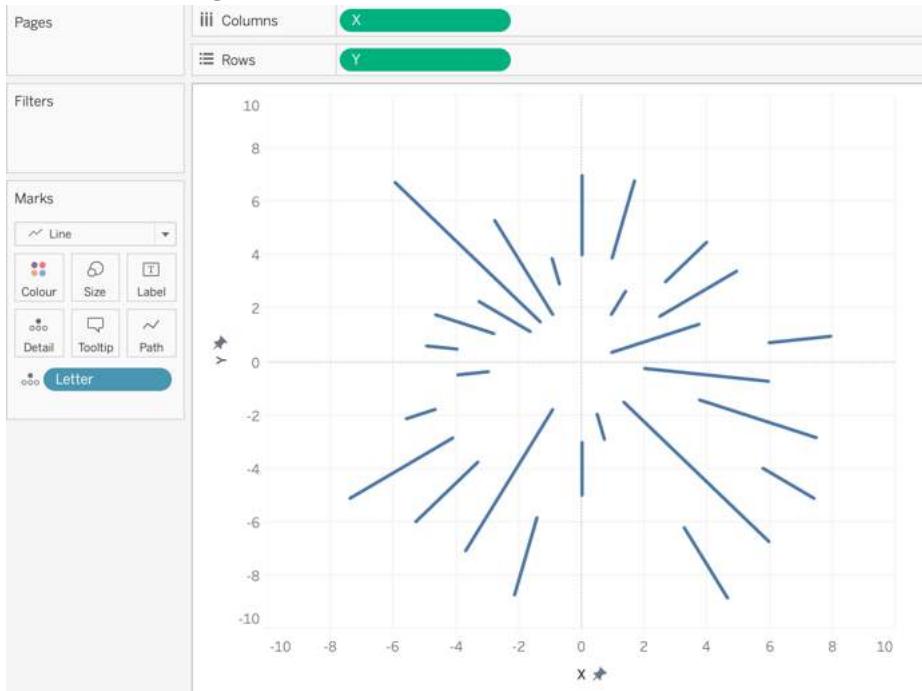
As we want to create two separate marks, we split it out by position, marking position 1 as the previous year value, and position 2 as the current year's value.

The Build

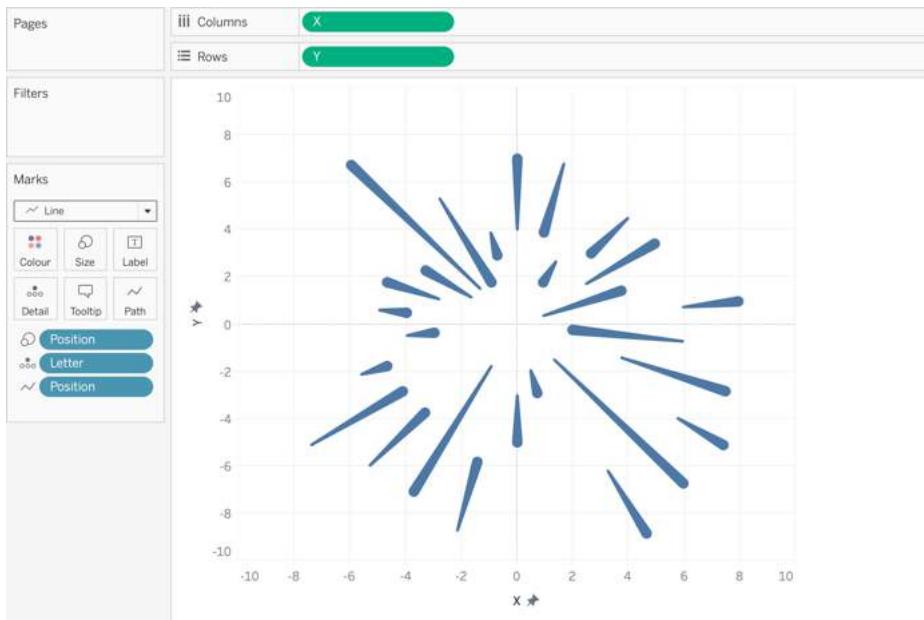
Drag X onto Columns.

Drag Y onto Rows.

Drag Letter onto detail, and make the marks a line.



Here we can now see the similarities to the ‘radial bar graph’ (as seen on Tableau Magic), however our start and end points are offset to be in alignment to the previous and current year positions of our dataset. Drag Position onto Path and Size. The current year will have the thicker end due as the position is sized on being 2, whereas the sizing of the previous year was 1.



From here it is a matter of additional design elements.

