
soccerdata

Release 1.6.1

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Release v1.6.1. (pip install soccerdata)

SoccerData is a collection of scrapers to gather soccer data from popular websites, including Club Elo, ESPN, FBref, FiveThirtyEight, Football-Data.co.uk, FotMob, Sofascore, SoFIFA, Understat and WhoScored.

```
import soccerdata as sd

# Create a scraper class instance for the 2018/19 Premier League
five38 = sd.FiveThirtyEight('ENG-Premier League', '1819')

# Fetch data
games = five38.read_games()
forecasts = five38.read_forecasts()
clinches = five38.read_clinches()
```

Main features

- Access current and historical soccer fixtures, forecasts, detailed match stats, event stream data and more.
- All data is provided in the form of Pandas DataFrames with sensible, matching column names and identifiers across datasets to make working with the data and combining data from multiple sources easy.
- Data is only downloaded when needed and cached locally to speed up your analysis scripts.
- Integrates with the [socceraction](#) package to allow analysis of event stream data.

Do you like it? *[Let's dive in!](#)*

GETTING STARTED

New to *soccerdata*? Well, you came to the right place: this tutorial will walk you through installing, configuring, and using the library. By the end of this tutorial, you will be able to scrape data from the top-5 European leagues and use it to create your own data-driven analyses.

1.1 Installation

SoccerData can be easily installed via `pip`:

```
python3 -m pip install soccerdata
```

1.2 Scraping data

Each of the *supported data sources* has its corresponding class for fetching data with a uniform API. For example, the `FBref` class is used to fetch data from fbref.com.

```
import soccerdata as sd

# Create scraper class instance
fbref = sd.FBref()
```

Once you have a scraper class instance, you can use it to fetch data. See the *examples* and *API reference* for the full list of options available for each scraper. For example, to fetch aggregated shooting stats for all teams:

```
# Create dataframes
season_stats = fbref.read_team_season_stats(stat_type='shooting')
```

The data is always returned as a convenient Pandas DataFrame.

league	season	team	#Pl	90s	Gls	Sh	SoT	SoT	Sh/	SoT	G/5	G/5	Dis	FK	PK	PK%	xG	np	np	G-	np:G-
ENG-Premier League	202	Arsenal	29	38.0	53	455	141	31.0	11.5	3.71	0.1	0.33	16.5	23	6	6	53.5	49.0	0.11	-	-
		As-ton Vill	24	38.0	52	518	179	34.6	13.6	4.71	0.09	0.26	16.5	15	5	6	52.5	48.5	0.1	-	-
		Brighton	27	38.0	39	476	129	27.1	12.5	3.35	0.07	0.26	16.6	14	6	9	51.6	44.8	0.1	-	-
		Burnley	25	38.0	32	383	125	32.6	10.0	3.25	0.08	0.23	16.6	15	3	3	39.5	37.6	0.1	-	-
		Chelsea	27	38.0	56	553	194	35.1	14.5	5.11	0.09	0.25	16.3	16	8	10	64.0	56.4	0.1	-	-
																				8.0	8.4

By default, the data for all available leagues and the five most recent seasons will be retrieved. However, in most cases, you would want to limit the data to specific leagues and / or seasons. This can be done by passing a list of leagues and seasons to the constructor of the scraper class. For example:

```
# Create scraper class instance filtering on specific leagues and seasons
fbref = sd.FBref(leagues=['ENG-Premier League'], seasons=['1718', '1819'])
# Retrieve data for the specified leagues and seasons
season_stats = fbref.read_team_season_stats(stat_type='shooting')
```

Note that only a limited number of leagues are supported out-of-the-box. The leagues available for each source can be listed with the `available_leagues()` class method.

```
sd.FBref.available_leagues()
>>> ['ENG-Premier League', 'ESP-La Liga', 'FRA-Ligue 1', 'GER-Bundesliga', 'ITA-Serie A']
```

You can *add more leagues* but there are no guarantees that they will be scraped correctly.

1.3 Data caching

Data caching is used to speed up the runtime and to prevent exceeding the rate limit of web servers. By default, all downloaded data is cached to `~/soccerdata` on Linux and Mac OS, and to `C:\Users\yourusername\soccerdata` on Windows. A custom location can be set if desired. You can configure this using environment variables (see below) or on the level of an individual scraper by setting the `data_dir` parameter when creating the scraper class instance:

```
# Create scraper class instance with custom caching directory
fbref = sd.FBref(data_dir="/tmp/FBref")
```

This directory can be deleted at any time to reclaim disk space. However, this also means you will have to redownload the same data again if you need it, which will lead to reduced performance.

SoccerData has no knowledge of when the data on the server changes, so it is up to the user to decide when to refresh the cache. This can be done by deleting the cache directory or by setting the `no_cache` option to `True` when creating the scraper class instance:

```
# Create scraper class instance which always re-downloads the latest data
fbref = sd.FBref(no_cache=True)
```


Some methods will assume the cache is always out-of-date (for example, when scraping the fixture of the current season). Typically, these methods will have a `force_cache` option that can be set to `True` to force the cached data to be used. For example:

```
fbref = sd.FBref(leagues=['ENG-Premier League'], seasons=['2324'])
fbref.read_schedule(force_cache=True)
```

Caching can also be disabled entirely by setting the `no_store` option to `True` when creating the scraper class instance. However, it should almost always be left enabled.

```
# Create scraper class instance with caching disabled
fbref = sd.FBref(no_store=True)
```

1.4 Global configuration

Several settings can be configured globally using the following environment variables:

SOCCKERDATA_DIR

The directory where the downloaded data is cached and where logs are stored. By default, all data is stored to `~/soccerdata` on Linux / Mac OS and `C:\Users\yourusername\soccerdata` on Windows.

SOCCKERDATA_NOCACHE

If set to “true”, no cached data is returned. Note that no-cache does not mean “don’t cache”. All downloaded data is still cached and overwrites existing caches. If the sense of “don’t cache” that you want is actually “don’t store”, then `SOCCKERDATA_NOSTORE` is the option to use. By default, data is retrieved from the cache.

SOCCKERDATA_NOSTORE

If set to “true”, no data is stored. By default, data is cached.

SOCCKERDATA_MAXAGE

The maximum age of cached data in seconds. If the cached data is older than this, it will be re-downloaded. By default, this is set to infinity.

SOCCKERDATA_LOGLEVEL

The level of logging to use. By default, this is set to “INFO”.

Example:

```
# bash
export SOCCKERDATA_DIR = "~/soccerdata"
export SOCCKERDATA_NOCACHE = "False"
export SOCCKERDATA_NOSTORE = "False"
export SOCCKERDATA_LOGLEVEL = "INFO"
```

1.5 Uniform team names

Each data source uses a different set of team names, which makes it difficult to combine data from multiple sources. To mitigate this, SoccerData allows translating the team names to uniform names. This is done by providing a `SOCCKERDATA_DIR/config/team_dict.json` file. This file should contain a mapping between a generic name for each team and the team name used by each data source that you want to support. The example below will map “Tot-tenham Hotspur”, “Tottenham Hotspur FC” and “Spurs” to “Tottenham” in all scraped data.

```
{  
  "Tottenham": ["Tottenham Hotspur", "Tottenham Hotspur FC", "Spurs"],  
}
```

1.6 Additional setup for scraping WhoScored data

WhoScored implements strong protection against scraping using Incapsula. To circumvent this, this scraper uses Selenium with the ChromeDriver extension to emulate a real user. Before using this scraper, you will have to [install Chrome](#). A Selenium driver matching your Chrome version will be downloaded automatically when you run the scraper.

1.7 Next steps

Look at you! You're now basically an expert at SoccerData!

From this point you can:

- Look at the example notebooks for each *Data source*.
- Take a deep dive into the [API](#).
- Give us feedback or contribute, see [Contributing](#).

Have fun!

OVERVIEW OF DATA SOURCES

Currently, the following data sources are supported.

ClubElo

[URL](#) | [Example usage](#) | [API reference](#)

```
from soccerdata import ClubElo
```

Team's relative strengths as Elo ratings, for most European leagues. Recalculated after every round, includes history.

ESPN

[URL](#) | [Example usage](#) | [API reference](#)

```
from soccerdata import ESPN
```

Historical results, statistics and lineups.

FBref

[URL](#) | [Example usage](#) | [API reference](#)

```
from soccerdata import FBref
```

Historical results, lineups, and detailed aggregated statistics for teams and individual players based on Stats Perform data.

FiveThirtyEight

[URL](#) | [Example usage](#) | [API reference](#)

```
from soccerdata import FiveThirtyEight
```

Team's relative strengths as SPI ratings, predictions and results for the top European and American leagues.

Football-Data.co.uk

[URL](#) | [Example usage](#) | [API reference](#)

```
from soccerdata import MatchHistory
```

Historical results, betting odds and match statistics. Level of detail depends on league.

Sofascore

[URL](#) | [Example usage](#) | [API reference](#)

```
from soccerdata import Sofascore
```

Results, schedules, lineups, and detailed statistics for teams and individual players.

SoFIFA

[URL](#) | [Example usage](#) | [API reference](#)

```
from soccerdata import SoFIFA
```

Detailed scores on all player's abilities from EA Sports FC.

Understat

[URL](#) | [Example usage](#) | [API reference](#)

```
from soccerdata import Understat
```

Advanced statistics such as xG, xGBuildup and xGChain, and shot events with associated xG values for the top European leagues.

WhoScored

[URL](#) | [Example usage](#) | [API reference](#)

```
from soccerdata import WhoScored
```

Historical results, match preview data and detailed Opta event stream data for major leagues.

The following section was generated from doc/datasources/ClubElo.ipynb

```
[2]: import soccerdata as sd
```

2.1 ClubElo

```
[3]: elo = sd.ClubElo()
     print(elo.__doc__)
```

Data will be downloaded as necessary and cached locally in `~/soccerdata/data/ClubElo`.`

Since the source does not provide league names, this class will not filter by league. League names will be inserted from the other sources where available. Leagues that are only covered by clubelo.com will have NaN values.

Parameters

proxy : 'tor' or dict or list(dict) or callable, optional

Use a proxy to hide your IP address. Valid options are:

- "tor": Uses the Tor network. Tor should be running in the background on port 9050.
- dict: A dictionary with the proxy to use. The dict should be a mapping of supported protocols to proxy addresses. For example::

```
{
  'http': 'http://10.10.1.10:3128',
  'https': 'http://10.10.1.10:1080',
}
```

- `list(dict)`: A list of proxies to choose from. A different proxy will be selected from this list after failed requests, allowing rotating proxies.
- `callable`: A function that returns a valid proxy. This function will be called after failed requests, allowing rotating proxies.

no_cache : bool

If True, will not use cached data.

```
no_store : bool
```

If True, will not store downloaded data.

```
data_dir : Path
```

Path to directory where data will be cached.

2.1.1 ELO scores for all teams at specified date

```
[4]: current_elo = elo.read_by_date()
      current_elo.head()
```

[4]:	rank	country	level	elo	from	to	\
	team						
	Liverpool	1.0	ENG	1	2047.083862	2022-04-20	2022-04-24
	Man City	2.0	ENG	1	2037.059937	2022-04-21	2022-04-23
	Bayern	3.0	GER	1	1984.775391	2022-04-18	2022-04-23
	Real Madrid	4.0	ESP	1	1969.584351	2022-04-21	2022-04-26
	Chelsea	5.0	ENG	1	1921.101440	2022-04-21	2022-04-24
			league				

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```
team
Liverpool    ENG-Premier League
Man City     ENG-Premier League
Bayern        GER-Bundesliga
Real Madrid   ESP-La Liga
Chelsea       ENG-Premier League
```

2.1.2 Full ELO history for one club

```
[5]: barca_elo = elo.read_team_history("Barcelona")
     barca_elo.head()
```

```
[5]:
```

	rank	team	country	level	elo	to
from						
1939-10-22	NaN	Barcelona	ESP	1	1636.704590	1939-12-03
1939-12-04	NaN	Barcelona	ESP	1	1626.102173	1939-12-10
1939-12-11	NaN	Barcelona	ESP	1	1636.728271	1939-12-17
1939-12-18	NaN	Barcelona	ESP	1	1646.951660	1939-12-24
1939-12-25	NaN	Barcelona	ESP	1	1637.424316	1939-12-31

..... doc/datasources/ClubElo.ipynb ends here.

The following section was generated from doc/datasources/ESPN.ipynb

```
[2]: import soccerdata as sd
```

2.2 ESPN

```
[3]: espn = sd.ESPN(leagues="ENG-Premier League", seasons=2021)
     print(espn.__doc__)
```

```
/cw/dtaijupiter/NoCsBack/dtai/pieterr/Projects/soccerdata/soccerdata/_common.py:466:
↳ UserWarning: Season id "2021" is ambiguous: interpreting as "20-21"
     warnings.warn(msg)
```

Provides pd.DataFrames from JSON api available at <http://site.api.espn.com>.

Data will be downloaded as necessary and cached locally in
`~/soccerdata/data/ESPN`.

Parameters

leagues : string or iterable, optional
IDs of leagues to include.

seasons : string, int or list, optional
Seasons to include. Supports multiple formats.
Examples: '16-17'; 2016; '2016-17'; [14, 15, 16]

proxy : 'tor' or dict or list(dict) or callable, optional
Use a proxy to hide your IP address. Valid options are:

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```

- "tor": Uses the Tor network. Tor should be running in
  the background on port 9050.
- dict: A dictionary with the proxy to use. The dict should be
  a mapping of supported protocols to proxy addresses. For example::

    {
      'http': 'http://10.10.1.10:3128',
      'https': 'http://10.10.1.10:1080',
    }

- list(dict): A list of proxies to choose from. A different proxy will
  be selected from this list after failed requests, allowing rotating
  proxies.
- callable: A function that returns a valid proxy. This function will
  be called after failed requests, allowing rotating proxies.
no_cache : bool
    If True, will not use cached data.
no_store : bool
    If True, will not store downloaded data.
data_dir : Path
    Path to directory where data will be cached.

