

Python on the Pitch: How Germany will win World Cup 2026

Ruslan Korniiichuk | 17.07.2025

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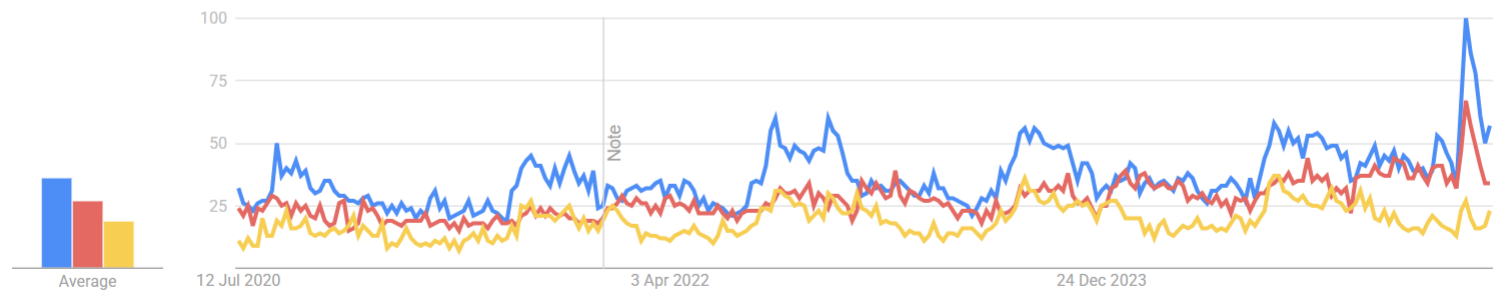


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01

Hudl Statsbomb

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img	Delete statsbomb-logo.jpg	3 years ago
.DS_Store	Added 370 new games, updated 1087 games.	2 years ago
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README.md	Update README.md	3 years ago

README

License

StatsBomb Open Data

Welcome to the StatsBomb Open Data repository.

StatsBomb are committed to sharing new data and research publicly to enhance understanding of the game of Football. We want to actively encourage new research and analysis at all levels. Therefore we have made certain leagues of StatsBomb Data freely available for public use for research projects and genuine interest in football analytics.

StatsBomb are hoping that by making data freely available, we will extend the wider football analytics community and attract new talent to the industry.

About

Free football data from StatsBomb

statsbomb.com/resource-centre/

- soccer
- open-data
- football-data
- football
- sports-stats
- sports-data

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Report repository

Releases

No releases published

Packages

No packages published

Contributors 5



Hudl Statsbomb Open Data structure

The data is provided as **JSON files** exported from the Statsbomb Data API, in the following structure:

- competition and seasons stored in **competitions.json**
- matches for each competition and season, stored in the **matches folder**. Each folder within is named for a competition ID, each file is named for a season ID within that competition
- events and lineups for each match, stored in **events** and **lineups** respectively. Each file is named for a match ID



Files



master



Go to file



data

- events
- lineups
- matches
- three-sixty

competitions.json

doc

img

- .DS_Store
- LICENSE.pdf
- README.md

open-data / data / competitions.json



cddr Added Euros 2024 and Copa America 2024

03d3ff7 · last year



History

Code

Blame

963 lines (963 loc) · 31.5 KB



Raw



```
1  [ {
2    "competition_id" : 9,
3    "season_id" : 281,
4    "country_name" : "Germany",
5    "competition_name" : "1. Bundesliga",
6    "competition_gender" : "male",
7    "competition_youth" : false,
8    "competition_international" : false,
9    "season_name" : "2023/2024",
10   "match_updated" : "2024-07-15T14:15:54.671676",
11   "match_updated_360" : "2024-07-15T14:17:00.877356",
12   "match_available_360" : "2024-07-15T14:17:00.877356",
13   "match_available" : "2024-07-15T14:15:54.671676"
14 }, {
15   "competition_id" : 9,
16   "season_id" : 27,
17   "country_name" : "Germany",
18   "competition_name" : "1. Bundesliga",
19   "competition_gender" : "male"
```

```
[ {
  "competition_id" : 9,
  "season_id" : 281,
  "country_name" : "Germany",
  "competition_name" : "1. Bundesliga",
  "competition_gender" : "male",
  "competition_youth" : false,
  "competition_international" : false,
  "season_name" : "2023/2024",
  "match_updated" : "2024-07-15T14:15:54.671676",
  "match_updated_360" : "2024-07-15T14:17:00.877356",
  "match_available_360" : "2024-07-15T14:17:00.877356",
  "match_available" : "2024-07-15T14:15:54.671676"
}, {
  "competition_id" : 9,
  "season_id" : 27,
  "country_name" : "Germany",
  "competition_name" : "1. Bundesliga",
  "competition_gender" : "male"
```

Hudl Statsbomb: Competitions

statsbomb_0001.ipynb

Open in... Python 3 (ipykernel)

```
[1]: import pandas as pd
import requests

[2]: pd.set_option("display.max.columns", None)
pd.set_option("display.max.rows", None)
```

