



"Decoding MMA: An In-depth Analysis"

Exploring Fight outcomes through Fighters and Locations



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Introduction To MMA



- MMA (Mixed Martial Arts) is a dynamic and exciting combat sport.
- It combines various techniques and fighting styles, making it one of the most versatile combat sports in the world.
- MMA bouts take place inside an octagonal cage or ring.
- The sport has gained immense popularity globally and features a wide range of weight classes.
- MMA fighters are known for their discipline, athleticism, and adaptability in the cage.
- MMA offers intense action, making it a must-watch sport for combat sports enthusiasts



Project Overview



Data Collection: Gathering MMA fight data from reliable sources.



Data Preparation: Cleaning and structuring data for analysis.



AWS Integration: Hosting MySQL database on AWS for team collaboration.



SQL Analysis: Extracting meaningful insights from the data.



PowerBI Visualization: Creating insights and reports.



Team Collaboration: Utilizing AWS to share work efficiently over the cloud.

Database SETUP



Amazon RDS console screenshot showing the configuration for a database instance named 'finalproject'.

Summary

DB identifier	CPU	Status	Class
finalproject	2.77%	Available	db.t3.micro

Connectivity & security

Endpoint & port	Networking	Security
Endpoint finalproject.c5m0dau7ziqn.us-east-1.rds.amazonaws.com Port 3306	Availability Zone us-east-1c VPC vpc-0f086b646b1370338 Subnet group default-vpc-0f086b646b1370338 Subnets subnet-0d51af6dca434f67dd subnet-08956f1c0d47511ef subnet-0e10210b4cf107418 subnet-0ab4224b3571aebc9 subnet-0ad8cac8186b3ae7 subnet-01c7763855aef16d09	VPC security groups default (sg-04a72e7892d3feebd) Active Publicly accessible Yes Certificate authority info rds-ca-2019 Certificate authority date August 22, 2024, 13:08 (UTC-04:00) DB instance certificate expiration date August 22, 2024, 13:08 (UTC-04:00)

Connect to Database

Stored Connection: **FinalProject** Select from saved connection settings

Connection Method: **Standard (TCP/IP)** Method to use to connect to the RDBMS

Parameters SSL Advanced

Hostname: **finalproject.c5m0dau7ziqn.us-east-1.rds.amazonaws.com** Port: **3306** Name or IP address of the server host - and TCP/IP port.

Username: **admin** Name of the user to connect with.

Password: **Store in Vault ...** **Clear** The user's password. Will be requested later if it's not set.

Default Schema: The schema to use as default schema. Leave blank to select it later.

ERD



This is the ERD representation of our Normalized Dataset

This is based on Star Schema where Fight Entity is the Fact Table, and the remaining tables are Dimension Tables

All relationships are non-identifying due to independence





Fights by Country

```
1 • select L.Country, count(*) as Number_Of_Fights
2   from Fight F
3  join Location L on L.Location_ID=F.Location_ID
4  group by L.Country;
```