```

2.2.1 Game schedule

```
[4]: epl_schedule = espn.read_schedule()
     epl_schedule.head()
```

```
[4]:
```

date \	league	season	game	
2019-08-09	ENG-Premier League	2021	Liverpool-Norwich City	2019-08-09 19:00:
00+00:00				
2019-08-10			AFC Bournemouth-Sheffield United	2019-08-10 14:00:
00+00:00				
2019-08-10			Burnley-Southampton	2019-08-10 14:00:
00+00:00				
2019-08-10			Crystal Palace-Everton	2019-08-10 14:00:
00+00:00				
2019-08-10			Tottenham Hotspur-Aston Villa	2019-08-10 16:30:
00+00:00				

\	home_team
2019-08-09	Liverpool
2019-08-10	AFC Bournemouth
2019-08-10	Burnley
2019-08-10	Crystal Palace
2019-08-10	Tottenham Hotspur

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```

away_team ↵
↵ \
league      season game
ENG-Premier League 2021  2019-08-09 Liverpool-Norwich City      Norwich City
                        2019-08-10 AFC Bournemouth-Sheffield United Sheffield United
                        2019-08-10 Burnley-Southampton      Southampton
                        2019-08-10 Crystal Palace-Everton      Everton
                        2019-08-10 Tottenham Hotspur-Aston Villa Aston Villa

game_id \
league      season game
ENG-Premier League 2021  2019-08-09 Liverpool-Norwich City      541844
                        2019-08-10 AFC Bournemouth-Sheffield United 541840
                        2019-08-10 Burnley-Southampton      541841
                        2019-08-10 Crystal Palace-Everton      541839
                        2019-08-10 Tottenham Hotspur-Aston Villa 541837

league_id
league      season game
ENG-Premier League 2021  2019-08-09 Liverpool-Norwich City      eng.1
                        2019-08-10 AFC Bournemouth-Sheffield United eng.1
                        2019-08-10 Burnley-Southampton      eng.1
                        2019-08-10 Crystal Palace-Everton      eng.1
                        2019-08-10 Tottenham Hotspur-Aston Villa eng.1

```

2.2.2 Match sheet data

```
[5]: matchsheet = espn.read_matchsheet(match_id=541465)
matchsheet.head()
```

```

[5]: is_
↵home \
league      season game      team      is_
ENG-Premier League 2021  2020-07-26 West Ham United-Aston Villa Aston Villa      False
                        West Ham United      True

venue \
league      season game      team      venue
ENG-Premier League 2021  2020-07-26 West Ham United-Aston Villa Aston Villa      None
                        West Ham United      None

attendance \
league      season game      team
ENG-Premier League 2021  2020-07-26 West Ham United-Aston Villa Aston Villa
↵ 0
                        West Ham United
↵ 0

capacity \

```

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```

league          season game          team
ENG-Premier League 2021  2020-07-26 West Ham United-Aston Villa Aston Villa      None
                                           West Ham United  None

↳ roster \
league          season game          team
ENG-Premier League 2021  2020-07-26 West Ham United-Aston Villa Aston Villa      [{
↳ 'active': True, 'starter': True, 'jersey': '...
                                           West Ham United  [{
↳ 'active': True, 'starter': True, 'jersey': '...

fouls_
↳ committed \
league          season game          team
ENG-Premier League 2021  2020-07-26 West Ham United-Aston Villa Aston Villa      16
↳
                                           West Ham United  13
↳

yellow_
↳ cards \
league          season game          team
ENG-Premier League 2021  2020-07-26 West Ham United-Aston Villa Aston Villa      2
↳
                                           West Ham United  1
↳

red_
↳ cards \
league          season game          team
ENG-Premier League 2021  2020-07-26 West Ham United-Aston Villa Aston Villa      0
↳
                                           West Ham United  0
↳

offsides \
league          season game          team
ENG-Premier League 2021  2020-07-26 West Ham United-Aston Villa Aston Villa      0
                                           West Ham United  1

won_
↳ corners \
league          season game          team
ENG-Premier League 2021  2020-07-26 West Ham United-Aston Villa Aston Villa      0
↳
                                           West Ham United  7
↳

saves \
league          season game          team

```

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```

ENG-Premier League 2021    2020-07-26 West Ham United-Aston Villa Aston Villa    3
                                West Ham United    0

↪possession_pct \
league          season game                                team
ENG-Premier League 2021    2020-07-26 West Ham United-Aston Villa Aston Villa
↪    63
                                West Ham United
↪    37

                                total_
↪shots \
league          season game                                team
ENG-Premier League 2021    2020-07-26 West Ham United-Aston Villa Aston Villa
↪    10
                                West Ham United
↪    13

                                shots_
↪on_target
league          season game                                team
ENG-Premier League 2021    2020-07-26 West Ham United-Aston Villa Aston Villa
↪    1
                                West Ham United
↪    4

```

2.2.3 Line ups

```
[6]: lineups = espn.read_lineup(match_id=541465)
lineups.head()
```

```

[6]:
↪    is_home \
league          season game                                team    player
ENG-Premier League 2021    2020-07-26 West Ham United-Aston Villa Aston Villa Anwar El_
↪Ghazi          False
                                Conor_
↪Hourihane      False
                                Douglas_
↪Luiz           False
                                Ezri Konsa _
↪              False
                                Frédéric_
↪Guilbert       False

↪              position \
league          season game                                team    player
ENG-Premier League 2021    2020-07-26 West Ham United-Aston Villa Aston Villa Anwar El_
↪Ghazi          Substitute

```

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```

↪Hourihane      Center Left Midfielder      Conor
↪Luiz           Defensive Midfielder         Douglas
↪              Center Right Defender        Ezri Konsa
↪Guilbert       Right Back                  Frédéric

↪      formation_place \
league      season game      team      player
ENG-Premier League 2021  2020-07-26 West Ham United-Aston Villa Aston Villa Anwar El
↪Ghazi              0
↪Hourihane              10
↪Luiz                  4
↪                      5
↪Guilbert              2

↪      sub_in \
league      season game      team      player
ENG-Premier League 2021  2020-07-26 West Ham United-Aston Villa Aston Villa Anwar El
↪Ghazi          90
↪Hourihane      start
↪Luiz           start
↪              start
↪Guilbert       start

↪      sub_out \
league      season game      team      player
ENG-Premier League 2021  2020-07-26 West Ham United-Aston Villa Aston Villa Anwar El
↪Ghazi          end
↪Hourihane      76
↪Luiz           end
↪              end
↪Guilbert       76

```

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```

↪      appearances \
league      season game      team      player
ENG-Premier League 2021  2020-07-26 West Ham United-Aston Villa Aston Villa Anwar El_
↪Ghazi      1.0
                                Conor_
↪Hourihane      1.0
                                Douglas_
↪Luiz      1.0
                                Ezri Konsa _
↪      1.0
                                Frédéric_
↪Guilbert      1.0
                                _

↪      fouls_committed \
league      season game      team      player
ENG-Premier League 2021  2020-07-26 West Ham United-Aston Villa Aston Villa Anwar El_
↪Ghazi      0.0
                                Conor_
↪Hourihane      0.0
                                Douglas_
↪Luiz      2.0
                                Ezri Konsa _
↪      0.0
                                Frédéric_
↪Guilbert      1.0
                                _

↪      fouls_suffered \
league      season game      team      player
ENG-Premier League 2021  2020-07-26 West Ham United-Aston Villa Aston Villa Anwar El_
↪Ghazi      0.0
                                Conor_
↪Hourihane      1.0
                                Douglas_
↪Luiz      2.0
                                Ezri Konsa _
↪      0.0
                                Frédéric_
↪Guilbert      1.0
                                _

↪      own_goals \
league      season game      team      player
ENG-Premier League 2021  2020-07-26 West Ham United-Aston Villa Aston Villa Anwar El_
↪Ghazi      0.0
                                Conor_
↪Hourihane      0.0
                                Douglas_
↪Luiz      0.0
                                Ezri Konsa _
↪      0.0
                                _

```

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↪Guilbert	0.0							Frédéric
↪								
↪	red_cards	\						
league	season	game				team	player	
ENG-Premier League	2021	2020-07-26	West Ham United-Aston Villa	Aston Villa	Anwar El			
↪Ghazi	0.0							
↪Hourihane	0.0						Conor	
↪Luiz	0.0						Douglas	
↪	0.0						Ezri Konsa	
↪Guilbert	0.0						Frédéric	
↪								
↪	sub_ins	\						
league	season	game				team	player	
ENG-Premier League	2021	2020-07-26	West Ham United-Aston Villa	Aston Villa	Anwar El			
↪Ghazi	1.0						Conor	
↪Hourihane	0.0						Douglas	
↪Luiz	0.0						Ezri Konsa	
↪	0.0						Frédéric	
↪Guilbert	0.0							
↪								
↪	yellow_cards	\						
league	season	game				team	player	
ENG-Premier League	2021	2020-07-26	West Ham United-Aston Villa	Aston Villa	Anwar El			
↪Ghazi	0.0						Conor	
↪Hourihane	0.0						Douglas	
↪Luiz	0.0						Ezri Konsa	
↪	0.0						Frédéric	
↪Guilbert	0.0							
↪								
↪	goal_assists	\						
league	season	game				team	player	
ENG-Premier League	2021	2020-07-26	West Ham United-Aston Villa	Aston Villa	Anwar El			
↪Ghazi	0.0						Conor	
↪Hourihane	0.0							

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↪Luiz	0.0							Douglas	↪
↪	0.0							Ezri Konsa	↪
↪Guilbert	0.0							Frédéric	↪
↪									↪
↪	shots_on_target	\							
league	season	game				team		player	
ENG-Premier League	2021	2020-07-26	West Ham United-Aston Villa	Aston Villa	Anwar El				↪
↪Ghazi	0.0							Conor	↪
↪Hourihane	0.0							Douglas	↪
↪Luiz	0.0							Ezri Konsa	↪
↪	0.0							Frédéric	↪
↪Guilbert	0.0								↪
↪									
↪	total_goals	\							
league	season	game				team		player	
ENG-Premier League	2021	2020-07-26	West Ham United-Aston Villa	Aston Villa	Anwar El				↪
↪Ghazi	0.0							Conor	↪
↪Hourihane	0.0							Douglas	↪
↪Luiz	0.0							Ezri Konsa	↪
↪	0.0							Frédéric	↪
↪Guilbert	0.0								↪
↪									
↪	total_shots	\							
league	season	game				team		player	
ENG-Premier League	2021	2020-07-26	West Ham United-Aston Villa	Aston Villa	Anwar El				↪
↪Ghazi	0.0							Conor	↪
↪Hourihane	0.0							Douglas	↪
↪Luiz	0.0							Ezri Konsa	↪
↪	0.0							Frédéric	↪
↪Guilbert	0.0								↪
↪									
↪	goals_conceded	\							
league	season	game				team		player	

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```

ENG-Premier League 2021    2020-07-26 West Ham United-Aston Villa Aston Villa Anwar El_
↳Ghazi                    0.0
                                Conor_
↳Hourihane                 0.0
                                Douglas_
↳Luiz                      1.0
                                Ezri Konsa _
↳                          1.0
                                Frédéric_
↳Guilbert                  0.0
                                _

↳      saves \
league      season game      team      player
ENG-Premier League 2021    2020-07-26 West Ham United-Aston Villa Aston Villa Anwar El_
↳Ghazi      NaN
                                Conor_
↳Hourihane   NaN
                                Douglas_
↳Luiz        NaN
                                Ezri Konsa _
↳            NaN
                                Frédéric_
↳Guilbert    NaN
                                _

↳      shots_faced \
league      season game      team      player
ENG-Premier League 2021    2020-07-26 West Ham United-Aston Villa Aston Villa Anwar El_
↳Ghazi      0.0
                                Conor_
↳Hourihane   0.0
                                Douglas_
↳Luiz        0.0
                                Ezri Konsa _
↳            0.0
                                Frédéric_
↳Guilbert    0.0
                                _

↳      offsides
league      season game      team      player
ENG-Premier League 2021    2020-07-26 West Ham United-Aston Villa Aston Villa Anwar El_
↳Ghazi      0.0
                                Conor_
↳Hourihane   0.0
                                Douglas_
↳Luiz        0.0
                                Ezri Konsa _
↳            0.0
                                Frédéric_
↳Guilbert    0.0
                                _

```

..... doc/datasources/ESPN.ipynb ends here.