Load competitions.json file from Hudl Statsbomb GitHub and transform to Pandas DataFrame

```
[3]: url = "https://raw.githubusercontent.com/statsbomb/open-data/refs/heads/master/data/competitions.json"
data = requests.get(url).json()
competitions = pd.json_normalize(data)
competitions.head(3)
```

	competition_id	season_id	country_name	competition_name	competition_gender	competition_youth	competition_international	season_name	match_updated	match_updated
0	9	281	Germany	1. Bundesliga	male	False	False	2023/2024	2024-07-15T14:15:54.671676	2024-07-15T14:17:00.1
1	9	27	Germany	1. Bundesliga	male	False	False	2015/2016	2024-05-19T11:11:14.192381	
2	1267	107	Africa	African Cup of Nations	male	False	True	2023	2024-06-13T07:51:02.452825	

Competitions with season_name, competition_id, and season_id

```
[4]: competitions[["competition_name", "season_name", "competition_id", "season_id"]].head(3)
```

	competition_name	season_name	competition_id	season_id
0	1. Bundesliga	2023/2024	9	281
1	1. Bundesliga	2015/2016	9	27
2	African Cup of Nations	2023	1267	107

Hudl Statsbomb: Matches

statsbomb_0002.ipynb

Open in... Python 3 (ipykernel)

```
[1]: import pandas as pd
import requests
```

FIFA World Cup 2022

```
[2]: competition_id = 43
season_id = 106
```

```
[3]: url = f"https://raw.githubusercontent.com/statsbomb/open-data/refs/heads/master/data/matches/{competition_id}/{season_id}.json"
data = requests.get(url).json()
matches = pd.json_normalize(data)
matches.head(2)
```

	match_id	match_date	kick_off	home_score	away_score	match_status	match_status_360	last_updated	last_updated_360	match_week	...	competition_stage_id
0	3857256	2022-12-02	21:00:00.000	2	3	available	available	2023-02-17T23:45:15.306706	2023-04-26T23:49:58.956186	3	...	10
1	3869151	2022-12-03	21:00:00.000	2	1	available	available	2023-07-30T07:46:05.382784	2023-07-30T07:48:51.865595	4	...	33

2 rows × 42 columns

```
[4]: len(matches)
```

```
[4]: 64
```

```
[5]: for _, row in matches.head(2).iterrows():
    print(
        f"{row['home_team.home_team_name']} {row['away_team.away_team_name']} "
        f"{row['home_score']}:{row['away_score']} ({row['match_id']})"
    )
```

Serbia Switzerland 2:3 (3857256)
Argentina Australia 2:1 (3869151)

Hudl Statsbomb: Matches (filtered)

```
statsbomb_0003.ipynb x +
[1]: import pandas as pd
import requests

FIFA World Cup 2022

[2]: competition_id = 43
season_id = 106

[3]: url = f"https://raw.githubusercontent.com/statsbomb/open-data/refs/heads/master/data/matches/{competition_id}/{season_id}.json"
data = requests.get(url).json()
matches = pd.json_normalize(data)

Germany

[4]: team = "Germany"

filtered = matches[(matches["home_team.home_team_name"] == team) | (matches["away_team.away_team_name"] == team)]

for _, row in filtered.iterrows():
    print(
        f"{row['home_team.home_team_name']} {row['away_team.away_team_name']} "
        f"{row['home_score']}:{row['away_score']} ({row['match_id']})"
    )

Spain Germany 1:1 (3857263)
Germany Japan 1:2 (3857284)
Costa Rica Germany 2:4 (3857292)
```

Statsbomb event data

Hudl Statsbomb: Match events

statsbomb_0004.ipynb

Open in... Python 3 (ipykernel)

```
[1]: import pandas as pd
import requests

Costa Rica 2:4 Germany

[2]: match_id = 3857292

[3]: url = f"https://raw.githubusercontent.com/statsbomb/open-data/refs/heads/master/data/events/{match_id}.json"
data = requests.get(url).json()
events = pd.json_normalize(data)

[4]: len(events)

[4]: 3869

[5]: events.head(3)
```

	id	index	period	timestamp	minute	second	possession	duration	type.id	type.name	...	substitution.outcome.name	substitution.replacement.id	substitution.replacement.name
0	2194e9dd-089b-44f8-a5c7-60436a00f0f9	1	1	00:00:00.000	0	0	1	0.0	35	Starting XI	...	NaN	NaN	
1	1247d52e-3c53-4106-bcf9-36c14a0c352d	2	1	00:00:00.000	0	0	1	0.0	35	Starting XI	...	NaN	NaN	
2	5ba53280-4efe-4482-b727-1328f6654d2a	3	1	00:00:00.000	0	0	1	0.0	18	Half Start	...	NaN	NaN	

3 rows × 116 columns

```
[6]: events.to_pickle("events.pkl")
```

Hudl Statsbomb: Event types

```
statsbomb_0005.ipynb x +
[1]: import pandas as pd

[2]: events = pd.read_pickle("events.pkl")

Event type frequency

[3]: events["type.name"].value_counts().head(5)

[3]: type.name
Pass      1140
Ball Receipt* 1062
Carry      868
Pressure   265
Ball Recovery 105
Name: count, dtype: int64

Event type frequency (Germany)

[4]: events_de = events.loc[events["possession_team.name"] == "Germany"]
events_de["type.name"].value_counts().head(5)

[4]: type.name
Pass      776
Ball Receipt* 733
Carry      606
Pressure   128
Ball Recovery 66
Name: count, dtype: int64

[5]: events_de.to_pickle("events_de.pkl")
```

Hudl Statsbomb: Event types

```
statsbomb_0006.ipynb
```

Open in... Python 3 (ipykernel)

```
[1]: import pandas as pd
```

```
[2]: events_de = pd.read_pickle("events_de.pkl")
```