Win ratio of blue and red corner fighter



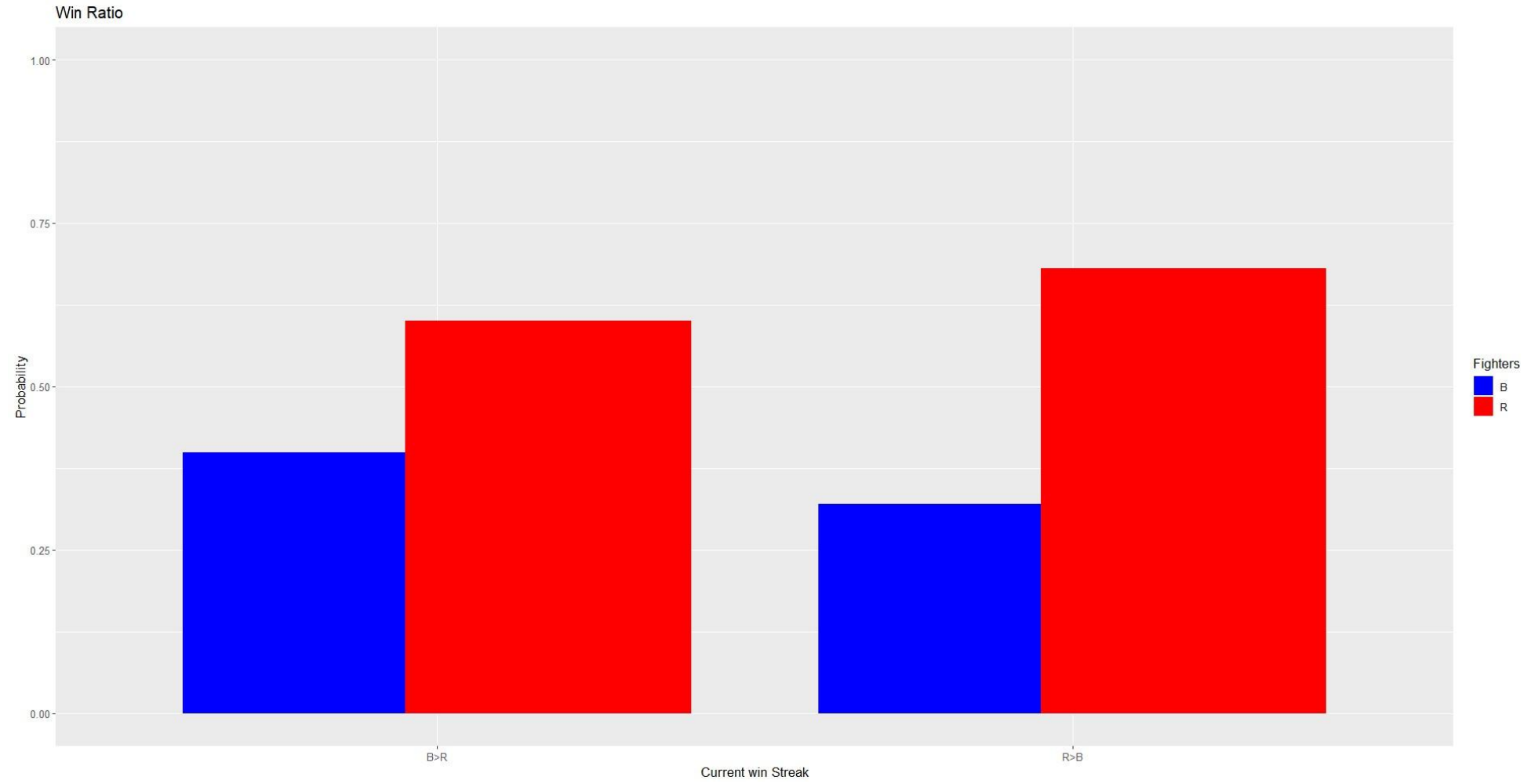
```
1  #Win Ratio of Blue Corner Fighter if the current winstreak of Blue is greater than Current winstreak of Red fighter
2  • SELECT
3      (SELECT COUNT(*)
4          FROM Fight F
5          JOIN Fighter_Blue B ON F.B_FighterID = B.B_FighterID
6          JOIN Fighter_Red R ON F.R_FighterID = R.R_FighterID
7          WHERE B.B_current_win_streak > R.R_current_win_streak AND Winner LIKE '%Blue%')
8      / NULLIF(
9          (SELECT COUNT(*)
10             FROM Fight F
11             JOIN Fighter_Blue B ON F.B_FighterID = B.B_FighterID
12             JOIN Fighter_Red R ON F.R_FighterID = R.R_FighterID
13             WHERE B.B_current_win_streak > R.R_current_win_streak AND Winner LIKE '%Red%')
14          +(SELECT COUNT(*)
15             FROM Fight F
16             JOIN Fighter_Blue B ON F.B_FighterID = B.B_FighterID
17             JOIN Fighter_Red R ON F.R_FighterID = R.R_FighterID
18             WHERE B.B_current_win_streak > R.R_current_win_streak AND Winner LIKE '%Blue%')
19          ), 0) AS WinRatio;
20
```