The following section was generated from doc/datasources/FBref.ipynb

```
[3]: import soccerdata as sd
```

2.3 FBref

```
[4]: fbref = sd.FBref(leagues="ENG-Premier League", seasons=2021)
print(fbref.__doc__)
```

Provides pd.DataFrames from data at <http://fbref.com>.

Data will be downloaded as necessary and cached locally in
`~/soccerdata/data/FBref`.

Parameters

leagues : string or iterable, optional

IDs of leagues to include. For efficiently reading data from the Top-5 European leagues, use "Big 5 European Leagues Combined".

seasons : string, int or list, optional

Seasons to include. Supports multiple formats.

Examples: '16-17'; 2016; '2016-17'; [14, 15, 16]

proxy : 'tor' or dict or list(dict) or callable, optional

Use a proxy to hide your IP address. Valid options are:

- "tor": Uses the Tor network. Tor should be running in the background on port 9050.
- dict: A dictionary with the proxy to use. The dict should be a mapping of supported protocols to proxy addresses. For example::

```
{
    'http': 'http://10.10.1.10:3128',
    'https': 'http://10.10.1.10:1080',
}
```

- list(dict): A list of proxies to choose from. A different proxy will be selected from this list after failed requests, allowing rotating proxies.

- callable: A function that returns a valid proxy. This function will be called after failed requests, allowing rotating proxies.

no_cache : bool

If True, will not use cached data.

no_store : bool

If True, will not store downloaded data.

data_dir : Path

Path to directory where data will be cached.

```
/cw/dtaijupiter/NoCsBack/dtai/pieterr/Projects/soccerdata/soccerdata/_common.py:471:
↳UserWarning: Season id "2021" is ambiguous: interpreting as "20-21"
warnings.warn(msg, stacklevel=1)
```


2.3.1 Team season stats

```
[5]: team_season_stats = fbref.read_team_season_stats(stat_type="passing")
team_season_stats.head()
```

```
[5]:
```

			players_used		90s	Total	\		
						Cmp	Att	Cmp%	
league	season	team							
ENG-Premier League	2021	Arsenal	29	38	18041	21807	82.7		
		Aston Villa	24	38	12938	16996	76.1		
		Brighton	27	38	15772	19871	79.4		
		Burnley	25	38	10825	15562	69.6		
		Chelsea	27	38	21969	25799	85.2		

			TotDist	PrgDist	Short	\		
					Cmp	Att	Cmp%	
league	season	team						
ENG-Premier League	2021	Arsenal	306094	93540	8319	9236	90.1	
		Aston Villa	235927	93009	5729	6654	86.1	
		Brighton	283213	95248	6694	7654	87.5	
		Burnley	196816	82192	5117	6058	84.5	
		Chelsea	360450	112392	10454	11454	91.3	

			Medium		Long		\		
			Cmp	Att	Cmp%	Cmp	Att	Cmp%	
league	season	team							
ENG-Premier League	2021	Arsenal	7770	8814	88.2	1453	2621	55.4	
		Aston Villa	5222	6209	84.1	1571	3074	51.1	
		Brighton	6893	7960	86.6	1689	3090	54.7	
		Burnley	3688	4824	76.5	1553	3535	43.9	
		Chelsea	8965	9976	89.9	1667	2703	61.7	

			Ast	xAG	xA	A-xAG	KP	1/3	PPA	\
league	season	team								
ENG-Premier League	2021	Arsenal	38	35.1	35.3	2.9	332	1377	325	
		Aston Villa	38	37.4	31.4	0.6	403	1086	323	
		Brighton	24	33.2	34.9	-9.2	358	1132	358	
		Burnley	20	27.7	26.9	-7.7	267	923	292	
		Chelsea	38	41.5	37.1	-3.5	448	1441	377	

			CrsPA	PrgP	\
league	season	team			
ENG-Premier League	2021	Arsenal	67	1760	
		Aston Villa	76	1420	
		Brighton	80	1516	
		Burnley	80	1012	
		Chelsea	70	1798	

url

league season team

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ENG-Premier League 2021	Arsenal	/en/squads/18bb7c10/2020-2021/Arsenal-Stats
	Aston Villa	/en/squads/8602292d/2020-2021/Aston-Villa-Stats
	Brighton	/en/squads/d07537b9/2020-2021/Brighton-and-Hov...
	Burnley	/en/squads/943e8050/2020-2021/Burnley-Stats
	Chelsea	/en/squads/cff3d9bb/2020-2021/Chelsea-Stats

2.3.2 Team match stats

```
[6]: team_match_stats = fbref.read_team_match_stats(stat_type="schedule", team="Manchester_
    ↪ City")
team_match_stats.head()
```

```
[6]:
    ↪ date \
league      season team      game
ENG-Premier League 2021 Manchester City 2020-09-21 Wolves-Manchester City      2020-
    ↪ 09-21
                                2020-09-27 Manchester City-Leicester City 2020-
    ↪ 09-27
                                2020-10-03 Leeds United-Manchester City 2020-
    ↪ 10-03
                                2020-10-17 Manchester City-Arsenal      2020-
    ↪ 10-17
                                2020-10-24 West Ham-Manchester City      2020-
    ↪ 10-24

    ↪ time \
league      season team      game
ENG-Premier League 2021 Manchester City 2020-09-21 Wolves-Manchester City      20:
    ↪ 15:00
                                2020-09-27 Manchester City-Leicester City 16:
    ↪ 30:00
                                2020-10-03 Leeds United-Manchester City 17:
    ↪ 30:00
                                2020-10-17 Manchester City-Arsenal      17:
    ↪ 30:00
                                2020-10-24 West Ham-Manchester City      12:
    ↪ 30:00

    ↪ round \
league      season team      game
ENG-Premier League 2021 Manchester City 2020-09-21 Wolves-Manchester City      ↪
    ↪ Matchweek 2
                                2020-09-27 Manchester City-Leicester City ↪
    ↪ Matchweek 3
                                2020-10-03 Leeds United-Manchester City ↪
    ↪ Matchweek 4
                                2020-10-17 Manchester City-Arsenal      ↪
    ↪ Matchweek 5
```

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↪ Matchweek 6

2020-10-24 West Ham-Manchester City ↪

day ↪

↪ \

league	season	team	game	
ENG-Premier League	2021	Manchester City	2020-09-21 Wolves-Manchester City	Mon
			2020-09-27 Manchester City-Leicester City	Sun
			2020-10-03 Leeds United-Manchester City	Sat
			2020-10-17 Manchester City-Arsenal	Sat
			2020-10-24 West Ham-Manchester City	Sat

↪ venue \

league	season	team	game	
ENG-Premier League	2021	Manchester City	2020-09-21 Wolves-Manchester City	Away
			2020-09-27 Manchester City-Leicester City	Home
			2020-10-03 Leeds United-Manchester City	Away
			2020-10-17 Manchester City-Arsenal	Home
			2020-10-24 West Ham-Manchester City	Away

↪ result \

league	season	team	game	
ENG-Premier League	2021	Manchester City	2020-09-21 Wolves-Manchester City	↪
			↪ W	
			2020-09-27 Manchester City-Leicester City	↪
			↪ L	
			2020-10-03 Leeds United-Manchester City	↪
			↪ D	
			2020-10-17 Manchester City-Arsenal	↪
			↪ W	
			2020-10-24 West Ham-Manchester City	↪
			↪ D	

GF ↪

↪ \

league	season	team	game	
ENG-Premier League	2021	Manchester City	2020-09-21 Wolves-Manchester City	3
			2020-09-27 Manchester City-Leicester City	2
			2020-10-03 Leeds United-Manchester City	1
			2020-10-17 Manchester City-Arsenal	1
			2020-10-24 West Ham-Manchester City	1

GA ↪

↪ \

league	season	team	game	
ENG-Premier League	2021	Manchester City	2020-09-21 Wolves-Manchester City	1
			2020-09-27 Manchester City-Leicester City	5
			2020-10-03 Leeds United-Manchester City	1
			2020-10-17 Manchester City-Arsenal	0
			2020-10-24 West Ham-Manchester City	1

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```

↪ opponent \
league          season team      game
ENG-Premier League 2021 Manchester City 2020-09-21 Wolves-Manchester City
↪ Wolves
                                2020-09-27 Manchester City-Leicester City
↪ Leicester City
                                2020-10-03 Leeds United-Manchester City
↪ Leeds United
                                2020-10-17 Manchester City-Arsenal
↪ Arsenal
                                2020-10-24 West Ham-Manchester City
↪ West Ham
                                xG
↪ \
league          season team      game
ENG-Premier League 2021 Manchester City 2020-09-21 Wolves-Manchester City 1.9
                                2020-09-27 Manchester City-Leicester City 0.9
                                2020-10-03 Leeds United-Manchester City 1.2
                                2020-10-17 Manchester City-Arsenal 1.3
                                2020-10-24 West Ham-Manchester City 1.0
                                xGA
↪ \
league          season team      game
ENG-Premier League 2021 Manchester City 2020-09-21 Wolves-Manchester City 0.6
                                2020-09-27 Manchester City-Leicester City 2.9
                                2020-10-03 Leeds United-Manchester City 2.4
                                2020-10-17 Manchester City-Arsenal 0.9
                                2020-10-24 West Ham-Manchester City 0.3
↪ Poss \
league          season team      game
ENG-Premier League 2021 Manchester City 2020-09-21 Wolves-Manchester City 65
                                2020-09-27 Manchester City-Leicester City 72
                                2020-10-03 Leeds United-Manchester City 49
                                2020-10-17 Manchester City-Arsenal 58
                                2020-10-24 West Ham-Manchester City 69
↪ Attendance \
league          season team      game
ENG-Premier League 2021 Manchester City 2020-09-21 Wolves-Manchester City
↪ <NA>
                                2020-09-27 Manchester City-Leicester City
↪ <NA>
                                2020-10-03 Leeds United-Manchester City
↪ <NA>
                                2020-10-17 Manchester City-Arsenal

```

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```

↳ <NA>
2020-10-24 West Ham-Manchester City
↳ <NA>

↳ Captain \
league      season team      game
ENG-Premier League 2021 Manchester City 2020-09-21 Wolves-Manchester City
↳Fernandinho
2020-09-27 Manchester City-Leicester City
↳Fernandinho
2020-10-03 Leeds United-Manchester City
↳Kevin De Bruyne
2020-10-17 Manchester City-Arsenal
↳Raheem Sterling
2020-10-24 West Ham-Manchester City
↳Raheem Sterling

↳Formation \
league      season team      game
ENG-Premier League 2021 Manchester City 2020-09-21 Wolves-Manchester City 4-
↳2-3-1
2020-09-27 Manchester City-Leicester City 4-
↳2-3-1
2020-10-03 Leeds United-Manchester City
↳4-3-3
2020-10-17 Manchester City-Arsenal 3-
↳1-4-2
2020-10-24 West Ham-Manchester City
↳4-3-3

↳ Referee \
league      season team      game
ENG-Premier League 2021 Manchester City 2020-09-21 Wolves-Manchester City
↳Andre Marriner
2020-09-27 Manchester City-Leicester City
↳Michael Oliver
2020-10-03 Leeds United-Manchester City
↳Mike Dean
2020-10-17 Manchester City-Arsenal
↳Chris Kavanagh
2020-10-24 West Ham-Manchester City
↳Anthony Taylor

↳
league      season team      match_report \
ENG-Premier League 2021 Manchester City 2020-09-21 Wolves-Manchester City /en/
↳matches/1c17eca3/Wolverhampton-Wanderers-M...
2020-09-27 Manchester City-Leicester City /en/

```

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```

↪matches/31c2a061/Manchester-City-Leicester...
                                2020-10-03 Leeds United-Manchester City    /en/
↪matches/5ce15b58/Leeds-United-Manchester-C...
                                2020-10-17 Manchester City-Arsenal          /en/
↪matches/e95b8546/Manchester-City-Arsenal-0...
                                2020-10-24 West Ham-Manchester City        /en/
↪matches/2b0c0eca/West-Ham-United-Mancheste...