Housekeeping

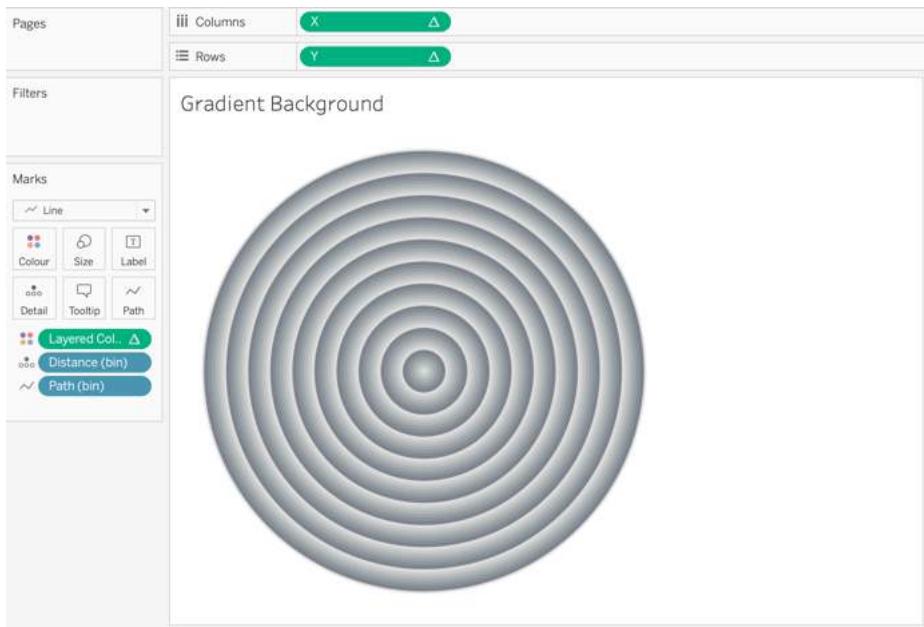
I added a random colour calculation using the below. This would be a great opportunity to bring in another attribute / colour on category if using your own dataset.

```
colour random
random()
// a random colour for gradients
```

The calculation is valid. 3 Dependencies ▾ Apply OK

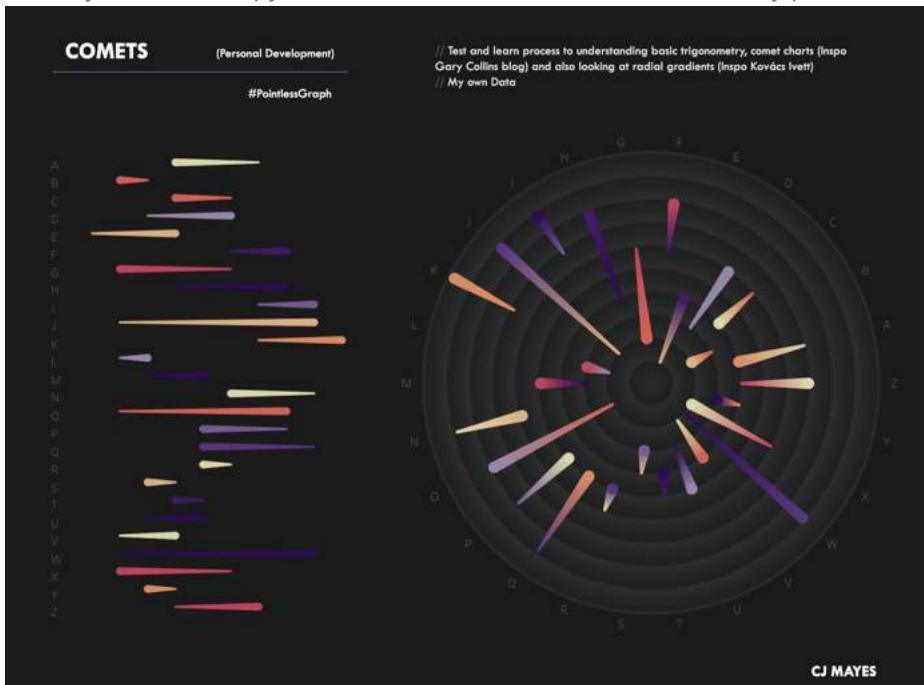
I made the X and Y-axis between -10 and 10, as these are the values my numbers sit within and will keep the shape of the circle.

Because the values don't all have the same start position I overlaid the graph on circles that had each ring moving outwards with an increasing value of 1. Do note this needs a separate dataset. I followed **Ivett's** radial gradient tutorial that can be found on the “How to Make It” tab.



Finally I overlaid the comet chart over the background (faded out) to make the end result.

If you'd like a copy of the workbook, it is downloadable on my profile.



A fairly quick and simple visualisation! Let me know if you have any questions, and feel free to reach out to me on [LinkedIn](#) or [Twitter](#).

Logging off.

CJ