

# **FOOTBALL BUSINESS ANALYTIC PROJECT**

## **INTRODUCTION**

This project aims to carry out a business analysis on football players to help a football general manager plan a football market session using a data warehousing approach in order to strengthen the team and increase the economic value of the club.

## **BUSINESS QUESTIONS**

According to our purpose, the business questions are the following:

- To enhance the team and gain a deeper understanding of potential recruits, it is important to assess the performance of national teams over the years, which is invaluable when considering potential acquisitions. We will provide a detailed analysis of player statistics, including the mean overall and improvement player ratings, and the total market value, categorized by playing positions. The total market value for each position is a good way to show how much popular is such position. Such insights are vital for our club's recruitment strategy. They allow us to pinpoint the national teams with the most talented individuals who not only exhibit impressive current performance but also possess the potential to excel in the future. By having access to these granular performance metrics, we can make more informed decisions about where players to target and invest in come from, ultimately strengthening our team. We will conduct our analysis considering different years in order to show how these metrics have evolved. We will also apply the same process to the football clubs.
- The average age of players is a critical factor for the longevity and development of a national team's talent pool. By scrutinizing this data alongside team mean overall and improvement, and the total market value, we can identify teams that demonstrate a perfect blend of seasoned veterans and emerging stars. Such insights empower us to make informed recruitment decisions that align with our club's vision for sustained success. This data-driven approach will provide us with a nuanced understanding of the dynamics at play within national teams. It will enable us to evaluate how important is the average age in each playing position in order to strengthen our team. By scrutinizing the average age of players across different positions, we can gauge the potential for player development and plan our recruitment strategies accordingly. We will conduct our analysis considering different years in order to show how these metrics have evolved. We will also apply the same process to the football clubs.
- Understanding the physical characteristics of players is vital in assessing their suitability for different playing positions and styles of play. Physical attributes such as height, weight, and physical strength are integral to assessing a player's suitability for various positions and their potential impact on the field. Combining this knowledge with the mean overall and improvement, and the total market value, offers us a holistic view of the football landscape. It empowers us to identify national teams that possess not only exceptional skills but also physical prowess. We will conduct our analysis considering different years in order to show how these metrics have evolved. We will apply this process to the national teams and the football clubs.

## PLAYING POSITIONS

- **RW - Right Wing:** A player positioned on the right side of the attacking formation, often responsible for creating scoring opportunities and providing crosses into the box.
- **ST - Striker:** The primary goal-scoring position, usually positioned centrally near the opponent's goal.
- **LW - Left Wing:** Similar to the RW, but on the left side of the attacking formation, responsible for creating scoring opportunities and crosses.
- **RCM - Right Center Midfielder:** Positioned in the central midfield but closer to the right side, involved in both offensive and defensive aspects of the game.
- **GK - Goalkeeper:** The player responsible for guarding the goal and preventing the opposing team from scoring.
- **CF - Center Forward:** A versatile attacker positioned centrally, often involved in both scoring and creating goals.
- **CDM - Central Defensive Midfielder:** Positioned centrally in midfield, primarily focused on defensive duties, such as intercepting passes and tackling.
- **LCB - Left Center Back:** A defender positioned centrally on the left side of the defensive line.
- **RDM - Right Defensive Midfielder:** Positioned centrally but closer to the right side, with a focus on defensive midfield duties.
- **RS - Right Striker:** An attacking position on the right side, usually paired with a central striker.
- **LCM - Left Center Midfielder:** Positioned centrally but closer to the left side, involved in both offensive and defensive aspects of the game.
- **SUB - Substitute:** A player not in the starting lineup but available to enter the game when needed.
- **CAM - Central Attacking Midfielder:** Positioned centrally in the attacking midfield, responsible for creating goal-scoring opportunities.
- **RCB - Right Center Back:** A defender positioned centrally on the right side of the defensive line.
- **LDM - Left Defensive Midfielder:** Positioned centrally but closer to the left side, with a focus on defensive midfield duties.
- **LB - Left Back:** A defender positioned on the left side of the defensive line.
- **RB - Right Back:** A defender positioned on the right side of the defensive line.