league      season team      game
ENG-Premier League 2021  Manchester City 2020-09-21 Wolves-Manchester City    <NA>
                                2020-09-27 Manchester City-Leicester City    <NA>
                                2020-10-03 Leeds United-Manchester City    <NA>
                                2020-10-17 Manchester City-Arsenal          <NA>
                                2020-10-24 West Ham-Manchester City        <NA>
Notes

```

2.3.3 Player season stats

```
[7]: player_season_stats = fbref.read_player_season_stats(stat_type="standard")
player_season_stats.head()
```

```
[7]:
                                nation    pos age \

league      season team      player
ENG-Premier League 2021  Arsenal Ainsley Maitland-Niles    ENG  MF,DF  22
                                Alexandre Lacazette        FRA   FW  29
                                Bernd Leno                  GER   GK  28
                                Bukayo Saka                  ENG  FW,MF  18
                                Calum Chambers              ENG   DF  25

                                born Playing Time \
                                MP

league      season team      player
ENG-Premier League 2021  Arsenal Ainsley Maitland-Niles    1997         11
                                Alexandre Lacazette        1991         31
                                Bernd Leno                  1992         35
                                Bukayo Saka                  2001         32
                                Calum Chambers              1995         10

                                Starts    Min    90s \

league      season team      player
ENG-Premier League 2021  Arsenal Ainsley Maitland-Niles     5    490    5.4
                                Alexandre Lacazette        22   1923   21.4
                                Bernd Leno                  35   3131   34.8
                                Bukayo Saka                  30   2553   28.4
                                Calum Chambers              8    753    8.4

                                Performance \
                                GlS Ast G+A

league      season team      player

```

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ENG-Premier League 2021	Arsenal	Ainsley Maitland-Niles	0	0	0
		Alexandre Lacazette	13	2	15
		Bernd Leno	0	0	0
		Bukayo Saka	5	3	8
		Calum Chambers	0	2	2

league	season	team	player	G-PK	PK	PKatt	CrDY
ENG-Premier League 2021		Arsenal	Ainsley Maitland-Niles	0	0	0	0
			Alexandre Lacazette	10	3	3	3
			Bernd Leno	0	0	0	0
			Bukayo Saka	5	0	0	1
			Calum Chambers	0	0	0	0

league	season	team	player	CrDR	Expected xG	npxG
ENG-Premier League 2021		Arsenal	Ainsley Maitland-Niles	0	0.1	0.1
			Alexandre Lacazette	0	11.7	9.3
			Bernd Leno	1	0.0	0.0
			Bukayo Saka	0	6.9	6.9
			Calum Chambers	0	0.4	0.4

league	season	team	player	xAG	npxG+xAG
ENG-Premier League 2021		Arsenal	Ainsley Maitland-Niles	0.1	0.2
			Alexandre Lacazette	2.2	11.5
			Bernd Leno	0.0	0.0
			Bukayo Saka	4.4	11.3
			Calum Chambers	1.1	1.5

league	season	team	player	Progression PrgC	PrgP
ENG-Premier League 2021		Arsenal	Ainsley Maitland-Niles	12	24
			Alexandre Lacazette	15	55
			Bernd Leno	0	2
			Bukayo Saka	85	101
			Calum Chambers	16	40

league	season	team	player	PrgR	Per 90 Minutes Gls
ENG-Premier League 2021		Arsenal	Ainsley Maitland-Niles	21	0.0
			Alexandre Lacazette	112	0.61
			Bernd Leno	0	0.0
			Bukayo Saka	269	0.18
			Calum Chambers	49	0.0

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league	season	team	player	Ast	G+A	G-PK
ENG-Premier League	2021	Arsenal	Ainsley Maitland-Niles	0.0	0.0	0.0
			Alexandre Lacazette	0.09	0.7	0.47
			Bernd Leno	0.0	0.0	0.0
			Bukayo Saka	0.11	0.28	0.18
			Calum Chambers	0.24	0.24	0.0

league	season	team	player	G+A-PK	xG	xAG
ENG-Premier League	2021	Arsenal	Ainsley Maitland-Niles	0.0	0.01	0.02
			Alexandre Lacazette	0.56	0.55	0.1
			Bernd Leno	0.0	0.0	0.0
			Bukayo Saka	0.28	0.24	0.16
			Calum Chambers	0.24	0.05	0.13

league	season	team	player	xG+xAG	npxG	npxG+xAG
ENG-Premier League	2021	Arsenal	Ainsley Maitland-Niles	0.04	0.01	0.04
			Alexandre Lacazette	0.65	0.43	0.54
			Bernd Leno	0.0	0.0	0.0
			Bukayo Saka	0.4	0.24	0.4
			Calum Chambers	0.18	0.05	0.18

2.3.4 Player match stats

```
[8]: player_match_stats = fbref.read_player_match_stats(stat_type="passing", match_id=
      ↪ 'db261cb0')
      player_match_stats.head()
```

```
[8]:
      ↪ jersey_number \
league      season game      team      player
ENG-Premier League 2021  2020-09-12 Crystal Palace-Southampton Crystal Palace Andros
      ↪ Townsend      10
      ↪ Kouyaté      8
      ↪ Eze      25
      ↪ McArthur      18
      ↪ McCarthy      22
      ↪ nation \
league      season game      team      player
```

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ENG-Premier League 2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace	Andros
↪Townsend	ENG			Cheikhou
↪Kouyaté	SEN			Eberechi
↪Eze	ENG			James
↪McArthur	SCO			James
↪McCarthy	IRL			
↪	pos	\		
league	season	game	team	player
ENG-Premier League 2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace	Andros
↪Townsend	RM			Cheikhou
↪Kouyaté	CB			Eberechi
↪Eze	LM			James
↪McArthur	CM			James
↪McCarthy	CM			
↪	age	\		
league	season	game	team	player
ENG-Premier League 2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace	Andros
↪Townsend	29-058			Cheikhou
↪Kouyaté	30-266			Eberechi
↪Eze	22-075			James
↪McArthur	32-341			James
↪McCarthy	29-305			
↪	min	\		
league	season	game	team	player
ENG-Premier League 2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace	Andros
↪Townsend	90			Cheikhou
↪Kouyaté	90			Eberechi
↪Eze	10			James

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league	season	game	team	player
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace Andros
↪Townsend	11			
				Cheikhou
↪Kouyaté	4			Eberechi
				James
↪Eze	2			James
↪McArthur	6			
↪McCarthy	6			
↪				
↪				
↪	Cmp%			
league	season	game	team	player
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace Andros
↪Townsend	72.7			
				Cheikhou
↪Kouyaté	75.0			Eberechi
↪Eze	100.0			James
↪McArthur	33.3			James
↪McCarthy	66.7			
↪				
↪	Medium			
↪				
↪	Cmp			
league	season	game	team	player
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace Andros
↪Townsend	4			
				Cheikhou
↪Kouyaté	3			Eberechi
↪Eze	3			James
↪McArthur	11			James
↪McCarthy	6			
↪				
↪				
↪	Att			
league	season	game	team	player
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace Andros
↪Townsend	8			
				Cheikhou

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↪Kouyaté	6						Eberechi
↪Eze	3						James
↪McArthur	15						James
↪McCarthy	10						
↪							
↪							
↪	Cmp%						
league	season	game			team	player	
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace	Andros		
↪Townsend	50.0						
↪Kouyaté	50.0					Cheikhou	
↪Eze	100.0					Eberechi	
↪McArthur	73.3					James	
↪McCarthy	60.0					James	
↪							
↪	Long						
↪							
↪	Cmp						
league	season	game			team	player	
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace	Andros		
↪Townsend	1						
↪Kouyaté	3					Cheikhou	
↪Eze	2					Eberechi	
↪McArthur	1					James	
↪McCarthy	3					James	
↪							
↪							
↪	Att						
league	season	game			team	player	
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace	Andros		
↪Townsend	6					Cheikhou	
↪Kouyaté	6					Eberechi	
↪Eze	3					James	

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league	season	game	team	player
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace Andros
↪Townsend	0.2			Cheikhou
↪Kouyaté	0.0			Eberechi
↪Eze	0.0			James
↪McArthur	0.0			James
↪McCarthy	0.1			
↪	KP \			

league	season	game	team	player
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace Andros
↪Townsend	2			Cheikhou
↪Kouyaté	0			Eberechi
↪Eze	0			James
↪McArthur	1			James
↪McCarthy	0			
↪	1/3 \			

league	season	game	team	player
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace Andros
↪Townsend	0			Cheikhou
↪Kouyaté	1			Eberechi
↪Eze	1			James
↪McArthur	2			James
↪McCarthy	0			
↪	PPA \			

league	season	game	team	player
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace Andros
↪Townsend	1			Cheikhou
↪Kouyaté	0			Eberechi

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↪Eze	0						James
↪McArthur	0						James
↪McCarthy	0						
↪	CrsPA	\					
league	season	game	team	player			
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace	Andros		
↪Townsend	0						
↪Kouyaté	0				Cheikhou		
↪Eze	0				Eberechi		
↪McArthur	0				James		
↪McCarthy	0				James		
↪	PrgP	\					
league	season	game	team	player			
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace	Andros		
↪Townsend	1				Cheikhou		
↪Kouyaté	2				Eberechi		
↪Eze	2				James		
↪McArthur	3				James		
↪McCarthy	2						
↪	game_id						
league	season	game	team	player			
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace	Andros		
↪Townsend	db261cb0				Cheikhou		
↪Kouyaté	db261cb0				Eberechi		
↪Eze	db261cb0				James		
↪McArthur	db261cb0				James		
↪McCarthy	db261cb0						

2.3.5 Game schedule

```
[9]: epl_schedule = fbref.read_schedule()
     epl_schedule.head()
```

```
[9]:
```

league	season	game	week	day	\
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	1	Sat	
		2020-09-12 Fulham-Arsenal	1	Sat	
		2020-09-12 Liverpool-Leeds United	1	Sat	
		2020-09-12 West Ham-Newcastle Utd	1	Sat	
		2020-09-13 Tottenham-Everton	1	Sun	

league	season	game	date	\
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	2020-09-12	
		2020-09-12 Fulham-Arsenal	2020-09-12	
		2020-09-12 Liverpool-Leeds United	2020-09-12	
		2020-09-12 West Ham-Newcastle Utd	2020-09-12	
		2020-09-13 Tottenham-Everton	2020-09-13	

league	season	game	time	\
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	15:00	
		2020-09-12 Fulham-Arsenal	12:30	
		2020-09-12 Liverpool-Leeds United	17:30	
		2020-09-12 West Ham-Newcastle Utd	20:00	
		2020-09-13 Tottenham-Everton	16:30	

league	season	game	home_team	\
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	Crystal Palace	
		2020-09-12 Fulham-Arsenal	Fulham	
		2020-09-12 Liverpool-Leeds United	Liverpool	
		2020-09-12 West Ham-Newcastle Utd	West Ham	
		2020-09-13 Tottenham-Everton	Tottenham	

league	season	game	home_xg	\
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	1.1	
		2020-09-12 Fulham-Arsenal	0.1	
		2020-09-12 Liverpool-Leeds United	2.7	
		2020-09-12 West Ham-Newcastle Utd	1.0	
		2020-09-13 Tottenham-Everton	1.1	

league	season	game	score	\
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	1-0	
		2020-09-12 Fulham-Arsenal	0-3	
		2020-09-12 Liverpool-Leeds United	4-3	
		2020-09-12 West Ham-Newcastle Utd	0-2	
		2020-09-13 Tottenham-Everton	0-1	

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				away_xg \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	0.9
		2020-09-12	Fulham-Arsenal	1.9
		2020-09-12	Liverpool-Leeds United	0.3
		2020-09-12	West Ham-Newcastle Utd	1.6
		2020-09-13	Tottenham-Everton	1.2
				away_team \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Southampton
		2020-09-12	Fulham-Arsenal	Arsenal
		2020-09-12	Liverpool-Leeds United	Leeds United
		2020-09-12	West Ham-Newcastle Utd	Newcastle Utd
		2020-09-13	Tottenham-Everton	Everton
				attendance \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	<NA>
		2020-09-12	Fulham-Arsenal	<NA>
		2020-09-12	Liverpool-Leeds United	<NA>
		2020-09-12	West Ham-Newcastle Utd	<NA>
		2020-09-13	Tottenham-Everton	<NA>
				venue \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Selhurst
		2020-09-12	Fulham-Arsenal	Craven
		2020-09-12	Liverpool-Leeds United	
		2020-09-12	West Ham-Newcastle Utd	London
		2020-09-13	Tottenham-Everton	Tottenham Hotspur
				referee \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Jonathan Moss
		2020-09-12	Fulham-Arsenal	Chris Kavanagh
		2020-09-12	Liverpool-Leeds United	Michael Oliver
		2020-09-12	West Ham-Newcastle Utd	Stuart Attwell
		2020-09-13	Tottenham-Everton	Martin Atkinson
				match_report \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	/en/matches/db261cb0/
		2020-09-12	Fulham-Arsenal	/en/matches/bf52349b/

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```

↪Fulham-Arsenal-September-...
    2020-09-12 Liverpool-Leeds United    /en/matches/21b58926/
↪Liverpool-Leeds-United-Se...
    2020-09-12 West Ham-Newcastle Utd    /en/matches/78495ced/
↪West-Ham-United-Newcastle...
    2020-09-13 Tottenham-Everton         /en/matches/fc7f9aa1/
↪Tottenham-Hotspur-Everton...