Passes (Germany)

```
[3]: passes_de = events_de.loc[events_de['type.name'] == 'Pass']
     passes_de[["player.name", "pass.recipient.name", "location", "pass.end_location"]].head(3)
```

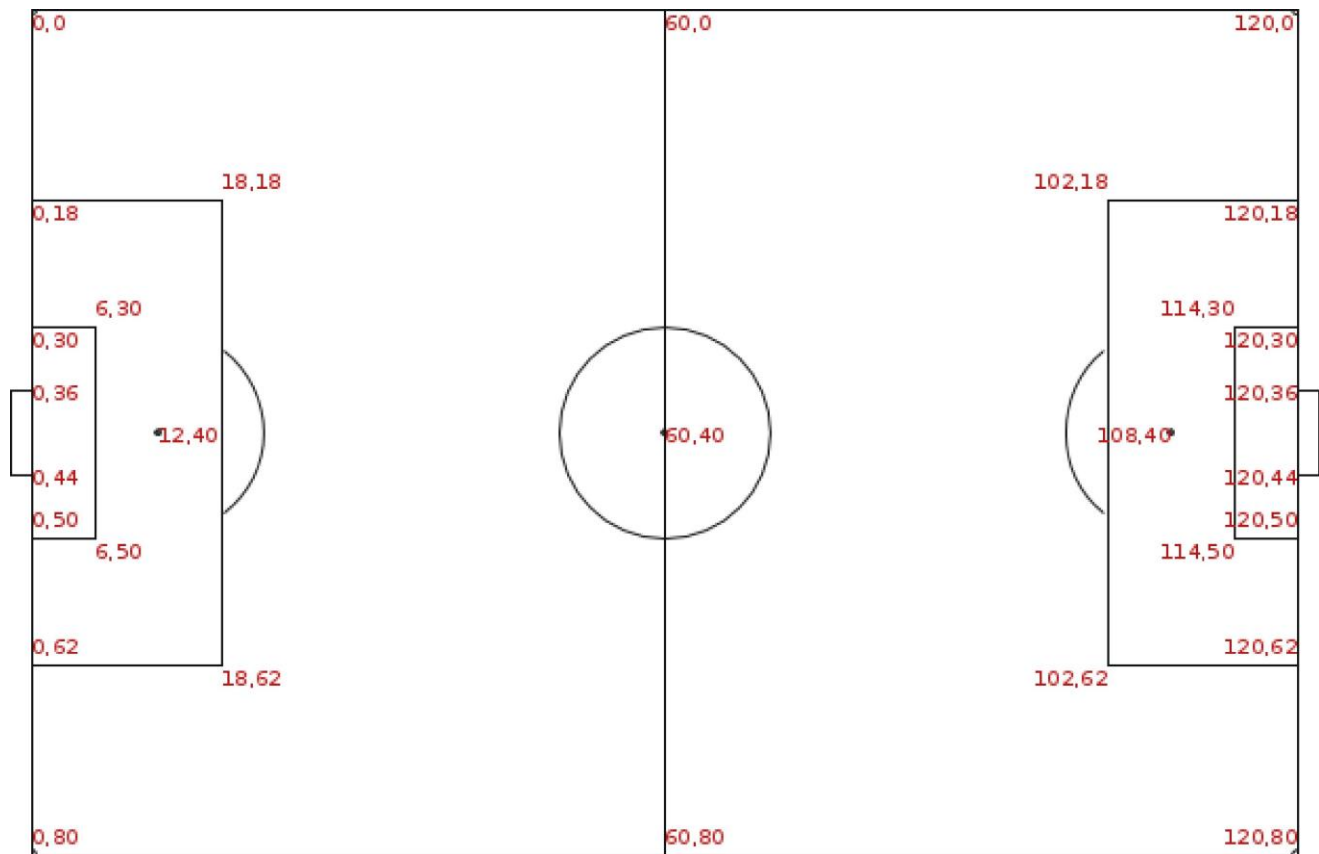
	player.name	pass.recipient.name	location	pass.end_location
4	Thomas Müller	Antonio Rüdiger	[61.0, 40.1]	[40.1, 36.2]
7	Antonio Rüdiger	Joshua Kimmich	[39.8, 36.4]	[40.6, 58.5]
10	Joshua Kimmich	Thomas Müller	[47.2, 62.2]	[89.9, 45.4]

Most frequent passing combinations between players

```
[4]: passes_de[["player.name", "pass.recipient.name"]].value_counts().head(10)
```

player.name	pass.recipient.name	
Joshua Kimmich	Niklas Süle	29
Niklas Süle	Joshua Kimmich	26
	Antonio Rüdiger	22
Antonio Rüdiger	Niklas Süle	20
Niklas Süle	İlkay Gündoğan	18
Antonio Rüdiger	David Raum	16
İlkay Gündoğan	Niklas Süle	15
David Raum	Antonio Rüdiger	15
Joshua Kimmich	Lukas Klostermann	14
Antonio Rüdiger	Joshua Kimmich	14