- **LM - Left Midfielder:** Positioned on the left side of the midfield, often involved in both offensive and defensive play.
- **RM - Right Midfielder:** Positioned on the right side of the midfield, similar to the LM.
- **LS - Left Striker:** An attacking position on the left side, usually paired with a central striker.
- **CB - Center Back:** A central defender responsible for protecting the goal and stopping opposing attacks.
- **RES - Reserve:** Players who are not part of the starting lineup or substitutes.
- **RWB - Right Wing Back:** A player who combines defensive and offensive duties on the right side of the field.
- **RF - Right Forward:** An attacking position on the right side, often closer to the goal.
- **CM - Central Midfielder:** Positioned centrally in midfield, involved in both offensive and defensive aspects of the game.
- **LWB - Left Wing Back:** Similar to RWB, but on the left side, combining defensive and offensive duties.
- **LAM - Left Attacking Midfielder:** Positioned centrally in the attacking midfield, responsible for creating goal-scoring opportunities on the left side.
- **LF - Left Forward:** An attacking position on the left side, often closer to the goal.
- **RAM - Right Attacking Midfielder:** Positioned centrally in the attacking midfield, responsible for creating goal-scoring opportunities on the right side.

## DATASETS

This business analysis makes use of the following dataset:

- **FIFA players from 2015 to 2022**  
**Description:** This dataset comprises player profiles, encompassing a player's personal information, statistics, and various characteristics.  
The player's personal information includes details like their name, height, weight, age, club and league affiliation, nationality, dominant foot, hypothetical market value in euros, playing position, preferred positions, international reputation (rated from one to five, based on social media followers), overall rating (ranging from one to ninety-nine, considering all statistics) and potential rating (indicating the player's maximum potential).  
The statistical information pertains to attributes such as shot power, sprint speed, reflexes, jump height, and more, each rated on a scale from 1 to 99.  
**Link:** [https://www.kaggle.com/datasets/stefanoleone992/fifa-22-complete-player-dataset?select=players\\_22.csv](https://www.kaggle.com/datasets/stefanoleone992/fifa-22-complete-player-dataset?select=players_22.csv)

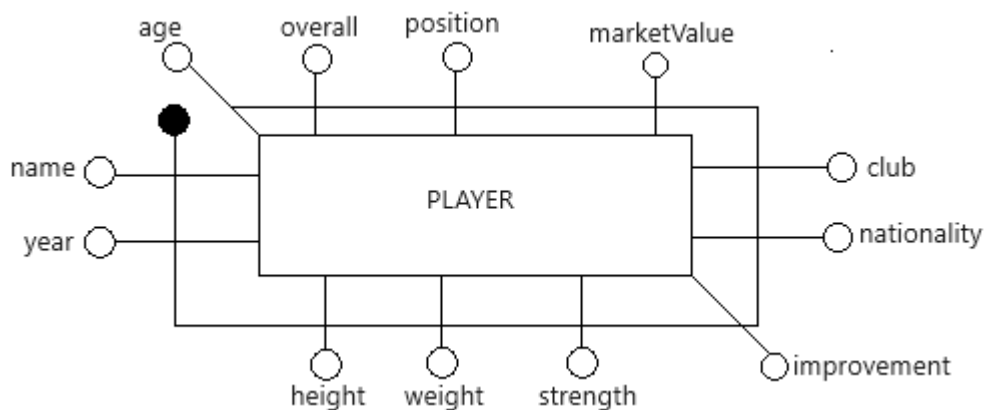
## DATA PREPARATION

To initiate the process, we began by opening all FIFA player CSV files downloaded from the corresponding source link, in Notepad and converting them into ANSI format to ensure an accurate display of accented characters. After this step, each file underwent further refinement, being transformed into the XLSX format. This allowed us to remove any unnecessary columns for our analysis and conveniently add and populate the "Year" column. To remove any accented characters, we utilized the Excel ASAP utilities.

Subsequently, these meticulously cleaned files were merged into a single comprehensive CSV file named "FIFAPlayers".

In the end, we removed from the CSV file the rows pertaining to free-agent players, those who do not belong to any club and have no market value. Check the folder "Data" to inspect the original files. The objective of this stage is to streamline the domain and prepare the data.