```

```

league      season game      notes \
ENG-Premier League 2021  2020-09-12 Crystal Palace-Southampton <NA>
                                2020-09-12 Fulham-Arsenal          <NA>
                                2020-09-12 Liverpool-Leeds United      <NA>
                                2020-09-12 West Ham-Newcastle Utd    <NA>
                                2020-09-13 Tottenham-Everton      <NA>

league      season game      game_id
ENG-Premier League 2021  2020-09-12 Crystal Palace-Southampton db261cb0
                                2020-09-12 Fulham-Arsenal          bf52349b
                                2020-09-12 Liverpool-Leeds United      21b58926
                                2020-09-12 West Ham-Newcastle Utd    78495ced
                                2020-09-13 Tottenham-Everton      fc7f9aa1

```

2.3.6 Line ups

```

[10]: lineups = fbref.read_lineup(match_id='db261cb0')
      lineups.head()

```

```

[10]: league      season game      jersey_number \
ENG-Premier League 2021  2020-09-12 Crystal Palace-Southampton      31
                                2020-09-12 Crystal Palace-Southampton      2
                                2020-09-12 Crystal Palace-Southampton      6
                                2020-09-12 Crystal Palace-Southampton      8
                                2020-09-12 Crystal Palace-Southampton      9

league      season game      player \
ENG-Premier League 2021  2020-09-12 Crystal Palace-Southampton      Vicente Guaita
                                2020-09-12 Crystal Palace-Southampton      Joel Ward
                                2020-09-12 Crystal Palace-Southampton      Scott Dann
                                2020-09-12 Crystal Palace-Southampton      Cheikhou Kouyaté
                                2020-09-12 Crystal Palace-Southampton      Jordan Ayew

league      season game      team \
ENG-Premier League 2021  2020-09-12 Crystal Palace-Southampton      Crystal Palace
                                2020-09-12 Crystal Palace-Southampton      Crystal Palace
                                2020-09-12 Crystal Palace-Southampton      Crystal Palace
                                2020-09-12 Crystal Palace-Southampton      Crystal Palace

```

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2020-09-12 Crystal Palace-Southampton					Crystal Palace
					is_starter \
league	season	game			
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton		True
		2020-09-12	Crystal Palace-Southampton		True
		2020-09-12	Crystal Palace-Southampton		True
		2020-09-12	Crystal Palace-Southampton		True
		2020-09-12	Crystal Palace-Southampton		True
					position \
league	season	game			
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton		GK
		2020-09-12	Crystal Palace-Southampton		RB
		2020-09-12	Crystal Palace-Southampton		CB
		2020-09-12	Crystal Palace-Southampton		CB
		2020-09-12	Crystal Palace-Southampton		FW
					minutes_played
league	season	game			
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton		90
		2020-09-12	Crystal Palace-Southampton		90
		2020-09-12	Crystal Palace-Southampton		90
		2020-09-12	Crystal Palace-Southampton		90
		2020-09-12	Crystal Palace-Southampton		90

2.3.7 Events

```
[11]: events = fbref.read_events(match_id='db261cb0')
events.head()
```

```
[11]:
```

					team \
league	season	game			
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton		Crystal Palace
		2020-09-12	Crystal Palace-Southampton		Crystal Palace
		2020-09-12	Crystal Palace-Southampton		Southampton
		2020-09-12	Crystal Palace-Southampton		Southampton
		2020-09-12	Crystal Palace-Southampton		Crystal Palace
					minute score \
league	season	game			
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	13	1:0
		2020-09-12	Crystal Palace-Southampton	41	1:0
		2020-09-12	Crystal Palace-Southampton	46	1:0
		2020-09-12	Crystal Palace-Southampton	51	1:0
		2020-09-12	Crystal Palace-Southampton	58	1:0
					player1 \
league	season	game			
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton		Wilfried Zaha
		2020-09-12	Crystal Palace-Southampton		Jeffrey Schlupp

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			2020-09-12	Crystal Palace-Southampton	Jannik Vestergaard
			2020-09-12	Crystal Palace-Southampton	Kyle Walker-Peters
			2020-09-12	Crystal Palace-Southampton	James McCarthy
					player2 \
league	season	game			
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Andros Townsend	
		2020-09-12	Crystal Palace-Southampton	None	
		2020-09-12	Crystal Palace-Southampton	Jan Bednarek	
		2020-09-12	Crystal Palace-Southampton	None	
		2020-09-12	Crystal Palace-Southampton	None	
					event_type
league	season	game			
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	goal	
		2020-09-12	Crystal Palace-Southampton	yellow_card	
		2020-09-12	Crystal Palace-Southampton	substitute_in	
		2020-09-12	Crystal Palace-Southampton	yellow_card	
		2020-09-12	Crystal Palace-Southampton	yellow_card	

2.3.8 Shot events

```
[12]: shots = fbref.read_shot_events(match_id='db261cb0')
shots.head()
```

```
[12]:
```

					minute \
league	season	game			
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	4	
		2020-09-12	Crystal Palace-Southampton	13	
		2020-09-12	Crystal Palace-Southampton	32	
		2020-09-12	Crystal Palace-Southampton	36	
		2020-09-12	Crystal Palace-Southampton	46	
					player \
league	season	game			
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Jack Stephens	
		2020-09-12	Crystal Palace-Southampton	Wilfried Zaha	
		2020-09-12	Crystal Palace-Southampton	Danny Ings	
		2020-09-12	Crystal Palace-Southampton	Cheikhou Kouyaté	
		2020-09-12	Crystal Palace-Southampton	Nathan Redmond	
					team \
league	season	game			
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Southampton	
		2020-09-12	Crystal Palace-Southampton	Crystal Palace	
		2020-09-12	Crystal Palace-Southampton	Southampton	
		2020-09-12	Crystal Palace-Southampton	Crystal Palace	
		2020-09-12	Crystal Palace-Southampton	Southampton	

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league	season	game	xG	PSxG	\
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	0.07	0.09	
		2020-09-12 Crystal Palace-Southampton	0.44	0.73	
		2020-09-12 Crystal Palace-Southampton	0.04	0.12	
		2020-09-12 Crystal Palace-Southampton	0.15	0.09	
		2020-09-12 Crystal Palace-Southampton	0.07	0.03	

outcome \

league	season	game	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	Saved
		2020-09-12 Crystal Palace-Southampton	Goal
		2020-09-12 Crystal Palace-Southampton	Saved
		2020-09-12 Crystal Palace-Southampton	Saved
		2020-09-12 Crystal Palace-Southampton	Saved

distance \

league	season	game	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	10
		2020-09-12 Crystal Palace-Southampton	9
		2020-09-12 Crystal Palace-Southampton	10
		2020-09-12 Crystal Palace-Southampton	11
		2020-09-12 Crystal Palace-Southampton	14

body_part \

league	season	game	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	Head
		2020-09-12 Crystal Palace-Southampton	Right Foot
		2020-09-12 Crystal Palace-Southampton	Head
		2020-09-12 Crystal Palace-Southampton	Right Foot
		2020-09-12 Crystal Palace-Southampton	Right Foot

notes \

league	season	game	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	<NA>
		2020-09-12 Crystal Palace-Southampton	Volley
		2020-09-12 Crystal Palace-Southampton	<NA>
		2020-09-12 Crystal Palace-Southampton	<NA>
		2020-09-12 Crystal Palace-Southampton	<NA>

SCA 1 \
player

league	season	game	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	James Ward-Prowse
		2020-09-12 Crystal Palace-Southampton	Andros Townsend
		2020-09-12 Crystal Palace-Southampton	Kyle Walker-Peters

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			2020-09-12	Crystal Palace-Southampton	Andros Townsend
			2020-09-12	Crystal Palace-Southampton	Che Adams
					\
					event
league	season	game			
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Pass (Dead)	
		2020-09-12	Crystal Palace-Southampton	Pass (Live)	
		2020-09-12	Crystal Palace-Southampton	Pass (Live)	
		2020-09-12	Crystal Palace-Southampton	Pass (Dead)	
		2020-09-12	Crystal Palace-Southampton	Pass (Live)	
					SCA 2 \
					player
league	season	game			
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Kyle Walker-Peters	
		2020-09-12	Crystal Palace-Southampton	James McCarthy	
		2020-09-12	Crystal Palace-Southampton	William Smallbone	
		2020-09-12	Crystal Palace-Southampton	Wilfried Zaha	
		2020-09-12	Crystal Palace-Southampton	Danny Ings	
					event
league	season	game			
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Pass (Dead)	
		2020-09-12	Crystal Palace-Southampton	Interception	
		2020-09-12	Crystal Palace-Southampton	Pass (Live)	
		2020-09-12	Crystal Palace-Southampton	Fouled	
		2020-09-12	Crystal Palace-Southampton	Pass (Live)	

..... doc/datasources/FBref.ipynb ends here.

The following section was generated from doc/datasources/FiveThirtyEight.ipynb

[3]: import soccerdata as sd

2.4 FiveThirtyEight

```
[4]: five38 = sd.FiveThirtyEight(leagues="ENG-Premier League", seasons=2021)
print(five38.__doc__)
```

```
/cw/dtaijupiter/NoCsBack/dtai/pieterr/Projects/soccerdata/soccerdata/_common.py:466:
↳ UserWarning: Season id "2021" is ambiguous: interpreting as "20-21"
warnings.warn(msg)
```

Provides pd.DataFrames from fivethirtyeight's "Club Soccer Predictions" project.

Data will be downloaded as necessary and cached locally in
`~/soccerdata/data/FiveThirtyEight`.

Original project and background info:

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```

https://projects.fivethirtyeight.com/soccer-predictions/ and
https://fivethirtyeight.com/features/how-our-club-soccer-projections-work/

Parameters
-----
leagues : string or iterable, optional
    IDs of Leagues to include.
seasons : string, int or list, optional
    Seasons to include. Supports multiple formats.
    Examples: '16-17'; 2016; '2016-17'; [14, 15, 16]
proxy : 'tor' or dict or list(dict) or callable, optional
    Use a proxy to hide your IP address. Valid options are:
    - "tor": Uses the Tor network. Tor should be running in
      the background on port 9050.
    - dict: A dictionary with the proxy to use. The dict should be
      a mapping of supported protocols to proxy addresses. For example::

        {
            'http': 'http://10.10.1.10:3128',
            'https': 'http://10.10.1.10:1080',
        }

    - list(dict): A list of proxies to choose from. A different proxy will
      be selected from this list after failed requests, allowing rotating
      proxies.
    - callable: A function that returns a valid proxy. This function will
      be called after failed requests, allowing rotating proxies.
no_cache : bool
    If True, will not use cached data.
no_store : bool
    If True, will not store downloaded data.
data_dir : Path
    Path to directory where data will be cached.

```

2.4.1 Game schedule and predicted results