Result Grid	Filter Rows:	Export:	Wrap Cell Content:
WinRatio			
0.3988			

```
1  #Win Ratio of Red Corner Fighters if the current winstreak of Red is greater than Current winstreak of Blue fighter
2  • SELECT
3      1-(SELECT COUNT(*)
4          FROM Fight F
5          JOIN Fighter_Blue B ON F.B_FighterID = B.B_FighterID
6          JOIN Fighter_Red R ON F.R_FighterID = R.R_FighterID
7          WHERE B.B_current_win_streak < R.R_current_win_streak AND Winner LIKE '%Red%')
8      / NULLIF(
9          (SELECT COUNT(*)
10             FROM Fight F
11             JOIN Fighter_Blue B ON F.B_FighterID = B.B_FighterID
12             JOIN Fighter_Red R ON F.R_FighterID = R.R_FighterID
13             WHERE B.B_current_win_streak < R.R_current_win_streak AND Winner LIKE '%Red%')
14          +(SELECT COUNT(*)
15             FROM Fight F
16             JOIN Fighter_Blue B ON F.B_FighterID = B.B_FighterID
17             JOIN Fighter_Red R ON F.R_FighterID = R.R_FighterID
18             WHERE B.B_current_win_streak < R.R_current_win_streak AND Winner LIKE '%Blue%')
19          ), 0) AS WinRatio;
20
```