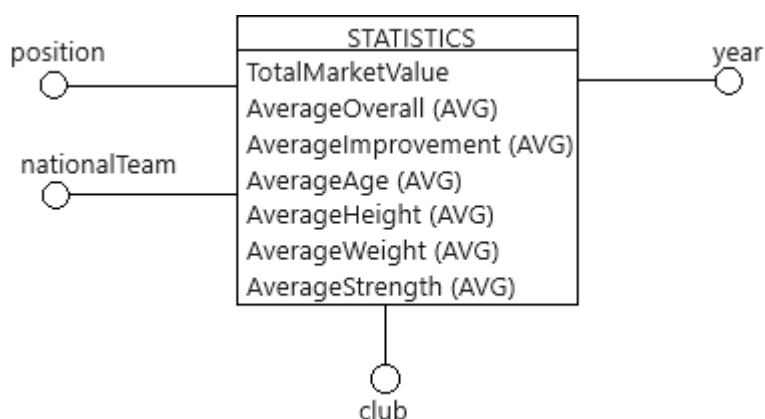
## DOMAIN & ER SCHEMA



Based on our business inquiries and the data at hand, our Entity-Relationship (ER) schema primarily comprises a single entity named "PLAYER." This entity, along with its associated attributes, provides comprehensive information about every player in a specific year. These attributes encompass age, height, weight, strength rating, overall rating, improvement rating (indicating the potential for overall rating growth), market value, the club they are affiliated with, their nationality, and the playing position they occupy. Given that there are instances where different players may share the same name and possess identical attribute values in distinct years, it becomes essential to ensure the uniqueness of each row. To achieve this, we utilize a composite primary key that includes all these attributes.

## DATAWAREHOUSE CONCEPTUAL DESIGN

Based on our business inquiries, we have devised the conceptual design for our data warehouse, which takes the form of a Dimensional Fact Model (DFM).



Within this DFM, we have identified three distinct categories of measures:

- **Economic Measure:** This category exclusively encompasses the additive measure known as 'TotalMarketValue.' This measure is designed to evaluate the cumulative market value of players associated with a specific club, national team, playing position, or within a particular year.
- **Performance Measures:** Within this set of measures, we have "AverageOverall" and "AverageImprovement," both of which are non-additive metrics. These metrics serve the purpose of evaluating the average overall rating and average improvement rating of players, respectively, within each year, playing position, club, or national team.
- **Physical Measures:** In this category, we include "AverageAge," "AverageHeight," "AverageWeight," and "AverageStrength," all of which are non-additive metrics. These metrics are employed to compute the average age, height, weight, and physical strength of players, categorized by year, playing position, club, or national team.

It's important to note that our dimensions do not exhibit dynamism; they remain static. For each year and position, clubs and national teams possess unique attribute values.

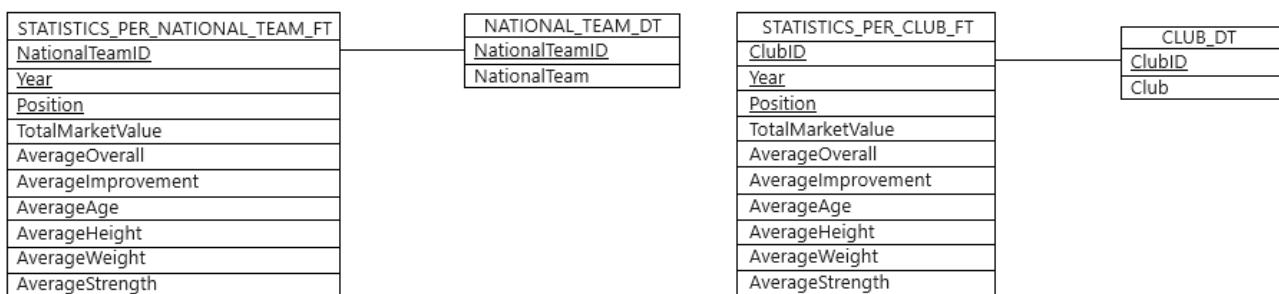
## WORKLOAD & DATA VOLUME

The aggregation patterns with their data volumes of our business questions are the following ones:

- {nationalTeam, position, year},  $183 \times 17 \times 8 = 24888$  records.
- {club, position, year},  $1017 \times 17 \times 8 = 138312$  records.