```
[5]: epl_schedule = five38.read_games()
epl_schedule.head()
```

```
[5]:
```

date \	league	season	game						
	ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	2020-09-12	14:00:00+00:00			
			2020-09-12	Fulham-Arsenal	2020-09-12	11:30:00+00:00			
			2020-09-12	Liverpool-Leeds United	2020-09-12	16:30:00+00:00			
			2020-09-12	West Ham United-Newcastle	2020-09-12	19:00:00+00:00			
			2020-09-13	Tottenham Hotspur-Everton	2020-09-13	15:30:00+00:00			
							status	leg	\

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league	season	game	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	post None
		2020-09-12 Fulham-Arsenal	post None
		2020-09-12 Liverpool-Leeds United	post None
		2020-09-12 West Ham United-Newcastle	post None
		2020-09-13 Tottenham Hotspur-Everton	post None

league	season	game	home_team \
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	Crystal Palace
		2020-09-12 Fulham-Arsenal	Fulham
		2020-09-12 Liverpool-Leeds United	Liverpool
		2020-09-12 West Ham United-Newcastle	West Ham United
		2020-09-13 Tottenham Hotspur-Everton	Tottenham Hotspur

league	season	game	away_team \
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	Southampton
		2020-09-12 Fulham-Arsenal	Arsenal
		2020-09-12 Liverpool-Leeds United	Leeds United
		2020-09-12 West Ham United-Newcastle	Newcastle
		2020-09-13 Tottenham Hotspur-Everton	Everton

league	season	game	home_id \
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	384
		2020-09-12 Fulham-Arsenal	370
		2020-09-12 Liverpool-Leeds United	364
		2020-09-12 West Ham United-Newcastle	371
		2020-09-13 Tottenham Hotspur-Everton	367

league	season	game	away_id \
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	376
		2020-09-12 Fulham-Arsenal	359
		2020-09-12 Liverpool-Leeds United	357
		2020-09-12 West Ham United-Newcastle	361
		2020-09-13 Tottenham Hotspur-Everton	368

league	season	game	home_code \
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	CRY
		2020-09-12 Fulham-Arsenal	FUL
		2020-09-12 Liverpool-Leeds United	LIV
		2020-09-12 West Ham United-Newcastle	WHU
		2020-09-13 Tottenham Hotspur-Everton	TOT

league	season	game	away_code \
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	SOU
		2020-09-12 Fulham-Arsenal	ARS
		2020-09-12 Liverpool-Leeds United	LEE

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		2020-09-12	West Ham United-Newcastle	NEW
		2020-09-13	Tottenham Hotspur-Everton	EVE
				prob_home \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	0.36979
		2020-09-12	Fulham-Arsenal	0.28167
		2020-09-12	Liverpool-Leeds United	0.83582
		2020-09-12	West Ham United-Newcastle	0.48865
		2020-09-13	Tottenham Hotspur-Everton	0.50235
				prob_away \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	0.35311
		2020-09-12	Fulham-Arsenal	0.46081
		2020-09-12	Liverpool-Leeds United	0.04384
		2020-09-12	West Ham United-Newcastle	0.25556
		2020-09-13	Tottenham Hotspur-Everton	0.24434
				prob_tie \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	0.27710
		2020-09-12	Fulham-Arsenal	0.25752
		2020-09-12	Liverpool-Leeds United	0.12034
		2020-09-12	West Ham United-Newcastle	0.25579
		2020-09-13	Tottenham Hotspur-Everton	0.25331
				round \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	None
		2020-09-12	Fulham-Arsenal	None
		2020-09-12	Liverpool-Leeds United	None
		2020-09-12	West Ham United-Newcastle	None
		2020-09-13	Tottenham Hotspur-Everton	None
				matchday \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	None
		2020-09-12	Fulham-Arsenal	None
		2020-09-12	Liverpool-Leeds United	None
		2020-09-12	West Ham United-Newcastle	None
		2020-09-13	Tottenham Hotspur-Everton	None
				score_home \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	1
		2020-09-12	Fulham-Arsenal	0
		2020-09-12	Liverpool-Leeds United	4
		2020-09-12	West Ham United-Newcastle	0
		2020-09-13	Tottenham Hotspur-Everton	0
				score_away \

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league	season	game	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	0
		2020-09-12 Fulham-Arsenal	3
		2020-09-12 Liverpool-Leeds United	3
		2020-09-12 West Ham United-Newcastle	2
		2020-09-13 Tottenham Hotspur-Everton	1
			adj_score_home \
league	season	game	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	1.05
		2020-09-12 Fulham-Arsenal	0.00
		2020-09-12 Liverpool-Leeds United	4.20
		2020-09-12 West Ham United-Newcastle	0.00
		2020-09-13 Tottenham Hotspur-Everton	0.00
			adj_score_away \
league	season	game	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	0.000
		2020-09-12 Fulham-Arsenal	3.150
		2020-09-12 Liverpool-Leeds United	3.150
		2020-09-12 West Ham United-Newcastle	1.666
		2020-09-13 Tottenham Hotspur-Everton	1.050
			chances_home \
league	season	game	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	1.507
		2020-09-12 Fulham-Arsenal	0.141
		2020-09-12 Liverpool-Leeds United	3.328
		2020-09-12 West Ham United-Newcastle	0.973
		2020-09-13 Tottenham Hotspur-Everton	1.029
			chances_away \
league	season	game	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	1.160
		2020-09-12 Fulham-Arsenal	2.989
		2020-09-12 Liverpool-Leeds United	0.368
		2020-09-12 West Ham United-Newcastle	1.475
		2020-09-13 Tottenham Hotspur-Everton	1.109
			moves_home \
league	season	game	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	0.943
		2020-09-12 Fulham-Arsenal	0.270
		2020-09-12 Liverpool-Leeds United	3.006
		2020-09-12 West Ham United-Newcastle	1.103
		2020-09-13 Tottenham Hotspur-Everton	1.316
			moves_away \
league	season	game	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	1.652
		2020-09-12 Fulham-Arsenal	1.528
		2020-09-12 Liverpool-Leeds United	0.747

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			2020-09-12 West Ham United-Newcastle	1.860
			2020-09-13 Tottenham Hotspur-Everton	1.110
				aggregate_winner \
league	season	game		
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton		None
		2020-09-12 Fulham-Arsenal		None
		2020-09-12 Liverpool-Leeds United		None
		2020-09-12 West Ham United-Newcastle		None
		2020-09-13 Tottenham Hotspur-Everton		None
				shootout_winner
league	season	game		
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton		None
		2020-09-12 Fulham-Arsenal		None
		2020-09-12 Liverpool-Leeds United		None
		2020-09-12 West Ham United-Newcastle		None
		2020-09-13 Tottenham Hotspur-Everton		None

2.4.2 Forecasted league table

```
[6]: forecasts = five38.read_forecasts()
forecasts.head()
```

```
[6]: league          season last_updated      team      code \
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal      ARS
                                           Aston Villa      AVL
                                           Brighton and Hove Albion BHA
                                           Burnley      BRN
                                           Chelsea      CHE

                                           current_

↳ losses \
league          season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal
↳ 0.0
                                           Aston Villa
↳ 0.0
                                           Brighton and Hove Albion
↳ 0.0
                                           Burnley
↳ 0.0
                                           Chelsea
↳ 0.0

                                           current_

↳ points \
league          season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal
↳ 0.0
```

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↪0.0			Aston Villa	↪
↪0.0			Brighton and Hove Albion	↪
↪0.0			Burnley	↪
↪0.0			Chelsea	↪
↪ties \				current_
league	season	last_updated	team	
ENG-Premier League	2021	2020-09-09T14:46:49.136Z	Arsenal	0.0
			Aston Villa	0.0
			Brighton and Hove Albion	0.0
			Burnley	0.0
			Chelsea	0.0
↪wins \				current_
league	season	last_updated	team	
ENG-Premier League	2021	2020-09-09T14:46:49.136Z	Arsenal	0.0
			Aston Villa	0.0
			Brighton and Hove Albion	0.0
			Burnley	0.0
			Chelsea	0.0
				d_rating \
league	season	last_updated	team	
ENG-Premier League	2021	2020-09-09T14:46:49.136Z	Arsenal	1.33114
			Aston Villa	1.52263
			Brighton and Hove Albion	1.45713
			Burnley	1.41912
			Chelsea	1.16934
				global_d \
league	season	last_updated	team	
ENG-Premier League	2021	2020-09-09T14:46:49.136Z	Arsenal	0.68339
			Aston Villa	0.87488
			Brighton and Hove Albion	0.80938
			Burnley	0.77137
			Chelsea	0.52160
				global_o \
league	season	last_updated	team	
ENG-Premier League	2021	2020-09-09T14:46:49.136Z	Arsenal	2.13421
			Aston Villa	1.77744
			Brighton and Hove Albion	1.77377
			Burnley	1.77961
			Chelsea	2.51615
				global_

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```

↪rating \
league      season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal          77.
↪16360
                                Aston Villa          66.
↪48339
                                Brighton and Hove Albion 68.
↪02657
                                Burnley          69.
↪08173
                                Chelsea          85.
↪37204

                                goal_diff \
league      season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal          4.13260
                                Aston Villa      -17.57325
                                Brighton and Hove Albion -15.24810
                                Burnley          -13.63310
                                Chelsea          26.57990

                                goals_
↪against \
league      season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal          49.
↪72715
                                Aston Villa          57.
↪65595
                                Brighton and Hove Albion 55.
↪36300
                                Burnley          53.
↪84085
                                Chelsea          42.
↪20305

                                goals_
↪scored \
league      season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal          53.85975
                                Aston Villa      40.08270
                                Brighton and Hove Albion 40.11490
                                Burnley          40.20775
                                Chelsea          68.78295

                                id \
league      season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal          359
                                Aston Villa      362
                                Brighton and Hove Albion 331
                                Burnley          379
                                Chelsea          363

```

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league	season	last_updated	team	losses \
ENG-Premier League	2021	2020-09-09T14:46:49.136Z	Arsenal	13.27675
			Aston Villa	17.72125
			Brighton and Hove Albion	17.18525
			Burnley	16.80205
			Chelsea	9.34340
				make_champs_
↩ \				
league	season	last_updated	team	
ENG-Premier League	2021	2020-09-09T14:46:49.136Z	Arsenal	0.16095
			Aston Villa	0.02335
			Brighton and Hove Albion	0.02950
			Burnley	0.03210
			Chelsea	0.53090
				make_europa_
↩ \				
league	season	last_updated	team	
ENG-Premier League	2021	2020-09-09T14:46:49.136Z	Arsenal	0.0
			Aston Villa	0.0
			Brighton and Hove Albion	0.0
			Burnley	0.0
			Chelsea	0.0
				make_
↩playoffs \				
league	season	last_updated	team	
ENG-Premier League	2021	2020-09-09T14:46:49.136Z	Arsenal	0.
↩0			Aston Villa	0.
↩0			Brighton and Hove Albion	0.
↩0			Burnley	0.
↩0			Chelsea	0.
↩0				
↩0				
				o_rating \
league	season	last_updated	team	
ENG-Premier League	2021	2020-09-09T14:46:49.136Z	Arsenal	1.48647
			Aston Villa	1.12969
			Brighton and Hove Albion	1.12603
			Burnley	1.13187
			Chelsea	1.86841
				points \
league	season	last_updated	team	
ENG-Premier League	2021	2020-09-09T14:46:49.136Z	Arsenal	55.50395
			Aston Villa	41.66985

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				Brighton and Hove Albion	42.92225
				Burnley	43.86545
				Chelsea	69.17900
					position_1
↩ \					
league	season	last_updated		team	
ENG-Premier League	2021	2020-09-09T14:46:49.136Z		Arsenal	0.00720
				Aston Villa	0.00030
				Brighton and Hove Albion	0.00075
				Burnley	0.00100
				Chelsea	0.06525
					position_10
↩ \					
league	season	last_updated		team	
ENG-Premier League	2021	2020-09-09T14:46:49.136Z		Arsenal	0.06905
				Aston Villa	0.05405
				Brighton and Hove Albion	0.05475
				Burnley	0.05910
				Chelsea	0.02775
					position_11
↩ \					
league	season	last_updated		team	
ENG-Premier League	2021	2020-09-09T14:46:49.136Z		Arsenal	0.06170
				Aston Villa	0.06005
				Brighton and Hove Albion	0.06255
				Burnley	0.06525
				Chelsea	0.02295
					position_12
↩ \					
league	season	last_updated		team	
ENG-Premier League	2021	2020-09-09T14:46:49.136Z		Arsenal	0.05220
				Aston Villa	0.06500
				Brighton and Hove Albion	0.06575
				Burnley	0.06555
				Chelsea	0.01715
					position_13
↩ \					
league	season	last_updated		team	
ENG-Premier League	2021	2020-09-09T14:46:49.136Z		Arsenal	0.04835
				Aston Villa	0.06855
				Brighton and Hove Albion	0.07025
				Burnley	0.07245
				Chelsea	0.01315
					position_14
↩ \					
league	season	last_updated		team	

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```

ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal      0.04075
                        Aston Villa      0.07090
                        Brighton and Hove Albion 0.07305
                        Burnley          0.06670
                        Chelsea          0.01000

                                position_15_
↪ \
league      season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal      0.03595
                        Aston Villa      0.07480
                        Brighton and Hove Albion 0.07485
                        Burnley          0.07370
                        Chelsea          0.00735

                                position_16_
↪ \
league      season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal      0.03045
                        Aston Villa      0.07685
                        Brighton and Hove Albion 0.07690
                        Burnley          0.07325
                        Chelsea          0.00585

                                position_17_
↪ \
league      season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal      0.02650
                        Aston Villa      0.07955
                        Brighton and Hove Albion 0.07505
                        Burnley          0.07340
                        Chelsea          0.00400

                                position_18_
↪ \
league      season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal      0.02035
                        Aston Villa      0.08465
                        Brighton and Hove Albion 0.07790
                        Burnley          0.07010
                        Chelsea          0.00230

                                position_19_
↪ \
league      season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal      0.01590
                        Aston Villa      0.08315
                        Brighton and Hove Albion 0.07590
                        Burnley          0.06735
                        Chelsea          0.00215