Name: count, dtype: int64



Hudl Statsbomb: Team's formation

```
statsbomb_0007.ipynb x +
[1]: import pandas as pd

[2]: events_de = pd.read_pickle("events_de.pkl")

Team's formation (Germany)

[3]: events_de['type.id'].isin([35]).any() # starting eleven

[3]: False

[4]: events_de['type.id'].isin([36]).any() # tactical shift

[4]: True

[5]: ', '.join(sorted(events_de['type.name'].unique()))

[5]: '50/50, Ball Receipt*, Ball Recovery, Block, Carry, Clearance, Dispossessed, Dribble, Dribbled Past, Duel, Foul Committed, Foul Won, Goal Keeper, Injury Stoppage, I
interception, Miscontrol, Offside, Pass, Pressure, Referee Ball-Drop, Shot, Substitution, Tactical Shift'

[6]: tactical_shifts = events_de[events_de['type.id'] == 36]
tactical_shifts = tactical_shifts.copy()
tactical_shifts["tactics.formation"] = tactical_shifts["tactics.formation"].astype(int).astype(str)

[7]: tactical_shifts[["type.name", "tactics.formation"]]

[7]:
   type.name  tactics.formation
2384 Tactical Shift             442
2757 Tactical Shift             352
3492 Tactical Shift             343

[8]: tactical_shifts.to_pickle("tactical_shifts.pkl")
```

Hudl Statsbomb: Team's formation

statsbomb_0008.ipynb

Open in... Python 3 (ipykernel)

```
[1]: import pandas as pd

[2]: tactical_shifts = pd.read_pickle("tactical_shifts.pkl")

[3]: exploded = tactical_shifts.explode('tactics.lineup').reset_index(drop=True)
normalized = pd.json_normalize(exploded["tactics.lineup"])
pd.concat([exploded[["type.name", "tactics.formation"]], normalized], axis=1).head(11)
```

	type.name	tactics.formation	jersey_number	player.id	player.name	position.id	position.name
0	Tactical Shift	442	1	5570	Manuel Neuer	1	Goalkeeper
1	Tactical Shift	442	16	8507	Lukas Klostermann	2	Right Back
2	Tactical Shift	442	15	6322	Niklas Süle	3	Right Center Back
3	Tactical Shift	442	2	3167	Antonio Rüdiger	5	Left Center Back
4	Tactical Shift	442	3	12034	David Raum	6	Left Back
5	Tactical Shift	442	14	39565	Jamal Musiala	9	Right Defensive Midfield
6	Tactical Shift	442	6	5579	Joshua Kimmich	11	Left Defensive Midfield
7	Tactical Shift	442	19	3053	Leroy Sané	12	Right Midfield
8	Tactical Shift	442	10	8400	Serge Gnabry	16	Left Midfield
9	Tactical Shift	442	9	8546	Niclas Füllkrug	22	Right Center Forward
10	Tactical Shift	442	13	5562	Thomas Müller	24	Left Center Forward

position number	position abbreviation	position name
1	GK	Goalkeeper
2	RB	Right Back
3	RCB	Right Center Back
4	CB	Center Back
5	LCB	Left Center Back
6	LB	Left Back
7	RWB	Right Wing Back
8	LWB	Left Wing Back
9	RDM	Right Defensive Midfield
10	CDM	Center Defensive Midfield
11	LDM	Left Defensive Midfield
12	RM	Right Midfield
13	RCM	Right Center Midfield
14	CM	Center Midfield
15	LCM	Left Center Midfield

position number	position abbreviation	position name
16	LM	Left Midfield
17	RW	Right Wing
18	RAM	Right Attacking Midfield
19	CAM	Center Attacking Midfield
20	LAM	Left Attacking Midfield
21	LW	Left Wing
22	RCF	Right Center Forward
23	ST	Striker
24	LCF	Left Center Forward
25	SS	Secondary Striker

Hudl IQ

(American football)



The unrivaled standard for verified football data.

Powered by AI, computer vision and expert data collectors, Hudl IQ delivers **10x more data** than any one provider, and in less time.



**Save Hours
Every Week**



**Advanced
Physical Metrics**



**Revolutionary
Recruiting Tools**



**Dedicated Analysis
Platforms**



**Commitment to
Your Privacy**



Transparent Data Collection Methods

02

Sportmonks

A slide with no useful information at all

- Just filling in the gap between the last slide and the next one (which will be along in just a moment)
- No need to write this down, unless you feel compelled to do so
- Nothing on this slide is examinable
- In fact, I am not really sure why I bothered with it

A slide with no useful information at all

- Just filling in the gap between the last slide and the next one (which will be along in just a moment)
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- Nothing on this slide is examinable
- In fact, I am not really sure why I bothered with it





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Commentaries	-	✓	✓
Match Statistics	-	✓	✓
Lineups	-	✓	✓
Ball Coordinates	-	-	✓