## DATAWAREHOUSE LOGICAL DESIGN

Based on our DFM, workload and data volume, we have devised the logical design for our data warehouse which takes the form of a multiple independent star schema.



The decision to opt for a multiple independent star schema was driven by the goal of enhancing query efficiency. By having multiple smaller fact tables, you can improve query performance because each table contains a subset of the data, making queries more efficient. In this context, we chose to include the degenerate dimensions 'Year' and 'Position' in the fact tables (FTs). The inclusion of 'Year' in the primary key made it unnecessary to create an additional dimension table solely for the 'Position' attribute, as doing so would not yield sufficient benefits.

## SQL

After establishing our logical schema, we proceeded to implement it in SQL. Our initial step involved creating a table named 'Player,' designed to mirror the structure outlined in the ER schema. Subsequently, we constructed the dimensional tables and the fact tables, building upon the foundation laid by the 'Player' table. Following that, we proceeded to implement two queries:

- **First query:** This query provides a comprehensive overview, detailing the total market value, as well as the average values for overall performance, improvement, age, height, weight, and physical strength, broken down by year, national team, and player position. The results are arranged in descending order of 'TotalMarketValue' because summing the market values serves as an indicator of the popularity of a particular playing position within a given national team. A higher total market value signifies a greater number of professional players and a greater probability of discovering exceptional players in that position. This is due to the observation that, for instance, the mean overall rating of Jamaican goalkeepers is slightly greater than that of Italian goalkeepers. Italy's football tradition boasts widespread popularity, a key factor behind the emergence of legendary goalkeepers such as Gianluigi Buffon, Gianluca Pagliuca, and Dino Zoff, a distinction not found in Jamaica. In a larger cohort of professional goalkeepers, it's customary for only a select few to demonstrate exceptional skills, consequently leading to a lower mean overall rating. A high total market value indicates high popularity within a country, which in turn results in a greater number of excellent players and stronger national teams.
- **Second query:** This query presents the same metrics as the previous query, but this time, it aggregates the data for each individual club ordered by the mean overall and improvement.

All the scripts pertaining to these queries and the associated tables have been organized and can be found within the 'Scripts' folder. Now, let's imagine to be in the role of a football manager who want to identify the clubs and national teams having the best goalkeepers and assess the significance of physical characteristics. We will analyze data considering three distinct years: 2022, 2018, and 2015. We'll commence our analysis by examining the finest and the weakest national teams, ranked in descending order of popularity.

year integer	nationalteam text	position text	totalmarketvalue numeric	averageoverall numeric	averageimprovement numeric	averageage numeric	averageheight numeric	averageweight numeric	averagestrength numeric
2022	Brazil	GK	297485000.00	73.68	1.35	28.15	189.06	83.91	66.76
2022	Germany	GK	287980000.00	70.12	3.12	27.07	189.98	86.35	66.67
2022	Spain	GK	209235000.00	73.62	2.05	30.05	188.11	81.81	65.89
2022	Italy	GK	196675000.00	75.13	1.81	29.06	190.75	83.56	60.69
2022	Argentina	GK	187840000.00	73.65	1.20	31.45	187.83	83.23	66.00
2022	Belgium	GK	175950000.00	74.54	3.31	27.54	192.00	84.23	65.69
2022	France	GK	157805000.00	71.61	3.21	27.76	187.94	81.97	62.00
2022	Slovenia	GK	121100000.00	83.33	0.67	31.67	191.33	87.67	68.67
2022	England	GK	118800000.00	65.88	4.46	26.77	189.20	79.52	58.91
2022	Portugal	GK	86750000.00	73.17	3.42	27.67	189.58	82.75	68.58