                                position_2_

```

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```

↪ \
league          season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal          0.02725
                                     Aston Villa       0.00315
                                     Brighton and Hove Albion 0.00295
                                     Burnley          0.00325
                                     Chelsea          0.13860

                                     position_20 ↪

↪ \
league          season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal          0.01165
                                     Aston Villa       0.08465
                                     Brighton and Hove Albion 0.06700
                                     Burnley          0.06145
                                     Chelsea          0.00050

                                     position_3 ↪

↪ \
league          season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal          0.05280
                                     Aston Villa       0.00615
                                     Brighton and Hove Albion 0.00965
                                     Burnley          0.01065
                                     Chelsea          0.17560

                                     position_4 ↪

↪ \
league          season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal          0.07370
                                     Aston Villa       0.01375
                                     Brighton and Hove Albion 0.01615
                                     Burnley          0.01720
                                     Chelsea          0.15145

                                     position_5 ↪

↪ \
league          season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal          0.08895
                                     Aston Villa       0.02105
                                     Brighton and Hove Albion 0.02415
                                     Burnley          0.02915
                                     Chelsea          0.11230

                                     position_6 ↪

↪ \
league          season last_updated      team
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal          0.09120
                                     Aston Villa       0.02830
                                     Brighton and Hove Albion 0.03275
                                     Burnley          0.03935
                                     Chelsea          0.08610

```

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```

↪ \
league          season last_updated      team          position_7
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal        0.08990
                                     Aston Villa    0.03375
                                     Brighton and Hove Albion 0.04185
                                     Burnley        0.04365
                                     Chelsea        0.06630

↪ \
league          season last_updated      team          position_8
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal        0.08340
                                     Aston Villa    0.04145
                                     Brighton and Hove Albion 0.04450
                                     Burnley        0.05110
                                     Chelsea        0.04965

↪ \
league          season last_updated      team          position_9
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal        0.07275
                                     Aston Villa    0.04990
                                     Brighton and Hove Albion 0.05330
                                     Burnley        0.05635
                                     Chelsea        0.04160

league          season last_updated      team          promoted \
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal        0.0
                                     Aston Villa    0.0
                                     Brighton and Hove Albion 0.0
                                     Burnley        0.0
                                     Chelsea        0.0

league          season last_updated      team          relegated \
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal        0.04790
                                     Aston Villa    0.25245
                                     Brighton and Hove Albion 0.22080
                                     Burnley        0.19890
                                     Chelsea        0.00495

league          season last_updated      team          sdr_id \
ENG-Premier League 2021  2020-09-09T14:46:49.136Z Arsenal        73616
                                     Aston Villa    73597
                                     Brighton and Hove Albion 73651
                                     Burnley        73618
                                     Chelsea        73598

```

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league	season	last_updated	team	ties \
ENG-Premier League	2021	2020-09-09T14:46:49.136Z	Arsenal	9.3329
			Aston Villa	9.5832
			Brighton and Hove Albion	9.7610
			Burnley	9.8642
			Chelsea	8.3954
				win_league ↵
league	season	last_updated	team	
ENG-Premier League	2021	2020-09-09T14:46:49.136Z	Arsenal	0.00720
			Aston Villa	0.00030
			Brighton and Hove Albion	0.00075
			Burnley	0.00100
			Chelsea	0.06525
				wins
league	season	last_updated	team	
ENG-Premier League	2021	2020-09-09T14:46:49.136Z	Arsenal	15.39035
			Aston Villa	10.69555
			Brighton and Hove Albion	11.05375
			Burnley	11.33375
			Chelsea	20.26120

2.4.3 Clinches

```
[7]: clinches = five38.read_clinches()
      clinches.head()
```

```
[7]:
```

league	season	date	typ	team
ENG-Premier League	2021	2021-02-13	relegated_elim	Manchester City
		2021-02-17	win_league_elim	Sheffield United
		2021-02-17	win_league_elim	West Bromwich Albion
		2021-02-27	win_league_elim	Fulham
		2021-03-02	win_league_elim	Newcastle

..... doc/datasources/FiveThirtyEight.ipynb ends here.

The following section was generated from doc/datasources/FotMob.ipynb

```
[1]: import pandas as pd
      pd.set_option('display.max_columns', None)
```

```
[3]: import soccerdata as sd
```

2.5 FotMob

```
[4]: fotmob = sd.FotMob(leagues='ESP-La Liga', seasons='2022/2023')
      print(fotmob.__doc__)
```

Provides pd.DataFrames from data available at <http://www.fotmob.com>.

Data will be downloaded as necessary and cached locally in
`~/soccerdata/data/FotMob`.

Parameters

leagues : string or iterable, optional

IDs of Leagues to include.

seasons : string, int or list, optional

Seasons to include. Supports multiple formats.

Examples: '16-17'; 2016; '2016-17'; [14, 15, 16]

proxy : 'tor' or dict or list(dict) or callable, optional

Use a proxy to hide your IP address. Valid options are:

- 'tor': Uses the Tor network. Tor should be running in the background on port 9050.
- dict: A dictionary with the proxy to use. The dict should be a mapping of supported protocols to proxy addresses. For example::

```
{
    'http': 'http://10.10.1.10:3128',
    'https': 'http://10.10.1.10:1080',
}
```

- list(dict): A list of proxies to choose from. A different proxy will be selected from this list after failed requests, allowing rotating proxies.
- callable: A function that returns a valid proxy. This function will be called after failed requests, allowing rotating proxies.

no_cache : bool

If True, will not use cached data.

no_store : bool

If True, will not store downloaded data.

data_dir : Path

Path to directory where data will be cached.

2.5.1 Read league table

```
[5]: league_table = fotmob.read_league_table()
      league_table.head()
```

```
[5]:
```

		team	MP	W	D	L	GF	GA	GD	Pts
league	season									
ESP-La Liga	2223	Barcelona	38	28	4	6	70	20	50	88
	2223	Real Madrid	38	24	6	8	75	36	39	78
	2223	Atletico Madrid	38	23	8	7	70	33	37	77
	2223	Real Sociedad	38	21	8	9	51	35	16	71
	2223	Villarreal	38	19	7	12	59	40	19	64

2.5.2 Read schedule

```
[6]: schedule = fotmob.read_schedule()
      schedule.head()
```

```
[6]:
```

				round	week	\
league	season	game				
ESP-La Liga	2223	2022-08-12 Osasuna-Sevilla		None	None	
		2022-08-13 Barcelona-Ray0 Vallecano		None	None	
		2022-08-13 Celta Vigo-Espanyol		None	None	
		2022-08-13 Real Valladolid-Villarreal		None	None	
		2022-08-14 Almeria-Real Madrid		None	None	

					date	\
league	season	game				
ESP-La Liga	2223	2022-08-12 Osasuna-Sevilla		2022-08-12	19:00:00+00:00	
		2022-08-13 Barcelona-Ray0 Vallecano		2022-08-13	19:00:00+00:00	
		2022-08-13 Celta Vigo-Espanyol		2022-08-13	15:00:00+00:00	
		2022-08-13 Real Valladolid-Villarreal		2022-08-13	17:00:00+00:00	
		2022-08-14 Almeria-Real Madrid		2022-08-14	20:00:00+00:00	

				home_team	\
league	season	game			
ESP-La Liga	2223	2022-08-12 Osasuna-Sevilla		Osasuna	
		2022-08-13 Barcelona-Ray0 Vallecano		Barcelona	
		2022-08-13 Celta Vigo-Espanyol		Celta Vigo	
		2022-08-13 Real Valladolid-Villarreal	Real	Valladolid	
		2022-08-14 Almeria-Real Madrid		Almeria	

				away_team	\
league	season	game			
ESP-La Liga	2223	2022-08-12 Osasuna-Sevilla		Sevilla	
		2022-08-13 Barcelona-Ray0 Vallecano	Rayo	Vallecano	
		2022-08-13 Celta Vigo-Espanyol		Espanyol	
		2022-08-13 Real Valladolid-Villarreal		Villarreal	
		2022-08-14 Almeria-Real Madrid		Real Madrid	

				home_score	\
league	season	game			

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```

ESP-La Liga 2223    2022-08-12 Osasuna-Sevilla                2
                   2022-08-13 Barcelona-Ray0 Vallecanao        0
                   2022-08-13 Celta Vigo-Espanyol             2
                   2022-08-13 Real Valladolid-Villarreal      0
                   2022-08-14 Almeria-Real Madrid             1

league      season game      away_score status \
ESP-La Liga 2223    2022-08-12 Osasuna-Sevilla                1    FT
                   2022-08-13 Barcelona-Ray0 Vallecanao        0    FT
                   2022-08-13 Celta Vigo-Espanyol             2    FT
                   2022-08-13 Real Valladolid-Villarreal      3    FT
                   2022-08-14 Almeria-Real Madrid             2    FT

league      season game      game_id \
ESP-La Liga 2223    2022-08-12 Osasuna-Sevilla                3918013
                   2022-08-13 Barcelona-Ray0 Vallecanao        3918009
                   2022-08-13 Celta Vigo-Espanyol             3918011
                   2022-08-13 Real Valladolid-Villarreal      3918016
                   2022-08-14 Almeria-Real Madrid             3918014

↪          url
league      season game      url
ESP-La Liga 2223    2022-08-12 Osasuna-Sevilla                https://fotmob.com/matches/
↪sevilla-vs-osasuna/...
                   2022-08-13 Barcelona-Ray0 Vallecanao        https://fotmob.com/matches/
↪rayo-vallecanao-vs-b...
                   2022-08-13 Celta Vigo-Espanyol             https://fotmob.com/matches/
↪espanyol-vs-celta-v...
                   2022-08-13 Real Valladolid-Villarreal      https://fotmob.com/matches/
↪villarreal-vs-real-...
                   2022-08-14 Almeria-Real Madrid             https://fotmob.com/matches/
↪real-madrid-vs-alme...

```

2.5.3 Read team match stats

```
[7]: match_stats = fotmob.read_team_match_stats(opponent_stats=False, team='Valencia')
match_stats.head()
```

```

[7]: league      season game      team      Accurate passes \
ESP-La Liga 2223    2022-08-14 Valencia-Girona      Valencia      285
                   2022-08-21 Athletic Club-Valencia Valencia      432
                   2022-08-29 Valencia-Athletico Madrid Valencia      513
                   2022-09-04 Valencia-Getafe        Valencia      482
                   2022-09-10 Rayo Vallecanao-Valencia Valencia      266

league      season game      team      Ball possession \

```

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ESP-La Liga	2223	2022-08-14	Valencia-Girona	Valencia	46
		2022-08-21	Athletic Club-Valencia	Valencia	63
		2022-08-29	Valencia-Athletico Madrid	Valencia	70
		2022-09-04	Valencia-Getafe	Valencia	70
		2022-09-10	Rayo Vallecano-Valencia	Valencia	54
Big chances \					
league	season	game		team	
ESP-La Liga	2223	2022-08-14	Valencia-Girona	Valencia	2
		2022-08-21	Athletic Club-Valencia	Valencia	1
		2022-08-29	Valencia-Athletico Madrid	Valencia	0
		2022-09-04	Valencia-Getafe	Valencia	4
		2022-09-10	Rayo Vallecano-Valencia	Valencia	3
Big chances missed \					
league	season	game		team	
ESP-La Liga	2223	2022-08-14	Valencia-Girona	Valencia	1
		2022-08-21	Athletic Club-Valencia	Valencia	1
		2022-08-29	Valencia-Athletico Madrid	Valencia	0
		2022-09-04	Valencia-Getafe	Valencia	1
		2022-09-10	Rayo Vallecano-Valencia	Valencia	2
Corners \					
league	season	game		team	
ESP-La Liga	2223	2022-08-14	Valencia-Girona	Valencia	4
		2022-08-21	Athletic Club-Valencia	Valencia	3
		2022-08-29	Valencia-Athletico Madrid	Valencia	6
		2022-09-04	Valencia-Getafe	Valencia	9
		2022-09-10	Rayo Vallecano-Valencia	Valencia	7
Expected goals (xG) \					
league	season	game		team	
ESP-La Liga	2223	2022-08-14	Valencia-Girona	Valencia	1.62
		2022-08-21	Athletic Club-Valencia	Valencia	0.73
		2022-08-29	Valencia-Athletico Madrid	Valencia	0.51
		2022-09-04	Valencia-Getafe	Valencia	2.30
		2022-09-10	Rayo Vallecano-Valencia	Valencia	1.80
Fouls committed \					
league	season	game		team	
ESP-La Liga	2223	2022-08-14	Valencia-Girona	Valencia	18
		2022-08-21	Athletic Club-Valencia	Valencia	15
		2022-08-29	Valencia-Athletico Madrid	Valencia	15
		2022-09-04	Valencia-Getafe	Valencia	11
		2022-09-10	Rayo Vallecano-Valencia	Valencia	11
Shots on target \					
league	season	game		team	
ESP-La Liga	2223	2022-08-14	Valencia-Girona	Valencia	2
		2022-08-21	Athletic Club-Valencia	Valencia	0
		2022-08-29	Valencia-Athletico Madrid	Valencia	2
		2022-09-04	Valencia-Getafe	Valencia	9

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2022-09-10 Rayo Vallecano-Valencia					Valencia	4
					Total shots \	
league	season	game			team	
ESP-La Liga	2223	2022-08-14	Valencia-Girona	Valencia	17	
		2022-08-21	Athletic Club-Valencia	Valencia	10	
		2022-08-29	Valencia-Atletico Madrid	Valencia	12	
		2022-09-04	Valencia-Getafe	Valencia	24	
		2022-09-10	Rayo Vallecano-Valencia	Valencia	17	
					Accurate passes (%)	
league	season	game			team	
ESP-La Liga	2223	2022-08-14	Valencia-Girona	Valencia	0.81	
		2022-08-21	Athletic Club-Valencia	Valencia	0.85	
		2022-08-29	Valencia-Atletico Madrid	Valencia	0.88	
		2022-09-04	Valencia-Getafe	Valencia	0.88	
		2022-09-10	Rayo Vallecano-Valencia	Valencia	0.77	

..... doc/datasources/FotMob.ipynb ends here.