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API STRUCTURE

Subscription and API

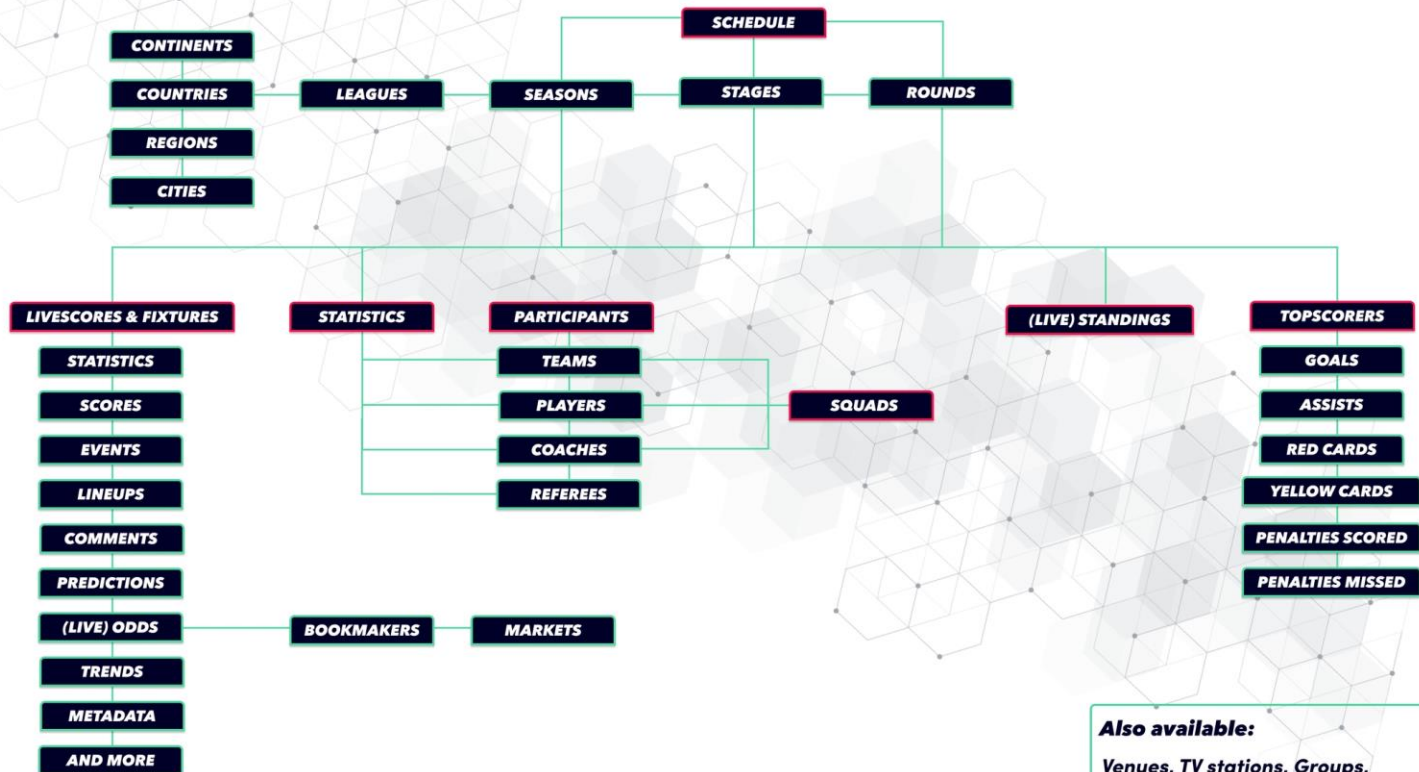
ENRICHMENTS

FILTERS

RESOURCES

TYPES

LEAGUES



Also available:

Venues, TV stations, Groups,
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Sportmonks: Leagues and countries

```
sportmonks_0001.ipynb
```

```
[1]: import pandas as pd
import requests

[2]: API_TOKEN = "tqz8BHX208tyVADTRuvyBaGmLVrZkwcwrhfbRjR9T5ZAQWXovTUEBytl4onZ"
params = {"api_token": API_TOKEN}

Get leagues

[3]: leagues = requests.get("https://api.sportmonks.com/v3/football/leagues", params=params).json()["data"]
len(leagues)

[3]: 4

[4]: country_ids = set()
for league in leagues:
    country_id = league["country_id"]
    country_ids.add(country_id)

[5]: country_ids

[5]: {320, 1161}

Get countries

[6]: for country_id in country_ids:
    name = requests.get(f"https://api.sportmonks.com/v3/core/countries/{country_id}", params=params).json()["data"]["name"]
    print(name)

Denmark
Scotland
```

Sportmonks: Fixtures (matches) by date

sportmonks_0002.ipynb

+

Python 3 (ipykernel)

Code

▼

```
[1]: import pandas as pd
import requests

[2]: API_TOKEN = "tqz8BHX200tyVADTRuvyBaGmLvRZkwcwrhfbRjR9T5ZAQWXovTUEBytl4onZ"
params = {"api_token": API_TOKEN}

Fixtures (matches) by date ( YYYY-MM-DD )

[3]: date = "2025-04-21"
data= requests.get(f"https://api.sportmonks.com/v3/football/fixtures/date/{date}", params=params).json()["data"]
matches = pd.json_normalize(data)
matches
```

	id	sport_id	league_id	season_id	stage_id	group_id	aggregate_id	round_id	state_id	venue_id	name	starting_at	result_info	leg	details	length	placeholder	has_odds	has
0	19404981	1	271	23584	77471147	None	None	369912	5	4832	Vejle Boldklub vs Silkeborg IF	2025-04-21 12:00:00	Silkeborg IF won after full-time.	1/1	None	90	False	True	
1	19404982	1	271	23584	77471147	None	None	369912	5	1467	Viborg FF vs Lyngby Boldklub	2025-04-21 12:00:00	Game ended in draw.	1/1	None	90	False	True	
2	19404953	1	271	23584	77471146	None	None	369902	5	5659	Brøndby IF vs Randers FC	2025-04-21 14:00:00	Brøndby IF won after full-time.	1/1	None	90	False	True	
3	19404954	1	271	23584	77471146	None	None	369902	5	5655	FC København vs AGF	2025-04-21 16:00:00	FC København won after full-time.	1/1	None	90	False	True	