year integer	nationalteam text	position text	totalmarketvalue numeric	averageoverall numeric	averageimprovement numeric	averageage numeric	averageheight numeric	averageweight numeric	averagestrength numeric
2022	Curacao	GK	2100000.00	74.00	0.00	32.00	188.00	81.00	65.00
2022	New Zealand	GK	1675000.00	65.00	4.50	24.50	194.50	85.00	60.00
2022	Wales	GK	1675000.00	64.00	2.33	27.67	186.00	77.33	64.33
2022	Suriname	GK	1200000.00	69.00	2.00	29.00	190.00	88.00	77.00
2022	Benin	GK	1200000.00	69.00	1.00	27.00	189.00	79.00	45.00
2022	Bulgaria	GK	1175000.00	64.00	3.00	25.50	188.00	79.50	59.50
2022	Iceland	GK	1100000.00	64.00	11.00	19.00	194.00	82.00	67.00
2022	Montenegro	GK	1000000.00	64.00	7.00	23.00	195.00	76.00	39.00
2022	United Arab Emirates	GK	850000.00	70.00	0.00	31.00	179.00	73.00	46.00
2022	Luxembourg	GK	750000.00	69.00	0.00	31.00	186.00	79.00	69.00
2022	El Salvador	GK	625000.00	61.00	11.00	20.00	185.00	79.00	55.00
2022	Guinea	GK	240000.00	69.00	0.00	34.00	185.00	75.00	51.00
2022	Albania	GK	180000.00	56.00	6.00	24.00	195.00	89.00	50.00

year integer	nationalteam text	position text	totalmarketvalue numeric	averageoverall numeric	averageimprovement numeric	averageage numeric	averageheight numeric	averageweight numeric	averagestrength numeric
2018	Germany	GK	273305000.00	70.54	3.52	26.44	189.48	85.33	68.00
2018	Spain	GK	214630000.00	73.86	2.49	28.86	187.51	80.84	63.24
2018	France	GK	183205000.00	72.67	4.03	27.18	186.61	82.18	64.55
2018	Italy	GK	148680000.00	71.61	4.30	27.00	189.36	81.73	59.58
2018	Brazil	GK	132350000.00	73.87	0.97	28.77	188.13	82.97	66.67
2018	England	GK	104480000.00	66.31	4.47	26.36	189.73	80.98	60.05
2018	Belgium	GK	103375000.00	72.31	3.06	26.06	191.25	86.00	68.88
2018	Slovenia	GK	89200000.00	82.67	2.33	27.67	191.33	88.00	69.33
2018	Argentina	GK	86595000.00	70.97	1.81	30.66	187.44	83.06	63.53
2018	Portugal	GK	61900000.00	73.50	2.17	28.17	187.08	82.08	66.75

year integer	nationalteam text	position text	totalmarketvalue numeric	averageoverall numeric	averageimprovement numeric	averageage numeric	averageheight numeric	averageweight numeric	averagestrength numeric
2018	Oman	GK	950000.00	73.00	0.00	35.00	194.00	79.00	64.00
2018	New Zealand	GK	775000.00	68.00	4.00	27.00	191.00	91.00	66.00
2018	Philippines	GK	725000.00	68.00	2.00	27.00	191.00	89.00	76.00
2018	Latvia	GK	560000.00	68.50	0.00	34.00	188.50	83.00	56.50
2018	Northern Ireland	GK	530000.00	63.67	0.00	33.00	186.33	86.00	65.00
2018	Montenegro	GK	525000.00	65.00	5.00	24.00	196.00	86.00	72.00
2018	Equatorial Guinea	GK	450000.00	67.00	0.00	32.00	184.00	83.00	45.00
2018	Israel	GK	450000.00	65.00	2.00	27.00	193.00	87.00	80.00
2018	Kenya	GK	375000.00	67.00	0.00	33.00	186.00	83.00	68.00
2018	Algeria	GK	350000.00	65.00	0.00	30.00	188.00	80.00	67.00
2018	Tunisia	GK	250000.00	63.00	0.00	28.00	193.00	78.00	64.00
2018	Canada	GK	170000.00	62.00	0.00	32.00	190.00	80.00	72.00
2018	Egypt	GK	120000.00	70.00	0.00	44.00	188.00	87.00	73.00

year integer	nationalteam text	position text	totalmarketvalue numeric	averageoverall numeric	averageimprovement numeric	averageage numeric	averageheight numeric	averageweight numeric	averagestrength numeric
2015	Germany	GK	153100000.00	71.81	2.65	26.68	189.71	86.32	68.55
2015	Spain	GK	123845000.00	70.59	1.78	28.24	186.73	80.86	67.70
2015	France	GK	102230000.00	69.29	2.59	27.44	186.09	80.65	59.50
2015	Italy	GK	75420000.00	67.91	4.61	25.88	188.42	81.30	57.94
2015	England	GK	57855000.00	64.31	3.74	25.89	189.33	81.74	61.26
2015	Belgium	GK	52850000.00	71.09	2.55	26.00	190.09	84.73	69.45
2015	Brazil	GK	50140000.00	72.29	1.00	29.41	189.47	83.47	68.12
2015	Argentina	GK	47830000.00	69.66	1.31	29.81	186.50	83.00	63.31
2015	Netherlands	GK	37575000.00	71.36	3.21	26.07	189.00	85.43	64.29
2015	Russia	GK	34220000.00	72.40	2.00	28.80	191.20	86.10	67.20