Result Grid	Filter Rows:	Export:	Wrap Cell Content:
WinRatio			
0.3196			

Visualization



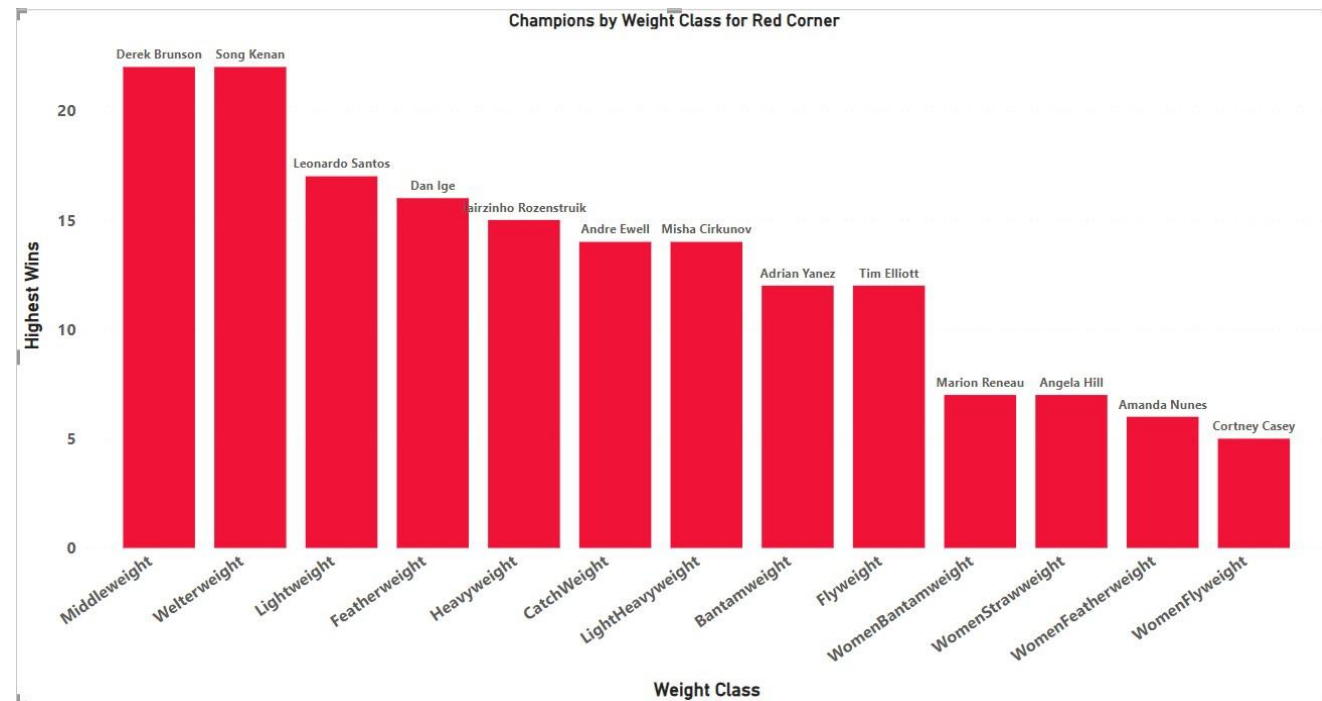
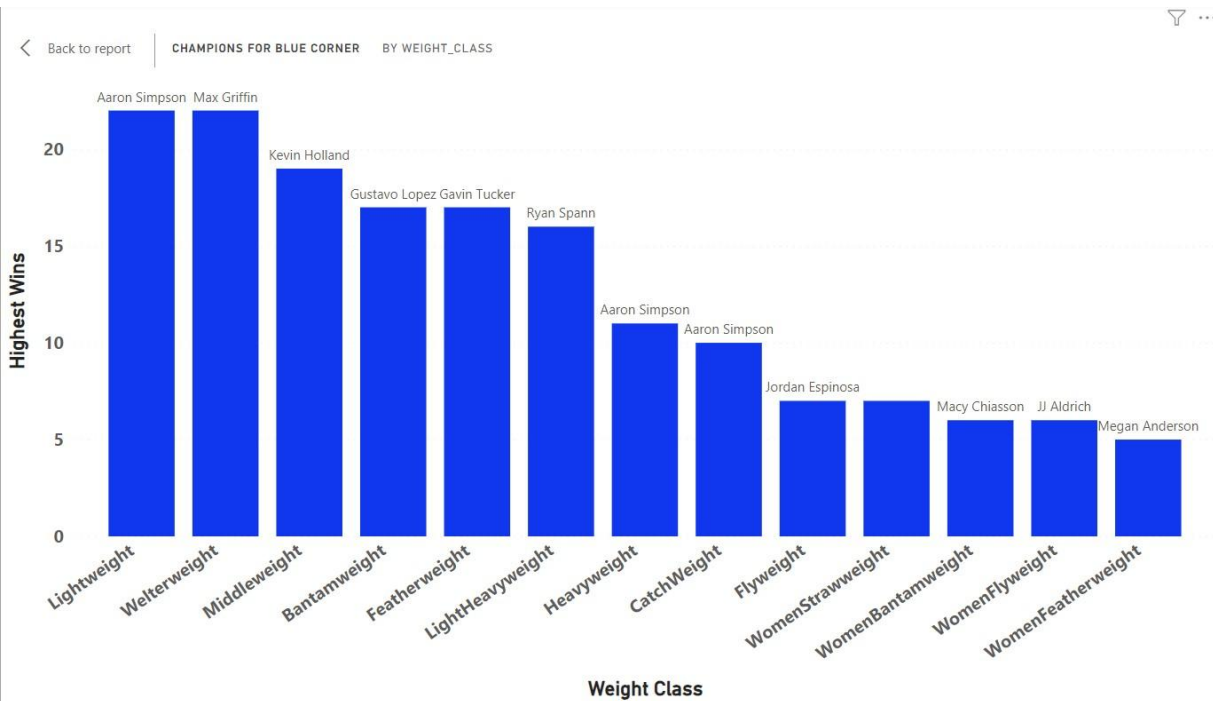
Champion by weight class



```
154 • CREATE or replace VIEW Champ_weightclass AS
155     SELECT CONCAT(B.B_First_Name, ' ', B.B_Last_Name) AS B_fullName,
156            max(B.B_wins) AS Max_Blue_wins,
157            CONCAT(R.R_First_Name, ' ', R.R_Last_Name) AS R_fullName,
158            max(R.R_wins) AS Max_Red_wins,
159            F.weight_class
160     FROM Fight F
161     JOIN Fighter_Blue B ON F.B_FighterID = B.B_FighterID
162     JOIN Fighter_Red R ON F.R_FighterID = R.R_FighterID
163     group by F.weight_class
164     ORDER BY Max_Blue_wins DESC, Max_Red_wins DESC;
165
166 • select * from Champ_weightclass;
```