Sportmonks: Fixtures (matches) by date range

sportmonks_0003.ipynb

Open in... Python 3 (ipykernel)

```
[1]: import pandas as pd
import requests
```

```
[2]: API_TOKEN = "tqz8BHX200tyVADTRuvyBaGmLVrZkwcwrhfbRjR9T5ZAQWXovTUEByt14onZ"
```

Fixtures (matches) by date range (max 100 days)

```
[3]: start_date = "2025-01-01"
end_date = "2025-04-01"

data = []
page = 1
has_more = True

while has_more:
    params = {"api_token": API_TOKEN, "per_page": 50, "page": page}
    r = requests.get(f"https://api.sportmonks.com/v3/football/fixtures/between/{start_date}/{end_date}", params=params).json()
    data.extend(r["data"])
    has_more = r["pagination"]["has_more"]
    page += 1
```

```
[4]: matches = pd.json_normalize(data)
matches.head(2)
```

```
[4]:
```

	id	sport_id	league_id	season_id	stage_id	group_id	aggregate_id	round_id	state_id	venue_id	name	starting_at	result_info	leg	details	length	placeholder	has_odds	ha
0	19146817	1	501	23690	77471570	None	None	340593	5	8928	Aberdeen vs Ross County	2025-01-02 15:00:00	Ross County won after full-time.	1/1	None	90	False	True	
1	19146818	1	501	23690	77471570	None	None	340593	5	336296	Hearts vs Motherwell	2025-01-02 15:00:00	Hearts won after full-time.	1/1	None	90	False	True	

Sportmonks: Fixture (match) by ID

```
sportmonks_0004.ipynb
```

Python 3 (ipykernel)

```
[1]: import pandas as pd
import requests

[2]: API_TOKEN = "tqz8BHX200tyVADTRuvyBaGmLVrZkwcwrhfbRjR9T5ZAQWXovTUEBytl4onZ"
params = {"api_token": API_TOKEN}

Aberdeen vs Ross County ( 19146817 )

[3]: data = requests.get("https://api.sportmonks.com/v3/football/fixtures/19146817", params=params).json()["data"]

[4]: match = pd.json_normalize(data)

[5]: match.columns

[5]: Index(['id', 'sport_id', 'league_id', 'season_id', 'stage_id', 'group_id',
        'aggregate_id', 'round_id', 'state_id', 'venue_id', 'name',
        'starting_at', 'result_info', 'leg', 'details', 'length', 'placeholder',
        'has_odds', 'has_premium_odds', 'starting_at_timestamp'],
        dtype='object')
```

Sportmonks: Fixture (match) statistics

sportmonks_0005.ipynb

+

Python 3 (ipykernel)

Code

▼

```
[1]: import pandas as pd
import requests

[2]: API_TOKEN = "tqz8BHX200tyVADTRuvyBaGmLVrZkwcwrhfbRjR9T5ZAQWXovTUEBytl4onZ"
params = {"api_token": API_TOKEN, "include": "statistics.type;events;formations;timeline;lineups.details.type"}

[3]: data = requests.get("https://api.sportmonks.com/v3/football/fixtures/19146817", params=params).json()["data"]
match = pd.json_normalize(data)
match.columns

[3]: Index(['id', 'sport_id', 'league_id', 'season_id', 'stage_id', 'group_id',
        'aggregate_id', 'round_id', 'state_id', 'venue_id', 'name',
        'starting_at', 'result_info', 'leg', 'details', 'length', 'placeholder',
        'has_odds', 'has_premium_odds', 'starting_at_timestamp', 'statistics',
        'events', 'formations', 'timeline', 'lineups'],
        dtype='object')

[4]: statistics = pd.json_normalize(match.statistics[0])

[5]: statistics.head(5)
```

	id	fixture_id	type_id	participant_id	location	data.value	type.id	type.name	type.code	type.developer_name	type.model_type	type.stat_group
0	207022998	19146817	34	273	home	9	34	Corners	corners	CORNERS	statistic	offensive
1	207023003	19146817	84	273	home	2	84	Yellowcards	yellowcards	YELLOWCARDS	statistic	overall
2	207023280	19146817	1605	273	home	33	1605	Successful Dribbles Percentage	successful-dribbles-percentage	SUCCESSFUL_DRIBBLES_PERCENTAGE	statistic	offensive
3	207023287	19146817	1605	246	away	38	1605	Successful Dribbles Percentage	successful-dribbles-percentage	SUCCESSFUL_DRIBBLES_PERCENTAGE	statistic	offensive
4	207023271	19146817	45	273	home	66	45	Ball Possession %	ball-possession	BALL_POSSESSION	statistic	overall

sport round stage group aggregate league season venue state
weatherReport lineups events timeline comments trends statistics
periods participants odds premiumOdds ↗ inplayOdds postmatchNews
prematchNews metadata tvStations predictions referees formations
ballCoordinates sidelined metadata scores

Sportmonks: Fixture (match) events

sportmonks_0006.ipynb

+

Python 3 (ipykernel)