year integer	nationalteam text	position text	totalmarketvalue numeric	averageoverall numeric	averageimprovement numeric	averageage numeric	averageheight numeric	averageweight numeric	averagestrength numeric
2015	Guatemala	GK	500000.00	64.00	0.00	28.00	188.00	84.00	53.00
2015	Cote d'Ivoire	GK	375000.00	65.00	7.00	21.00	193.00	82.00	69.00
2015	Senegal	GK	375000.00	64.00	13.00	20.00	196.00	80.00	55.00
2015	Estonia	GK	350000.00	64.00	0.00	34.00	191.00	88.00	53.00
2015	Jamaica	GK	300000.00	68.00	0.00	37.00	193.00	97.00	80.00
2015	Kyrgyzstan	GK	300000.00	62.00	5.00	27.00	194.00	90.00	71.00
2015	Romania	GK	300000.00	62.00	4.00	24.00	188.00	72.00	48.00
2015	Kenya	GK	300000.00	62.00	0.00	30.00	184.00	82.00	68.00
2015	Armenia	GK	275000.00	70.00	0.00	39.00	188.00	89.00	76.00
2015	Liechtenstein	GK	275000.00	63.00	0.00	32.00	187.00	80.00	46.00
2015	New Zealand	GK	275000.00	62.00	0.00	31.00	187.00	90.00	62.00
2015	Iceland	GK	130000.00	57.00	0.00	30.00	193.00	90.00	65.00
2015	Bulgaria	GK	70000.00	54.00	13.00	20.00	191.00	83.00	38.00

As expected, the top national teams are also the ones that typically progress further in tournaments. Upon analyzing these results, it becomes evident that national teams with the finest goalkeepers are almost the same and maintain consistency over the years. Over the years, the average ages of the top national teams range from about 26 to 31, while in the weakest teams, it can vary more significantly. The mean heights are quite similar for both the strongest and the least competitive national teams across the years, with rare outliers. The mean weight can vary significantly among national teams. The average physical strengths are more similar among elite national teams, whereas in the least successful ones, they can vary considerably. The mean overall ratings, with the corresponding improvements, of the most popular national teams are very similar to the least popular ones. This validates the theory discussed in this section, in particular in part regarding the first query.

Let's consider now the clubs:

year integer	club text	position text	totalmarketvalue numeric	averageoverall numeric	averageimprovement numeric	averageage numeric	averageheight numeric	averageweight numeric	averagestrength numeric
2022	Atletico de Madrid	GK	112000000.00	91.00	2.00	28.00	188.00	87.00	78.00
2022	FC Barcelona	GK	99000000.00	90.00	2.00	29.00	187.00	85.00	78.00
2022	FC Bayern Munchen	GK	13500000.00	90.00	0.00	35.00	193.00	93.00	80.00
2022	Paris Saint-Germain	GK	119500000.00	89.00	4.00	22.00	196.00	90.00	72.00
2022	Manchester City	GK	94000000.00	89.00	2.00	27.00	188.00	86.00	78.00
2022	Real Madrid CF	GK	85500000.00	89.00	2.00	29.00	199.00	96.00	70.00
2022	Liverpool	GK	82000000.00	89.00	1.00	28.00	191.00	91.00	78.00
2022	Juventus	GK	42000000.00	87.00	0.00	31.00	195.00	90.00	65.00
2022	Tottenham Hotspur	GK	13500000.00	87.00	0.00	34.00	188.00	82.00	43.00
2022	VfL Wolfsburg	GK	52000000.00	86.00	1.00	29.00	197.00	86.00	72.00