	B_fullName	Max_Blue_wins	R_fullName	Max_Red_wins	weight_class
►	Max Griffin	22	Song Kenan	22	Welterweight
	Aaron Simpson	22	Leonardo Santos	17	Lightweight
	Kevin Holland	19	Derek Brunson	22	Middleweight
	Gavin Tucker	17	Dan Ige	16	Featherweight
	Gustavo Lopez	17	Adrian Yanez	12	Bantamweight
	Ryan Spann	16	Misha Cirkunov	14	LightHeavyweight
	Aaron Simpson	11	Jairzinho Rozenstruik	15	Heavyweight

Visualization



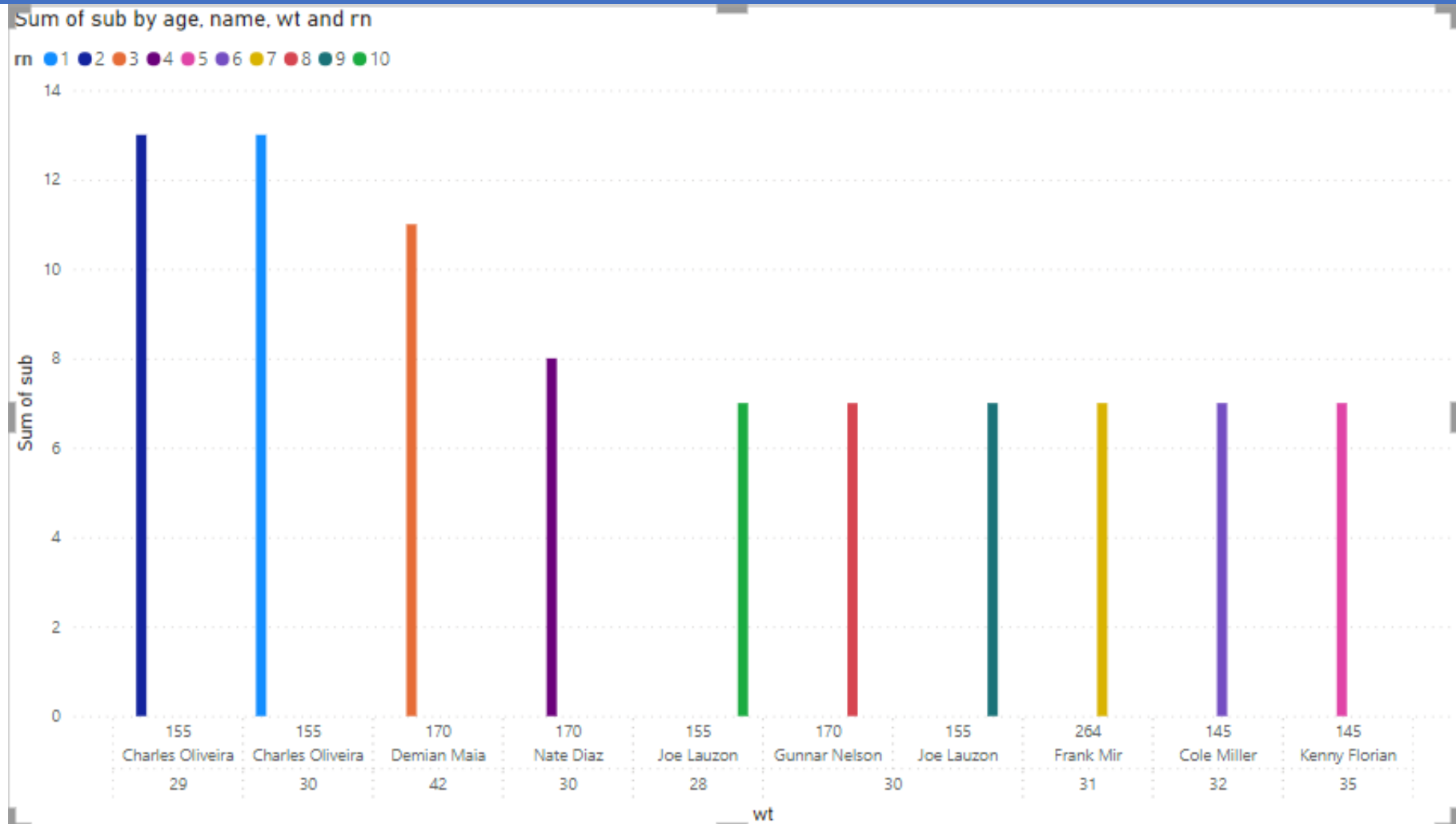
Champions by Submission



```
17 # Provide top 10 player names(first_name + Last_name) with age and weight wth of Submission
18 #of all the players consider if multiple players having Submission outs consider
19 #the top 10 values by age desc & wt desc
20 • select ROW_NUMBER() over(order by sub desc,age desc, wt desc) as rn,d.* from (
21   select concat(B_First_Name, ' ',B_Last_Name) as name ,
22   B_win_by_Submission as sub,B_weight_lbs as wt,
23   B_age as age,'BLUE' as team from Fighter_Blue
24   union all
25   select concat(R_First_Name, ' ',R_Last_Name) as name,
26   R_win_by_Submission as sub,R_weight_lbs as wt,
27   R_age as age,'RED' as team from Fighter_Red) d
28   order by rn
29   limit 10;
```

Result Grid						
Filter Rows:						
Export:						
Wrap Cell Content:						
	rn	name	sub	wt	age	team
▶	1	Charles Oliveira	13	155	30	BLUE
	2	Charles Oliveira	13	155	29	RED
	3	Demian Maia	11	170	42	RED
	4	Nate Diaz	8	170	30	BLUE
	5	Kenny Florian	7	145	35	BLUE
	6	Cole Miller	7	145	32	RED
	7	Frank Mir	7	264	31	RED

Visualization



Challenges



Relevant data sourcing and formatting given the overwhelming number of datasets available online



Data Integrity checks during normalization of the original dataset to suit our project analyses



Forgetting that the tables are in sync and trying to do operations without informing in a shared space



Time Management and meeting organization according to available schedules (constraints such as part time commitments, internships, academic schedule)

Learning Outcomes



- **Data Interpretation & Visualization:** Acquired skills in analyzing fight data, recognizing trends, and displaying important metrics with different tools.
- **Statistical Proficiency:** Improved skills in using statistics to study fighters' results and make predictions about future matches.
- **Domain Knowledge:** Gained knowledge about MMA factors like fighter position and weight category and how they affect match results.
- **Database Querying:** Became skilled in using SQL to handle MMA data, offering insights into weight categories, fighter comparisons, and trends based on location.



• "Knockout Thanks!"



QQ

- Q&A?