Code

▼

```
[1]: import pandas as pd
import requests

[2]: API_TOKEN = "tqz8BHX200tyVADTRuvyBaGmLVrZkwcwrhfbRjR9T5ZAQWXovTUEBytl4onZ"
params = {"api_token": API_TOKEN, "include": "events"}

[3]: data = requests.get("https://api.sportmonks.com/v3/football/fixtures/19146817", params=params).json()["data"]
match = pd.json_normalize(data)

[4]: events = pd.json_normalize(match.events[0])
len(events)

[4]: 17

[5]: events.head(5)
```

	id	fixture_id	period_id	participant_id	type_id	section	player_id	related_player_id	player_name	related_player_name	...	info	addition	minute	extra_minute	injured	on_ber
0	148273586	19146817	5800865	273	18	event	173059	464190.0	Kevin Nisbet	Ester Sokler	...	None	1st Substitution	30	NaN	None	Fa
1	148273591	19146817	5800865	246	19	event	123690	NaN	James Brown	None	...	Foul	2nd Yellowcard	31	NaN	None	Fa
2	148273534	19146817	5800865	273	19	event	37344344	NaN	T. Keskinen	None	...	Foul	1st Yellowcard	23	NaN	None	Fa
3	148273728	19146817	5800865	273	14	event	173059	NaN	Kevin Nisbet	None	...	Field Goal	2nd Goal	45	11.0	None	Fa
4	148273645	19146817	5800865	246	18	event	4893665	546803.0	George Harmon	Michee Efete	...	None	2nd Substitution	44	NaN	None	Fa

5 rows × 21 columns

Sportmonks: Formations

```
sportmonks_0007.ipynb
```

Open in... Python 3 (ipykernel)

```
[1]: import pandas as pd
import requests

[2]: API_TOKEN = "tqz8BHX200tyVADTRuvyBaGmLVrZkwcwrhfbRjR9T5ZAQWXovTUEBytl4onZ"
params = {"api_token": API_TOKEN, "include": "formations"}

[3]: data = requests.get("https://api.sportmonks.com/v3/football/fixtures/19146817", params=params).json()["data"]
match = pd.json_normalize(data)

[4]: formations = pd.json_normalize(match.formations[0])

[5]: formations.head(5)
```

	id	fixture_id	participant_id	formation	location
0	8387600	19146817	246	3-5-1-1	away
1	8387601	19146817	273	4-2-3-1	home

Sportmonks: Fixture (match) timeline

sportmonks_0008.ipynb

Python 3 (ipykernel)

```
[1]: import pandas as pd
import requests

[2]: API_TOKEN = "PTdd20P9btErrQPcRSTXpxLtfL2iIwz70Wi8LrLg9jhw51Mt0C9CtTuWzP6Y"
params = {"api_token": API_TOKEN, "include": "timeline"}

[3]: data = requests.get("https://api.sportmonks.com/v3/football/fixtures/19146817", params=params).json()["data"]
match = pd.json_normalize(data)

[4]: timeline = pd.json_normalize(match.timeline[0])
len(timeline)

[4]: 17

[5]: def head_skip_all_nan(df, n):
    return df.dropna(axis=1, how='all').head(n)

head_skip_all_nan(timeline, 5)

[5]:
```

	id	fixture_id	period_id	participant_id	type_id	section	addition	minute	extra_minute	on_bench	sort_order
0	148273597	19146817	5800865	246	126	timeline	3rd Corner	37	NaN	False	3
1	148273435	19146817	5800865	246	126	timeline	1st Corner	6	NaN	False	1
2	148273535	19146817	5800865	246	126	timeline	2nd Corner	24	NaN	False	2
3	148273629	19146817	5800865	273	126	timeline	6th Corner	38	NaN	False	6
4	148273735	19146817	5800865	273	126	timeline	8th Corner	45	NaN	False	8

Sportmonks: Fixture (match) lineups

```
sportmonks_0009.ipynb
```

```
[1]: import pandas as pd
import requests

[2]: API_TOKEN = "PTdd20P9btERrQPcRSTXpxLtlfL2iIwz70Wi8LrLg9jhw51Mt0C9CtTuWzP6Y"
params = {"api_token": API_TOKEN, "include": "lineups.details.type"}

[3]: data = requests.get("https://api.sportmonks.com/v3/football/fixtures/19146817", params=params).json()["data"]
match = pd.json_normalize(data)

[4]: lineups = pd.json_normalize(match.lineups[0])
len(lineups)

[4]: 40

[5]: def head_skip_all_nan(df, n):
    return df.dropna(axis=1, how='all').head(n)

head_skip_all_nan(lineups.drop('details', axis=1), 5)

[5]:
```

	id	sport_id	fixture_id	player_id	team_id	position_id	type_id	formation_position	player_name	jersey_number
0	14597927439	1	19146817	123690	246	26	11	5.0	James Brown	2
1	14597927412	1	19146817	580993	246	25	11	4.0	Ryan David Leak	3
2	14597927435	1	19146817	9654	246	25	11	2.0	Akil Wright	4
3	14597927126	1	19146817	174741	246	26	12	NaN	Scott Allardice	6
4	14597927130	1	19146817	34422813	246	26	12	NaN	Victor Loturi	7

```
[6]: lineups.to_pickle("lineups.pkl")
```