year integer	club text	position text	totalmarketvalue numeric	averageoverall numeric	averageimprovement numeric	averageage numeric	averageheight numeric	averageweight numeric	averagestrength numeric
2022	Kerala Blasters FC	GK	1700000.00	57.00	4.00	27.00	189.00	87.00	51.00
2022	Jamshedpur FC	GK	150000.00	57.00	3.00	28.00	180.00	75.00	49.00
2022	Longford Town	GK	130000.00	57.00	1.00	28.00	185.00	83.00	43.00
2022	SC Freiburg II	GK	300000.00	56.00	13.00	18.00	190.00	80.00	55.00
2022	Odisha FC	GK	275000.00	56.00	9.00	23.00	181.00	69.00	34.00
2022	Hebei FC	GK	240000.00	56.00	7.00	24.00	192.00	81.00	57.00
2022	Dundalk FC	GK	180000.00	56.00	6.00	24.00	195.00	89.00	50.00
2022	Hyderabad FC	GK	70000.00	56.00	0.00	32.00	180.00	72.00	52.00
2022	AC Mineros de Guayana	GK	240000.00	55.00	10.00	20.00	192.00	80.00	56.00
2022	FC Academica Clinceni	GK	250000.00	54.00	16.00	20.00	181.00	80.00	53.00
2022	Brisbane Roar	GK	200000.00	53.00	12.00	22.00	193.00	76.00	63.00
2022	Al Taawoun	GK	160000.00	53.00	7.00	23.00	180.00	71.00	53.00
2022	Mumbai City FC	GK	150000.00	52.00	9.00	23.00	182.00	78.00	48.00



year integer	club text	position text	totalmarketvalue numeric	averageoverall numeric	averageimprovement numeric	averageage numeric	averageheight numeric	averageweight numeric	averagestrength numeric
2018	FC Bayern Munchen	GK	61000000.00	92.00	0.00	31.00	193.00	92.00	83.00
2018	Manchester United	GK	64500000.00	90.00	2.00	26.00	193.00	76.00	64.00
2018	Chelsea	GK	59000000.00	89.00	3.00	25.00	199.00	94.00	70.00
2018	Juventus	GK	4500000.00	89.00	0.00	39.00	191.00	94.00	69.00
2018	Atletico de Madrid	GK	57000000.00	88.00	5.00	24.00	189.00	82.00	78.00
2018	Tottenham Hotspur	GK	38000000.00	88.00	0.00	30.00	188.00	82.00	43.00
2018	Inter	GK	29000000.00	87.00	0.00	32.00	193.00	89.00	71.00
2018	Arsenal	GK	10500000.00	86.00	0.00	35.00	196.00	90.00	65.00
2018	FC Barcelona	GK	35000000.00	85.00	4.00	25.00	187.00	85.00	79.00
2018	Bayer 04 Leverkusen	GK	34000000.00	85.00	3.00	25.00	190.00	83.00	68.00

year integer	club text	position text	totalmarketvalue numeric	averageoverall numeric	averageimprovement numeric	averageage numeric	averageheight numeric	averageweight numeric	averagestrength numeric
2018	FC Lausanne-Sport	GK	130000.00	58.00	7.00	24.00	185.00	76.00	55.00
2018	Wellington Phoenix	GK	120000.00	58.00	4.00	26.00	189.00	83.00	53.00
2018	Spurs SKN St. Pölten	GK	120000.00	58.00	4.00	25.00	185.00	83.00	73.00
2018	Accrington Stanley	GK	100000.00	58.00	2.00	27.00	203.00	92.00	52.00
2018	Omiya Ardija	GK	80000.00	58.00	0.00	31.00	187.00	72.00	49.00
2018	Stade Brestois 29	GK	160000.00	57.00	13.00	20.00	181.00	69.00	55.00
2018	Gillingham	GK	70000.00	57.00	0.00	25.00	205.00	102.00	12.00
2018	Stevenage	GK	130000.00	56.00	12.00	21.00	185.00	72.00	52.00
2018	Finn Harps	GK	80000.00	56.00	4.00	25.00	188.00	85.00	70.00
2018	Port Vale	GK	100000.00	55.00	10.00	22.00	185.00	69.00	58.00
2018	Galway United	GK	70000.00	55.00	3.00	25.00	198.00	95.00	68.00
2018	Grimsby Town	GK	60000.00	55.00	1.00	27.00	187.00	89.00	65.00
2018	Rochdale	GK	60000.00	53.00	6.00	25.00	188.00	85.00	62.00