Sportmonks: Fixture (match) lineups details

sportmonks_0010.ipynb

+

Python 3 (ipykernel)

```
[1]: import pandas as pd
import requests

[2]: lineups = pd.read_pickle("lineups.pkl")

[3]: exploded = lineups.explode('details').reset_index(drop=True)
normalized = pd.json_normalize(exploded["details"])
pd.concat([exploded.drop('details', axis=1), normalized[["data.value", "type.name"]], axis=1)
```

	id	sport_id	fixture_id	player_id	team_id	position_id	formation_field	type_id	formation_position	player_name	jersey_number	data.value	type.name
0	14597927439	1	19146817	123690	246	26	None	11	5.0	James Brown	2	75	Accurate Passes Percentage
1	14597927439	1	19146817	123690	246	26	None	11	5.0	James Brown	2	6	Total Duels
2	14597927439	1	19146817	123690	246	26	None	11	5.0	James Brown	2	2	Fouls Drawn
3	14597927439	1	19146817	123690	246	26	None	11	5.0	James Brown	2	4	Duels Won
4	14597927439	1	19146817	123690	246	26	None	11	5.0	James Brown	2	12	Accurate Passes
...	...	...	...	...	...	...	...	...	...	...	...	...	...
880	14597927129	1	19146817	37344344	273	26	None	11	8.0	Topi Keskinen	81	1	Big Chances Missed
881	14597927129	1	19146817	37344344	273	26	None	11	8.0	Topi Keskinen	81	27	Possession Lost
882	14597927129	1	19146817	37344344	273	26	None	11	8.0	Topi Keskinen	81	1	Passes In Final Third
883	14597927129	1	19146817	37344344	273	26	None	11	8.0	Topi Keskinen	81	8	Backward Passes
884	14597927129	1	19146817	37344344	273	26	None	11	8.0	Topi Keskinen	81	5	Turn Over

885 rows × 13 columns

03

Understat

Expected goals (xG) is the new revolutionary football metric, which allows you to evaluate team and player performance.

In a low-scoring game such as football, final match score does not provide a clear picture of performance.

This is why more and more sports analytics turn to the advanced models like xG, which is a statistical measure of the quality of chances created and conceded.

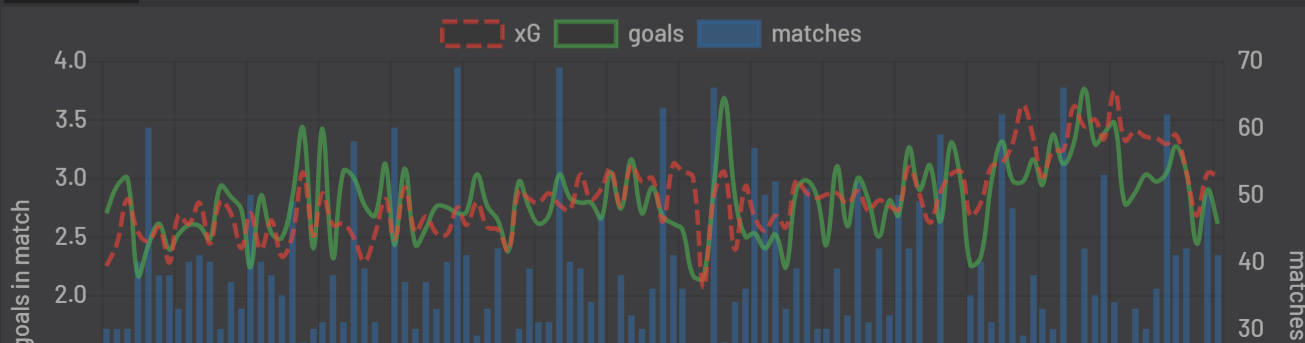
Our goal was to create the most precise method for shot quality evaluation.

For this case, we trained neural network prediction algorithms with the large dataset (>100,000 shots, over 10 parameters for each).

On this site, you will find our detailed xG statistics for the top European leagues.

league

EPL ▼



04

Extras

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 dmoggles Adding alternative text to radar charts (#112)

33b1f10 · last week 692 Commits

docs	Install via uv rather than Conda. Fix docs.	3 months ago
examples	Adding alternative text to radar charts (#112)	last week
mplsoccer	Adding alternative text to radar charts (#112)	last week
tests	fixed bin statistic so it is consistent by pitch type, previously i...	3 years ago
.gitignore	Install via uv rather than Conda. Fix docs.	3 months ago
.pylintrc	update .pylintrc and linting fixes.	3 years ago
.readthedocs.yml	Install via uv rather than Conda. Fix docs.	3 months ago
CHANGELOG.md	Adding alternative text to radar charts (#112)	last week
LICENSE	Install via uv rather than Conda. Fix docs.	3 months ago
README.md	fix README version 1.2.1.	2 years ago
pyproject.toml	Install via uv rather than Conda. Fix docs.	3 months ago

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The dev-friendly football API

RESTful. Reliable. Free to use. Easy to integrate.

Did you realize the delay in the table below? That was the time it took to make a

```
GET https://api.football-data.org/v4/matches
```

in the background. But in the end it's that easy... one request.

Date/Status		Opponents			Score
FINISHED		 Botafogo FR	vs.	 EC Vitória	0:0
FINISHED		 RB Bragantino	vs.	 São Paulo FC	2:2
17/07/2025	22h30	 Fluminense FC	vs.	 Cruzeiro EC	-:-

05

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8.2K

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By McKay Johns • November 24, 2024

If you feel lost with learning sports analytics, let's dive into the step by step guide on how to do it.

Python

R

sports analytics

coding

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