year integer	club text	position text	totalmarketvalue numeric	averageoverall numeric	averageimprovement numeric	averageage numeric	averageheight numeric	averageweight numeric	averagestrength numeric
2015	FC Bayern Munchen	GK	63500000.00	90.00	0.00	28.00	193.00	92.00	83.00
2015	Chelsea	GK	27000000.00	86.00	4.00	22.00	199.00	88.00	70.00
2015	Tottenham Hotspur	GK	21000000.00	85.00	1.00	27.00	188.00	78.00	43.00
2015	Paris Saint-Germain	GK	21000000.00	84.00	1.00	27.00	192.00	80.00	66.00
2015	Real Madrid CF	GK	16500000.00	84.00	0.00	33.00	185.00	84.00	70.00
2015	Manchester United	GK	13500000.00	83.00	4.00	23.00	193.00	82.00	64.00
2015	AS Saint-Etienne	GK	15000000.00	83.00	1.00	27.00	188.00	90.00	76.00
2015	PFC CSKA Moscow	GK	15500000.00	83.00	0.00	28.00	186.00	78.00	67.00
2015	Borussia Dortmund	GK	11500000.00	83.00	0.00	33.00	188.00	85.00	74.00
2015	FC Barcelona	GK	14000000.00	83.00	0.00	31.00	185.00	84.00	70.00

year integer	club text	position text	totalmarketvalue numeric	averageoverall numeric	averageimprovement numeric	averageage numeric	averageheight numeric	averageweight numeric	averagestrength numeric
2015	Manstfield Town	GK	70000.00	54.00	13.00	20.00	191.00	83.00	38.00
2015	UCD AFC	GK	70000.00	54.00	11.00	20.00	188.00	88.00	51.00
2015	Fleetwood Town	GK	80000.00	54.00	6.00	23.00	191.00	74.00	58.00
2015	Al Taawoun	GK	90000.00	54.00	5.00	24.00	188.00	84.00	63.00
2015	Drogheda United	GK	80000.00	54.00	5.00	23.00	182.00	82.00	53.00
2015	Bohemian FC	GK	70000.00	54.00	0.00	33.00	185.00	83.00	49.00
2015	Brescia	GK	40000.00	53.00	13.00	20.00	184.00	76.00	57.00
2015	Bray Wanderers	GK	40000.00	53.00	11.00	19.00	179.00	76.00	44.00
2015	Trapani	GK	40000.00	53.00	9.00	21.00	186.00	81.00	60.00
2015	Al Shoulla	GK	45000.00	52.00	0.00	32.00	183.00	89.00	60.00
2015	Colorado Rapids	GK	50000.00	51.00	7.00	23.00	191.00	92.00	80.00
2015	Athlone Town	GK	60000.00	51.00	4.00	25.00	185.00	85.00	35.00
2015	Demir Grup Sivasspor	GK	30000.00	43.00	6.00	24.00	191.00	83.00	21.00

As expected, the top clubs are also the ones that typically progress further in international competitions like the Champions League and in their respective first-level leagues. Upon analyzing these results, it becomes evident that clubs with the finest goalkeepers are almost the same and maintain consistency over the years. Over the years, the average ages and the physical characteristics of the top and weakest goalkeepers can vary significantly. In conclusion, our analyses of both national teams and club football highlight several key trends that underline the significance of certain factors in achieving success in the world of football. It is evident that top national teams, as well as leading clubs, tend to progress further in tournaments and international competitions. One crucial factor contributing to this success is the quality of goalkeepers, which consistently plays a pivotal role. Interestingly, the mean heights of players do not show significant

disparities between strong and weak teams, and between strong and weak clubs. This suggests that height alone may not be a decisive factor in team success, but a minimal mean height to become a professional player exists. The mean weight and physical strength of players can vary significantly among national teams and clubs, underscoring the potential importance of physical attributes. Regarding age, the elite national teams maintain a relatively consistent average age among their players, typically ranging from approximately 26 to 31 years old, while in the clubs it can vary a lot. This suggests that the average age is not so crucial; an excellent goalkeeper cannot have experience.