The following section was generated from doc/datasources/MatchHistory.ipynb

```
[3]: import soccerdata as sd
```

2.6 Match History

```
[4]: mh = sd.MatchHistory(leagues="ENG-Premier League", seasons=2021)
print(mh.__doc__)
```

```
/cw/dtaijupiter/NoCsBack/dtai/pieterr/Projects/soccerdata/soccerdata/_common.py:466:
↳ UserWarning: Season id "2021" is ambiguous: interpreting as "20-21"
warnings.warn(msg)
```

Provides pd.DataFrames from CSV files available at <http://www.football-data.co.uk/data>.
↳ php.

Data will be downloaded as necessary and cached locally in
`~/soccerdata/data/MatchHistory`.

Parameters

leagues : string or iterable

IDs of leagues to include.

seasons : string, int or list

Seasons to include. Supports multiple formats.

Examples: '16-17'; 2016; '2016-17'; [14, 15, 16]

proxy : 'tor' or dict or list(dict) or callable, optional

Use a proxy to hide your IP address. Valid options are:

- "tor": Uses the Tor network. Tor should be running in the background on port 9050.

- dict: A dictionary with the proxy to use. The dict should be

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a mapping of supported protocols to proxy addresses. For example::

```
{
  'http': 'http://10.10.1.10:3128',
  'https': 'http://10.10.1.10:1080',
}
```

- `list(dict)`: A list of proxies to choose from. A different proxy will be selected from this list after failed requests, allowing rotating proxies.
- `callable`: A function that returns a valid proxy. This function will be called after failed requests, allowing rotating proxies.

`no_cache` : bool

If True, will not use cached data.

`no_store` : bool

If True, will not store downloaded data.

`data_dir` : Path, optional

Path to directory where data will be cached.

2.6.1 Historic match results and betting odds

```
[5]: hist = mh.read_games()
hist.head()
```

```
[5]:
```

league	season	game	date	\
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	2020-01-11 12:00:00	
		2020-01-11 Man United-Arsenal	2020-01-11 16:30:00	
		2020-01-11 Newcastle-Everton	2020-01-11 14:00:00	
		2020-01-11 Tottenham-Brighton	2020-01-11 19:15:00	
		2020-02-11 Fulham-West Brom	2020-02-11 17:30:00	

league	season	game	home_team	\
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	Aston Villa	
		2020-01-11 Man United-Arsenal	Man United	
		2020-01-11 Newcastle-Everton	Newcastle	
		2020-01-11 Tottenham-Brighton	Tottenham	
		2020-02-11 Fulham-West Brom	Fulham	

league	season	game	away_team	\
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	Southampton	
		2020-01-11 Man United-Arsenal	Arsenal	
		2020-01-11 Newcastle-Everton	Everton	
		2020-01-11 Tottenham-Brighton	Brighton	
		2020-02-11 Fulham-West Brom	West Brom	

league	season	game	FTHG	FTAG	FTR	\
league	season	game				

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ENG-Premier League 2021	2020-01-11	Aston Villa-Southampton	3	4	A
	2020-01-11	Man United-Arsenal	0	1	A
	2020-01-11	Newcastle-Everton	2	1	H
	2020-01-11	Tottenham-Brighton	2	1	H
	2020-02-11	Fulham-West Brom	2	0	H
			HTHG	HTAG	HTR \
league	season	game			
ENG-Premier League 2021	2020-01-11	Aston Villa-Southampton	0	3	A
	2020-01-11	Man United-Arsenal	0	0	D
	2020-01-11	Newcastle-Everton	0	0	D
	2020-01-11	Tottenham-Brighton	1	0	H
	2020-02-11	Fulham-West Brom	2	0	H
			referee	HS	\
league	season	game			
ENG-Premier League 2021	2020-01-11	Aston Villa-Southampton	D England	19	
	2020-01-11	Man United-Arsenal	M Dean	8	
	2020-01-11	Newcastle-Everton	S Attwell	11	
	2020-01-11	Tottenham-Brighton	G Scott	9	
	2020-02-11	Fulham-West Brom	S Hooper	13	
			AS	HST	AST \
league	season	game			
ENG-Premier League 2021	2020-01-11	Aston Villa-Southampton	9	10	4
	2020-01-11	Man United-Arsenal	7	2	2
	2020-01-11	Newcastle-Everton	15	4	4
	2020-01-11	Tottenham-Brighton	6	3	2
	2020-02-11	Fulham-West Brom	10	6	1
			HF	AF	HC AC \
league	season	game			
ENG-Premier League 2021	2020-01-11	Aston Villa-Southampton	12	17	11 1
	2020-01-11	Man United-Arsenal	12	12	6 3
	2020-01-11	Newcastle-Everton	9	10	5 4
	2020-01-11	Tottenham-Brighton	14	13	4 5
	2020-02-11	Fulham-West Brom	13	11	5 2
			HY	AY	HR AR \
league	season	game			
ENG-Premier League 2021	2020-01-11	Aston Villa-Southampton	1	2	0 0
	2020-01-11	Man United-Arsenal	3	3	0 0
	2020-01-11	Newcastle-Everton	2	4	0 0
	2020-01-11	Tottenham-Brighton	2	1	0 0
	2020-02-11	Fulham-West Brom	3	2	0 0
			B365H	B365D	\
league	season	game			
ENG-Premier League 2021	2020-01-11	Aston Villa-Southampton	2.45	3.5	
	2020-01-11	Man United-Arsenal	2.00	3.6	
	2020-01-11	Newcastle-Everton	3.70	3.4	
	2020-01-11	Tottenham-Brighton	1.61	4.0	

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			2020-02-11 Fulham-West Brom	2.40	3.3			
				B365A	BWH	\		
league	season	game						
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	2.80	2.35				
		2020-01-11 Man United-Arsenal	3.60	2.00				
		2020-01-11 Newcastle-Everton	2.05	3.75				
		2020-01-11 Tottenham-Brighton	5.50	1.62				
		2020-02-11 Fulham-West Brom	3.00	2.40				
				BWD	BWA	\		
league	season	game						
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	3.60	2.85				
		2020-01-11 Man United-Arsenal	3.70	3.60				
		2020-01-11 Newcastle-Everton	3.40	2.05				
		2020-01-11 Tottenham-Brighton	4.25	5.00				
		2020-02-11 Fulham-West Brom	3.30	3.00				
				IWH	IWD	\		
league	season	game						
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	2.50	3.35				
		2020-01-11 Man United-Arsenal	2.05	3.45				
		2020-01-11 Newcastle-Everton	3.55	3.30				
		2020-01-11 Tottenham-Brighton	1.65	3.90				
		2020-02-11 Fulham-West Brom	2.45	3.10				
				IWA	PSH	\		
league	season	game						
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	2.75	2.53				
		2020-01-11 Man United-Arsenal	3.55	2.05				
		2020-01-11 Newcastle-Everton	2.10	3.82				
		2020-01-11 Tottenham-Brighton	5.00	1.65				
		2020-02-11 Fulham-West Brom	3.00	2.47				
				PSD	PSA	\		
league	season	game						
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	3.72	2.81				
		2020-01-11 Man United-Arsenal	3.78	3.73				
		2020-01-11 Newcastle-Everton	3.56	2.09				
		2020-01-11 Tottenham-Brighton	4.26	5.54				
		2020-02-11 Fulham-West Brom	3.40	3.13				
				WHH	WHD	WHA	\	
league	season	game						
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	2.50	3.5	2.75			
		2020-01-11 Man United-Arsenal	2.05	3.6	3.60			
		2020-01-11 Newcastle-Everton	3.70	3.4	2.05			
		2020-01-11 Tottenham-Brighton	1.63	4.0	5.25			
		2020-02-11 Fulham-West Brom	2.40	3.3	3.00			
				VCH	VCD	\		
league	season	game						

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ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.40	3.60		
		2020-01-11	Man United-Arsenal	2.05	3.60		
		2020-01-11	Newcastle-Everton	3.50	3.50		
		2020-01-11	Tottenham-Brighton	1.62	4.20		
		2020-02-11	Fulham-West Brom	2.45	3.25		
				VCA	MaxH	\	
league	season	game					
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.80	2.60		
		2020-01-11	Man United-Arsenal	3.50	2.10		
		2020-01-11	Newcastle-Everton	2.05	4.00		
		2020-01-11	Tottenham-Brighton	5.25	1.67		
		2020-02-11	Fulham-West Brom	3.00	2.56		
				MaxD	MaxA	\	
league	season	game					
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	3.84	2.85		
		2020-01-11	Man United-Arsenal	3.85	3.76		
		2020-01-11	Newcastle-Everton	3.59	2.15		
		2020-01-11	Tottenham-Brighton	4.30	5.75		
		2020-02-11	Fulham-West Brom	3.50	3.17		
				AvgH	AvgD	\	
league	season	game					
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.46	3.60		
		2020-01-11	Man United-Arsenal	2.04	3.66		
		2020-01-11	Newcastle-Everton	3.71	3.47		
		2020-01-11	Tottenham-Brighton	1.63	4.17		
		2020-02-11	Fulham-West Brom	2.44	3.32		
				AvgA	B365>2.5	\	
league	season	game					
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.78	1.66		
		2020-01-11	Man United-Arsenal	3.58	1.72		
		2020-01-11	Newcastle-Everton	2.06	1.80		
		2020-01-11	Tottenham-Brighton	5.29	1.66		
		2020-02-11	Fulham-West Brom	3.01	2.00		
				B365<2.5	P>2.5	\	
league	season	game					
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.2	1.66		
		2020-01-11	Man United-Arsenal	2.1	1.76		
		2020-01-11	Newcastle-Everton	2.0	1.86		
		2020-01-11	Tottenham-Brighton	2.2	1.68		
		2020-02-11	Fulham-West Brom	1.8	2.13		
				P<2.5	Max>2.5	\	
league	season	game					
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.37	1.69		
		2020-01-11	Man United-Arsenal	2.19	1.81		
		2020-01-11	Newcastle-Everton	2.07	1.88		
		2020-01-11	Tottenham-Brighton	2.32	1.71		

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			2020-02-11 Fulham-West Brom	1.80	2.14		
				Max<2.5	\		
league	season	game					
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	2.38				
		2020-01-11 Man United-Arsenal	2.22				
		2020-01-11 Newcastle-Everton	2.08				
		2020-01-11 Tottenham-Brighton	2.35				
		2020-02-11 Fulham-West Brom	1.85				
				Avg>2.5	\		
league	season	game					
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	1.65				
		2020-01-11 Man United-Arsenal	1.74				
		2020-01-11 Newcastle-Everton	1.82				
		2020-01-11 Tottenham-Brighton	1.65				
		2020-02-11 Fulham-West Brom	2.06				
				Avg<2.5	AHh	\	
league	season	game					
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	2.27	0.00			
		2020-01-11 Man United-Arsenal	2.12	-0.50			
		2020-01-11 Newcastle-Everton	2.01	0.25			
		2020-01-11 Tottenham-Brighton	2.26	-1.00			
		2020-02-11 Fulham-West Brom	1.78	-0.25			
				B365AHH	\		
league	season	game					
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	1.83				
		2020-01-11 Man United-Arsenal	2.05				
		2020-01-11 Newcastle-Everton	2.05				
		2020-01-11 Tottenham-Brighton	2.02				
		2020-02-11 Fulham-West Brom	2.10				
				B365AHA	PAHH	\	
league	season	game					
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	2.07	1.87			
		2020-01-11 Man United-Arsenal	1.85	2.05			
		2020-01-11 Newcastle-Everton	1.75	2.15			
		2020-01-11 Tottenham-Brighton	1.77	2.15			
		2020-02-11 Fulham-West Brom	1.80	2.11			
				PAHA	MaxAHH	\	
league	season	game					
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	2.07	1.87			
		2020-01-11 Man United-Arsenal	1.88	2.09			
		2020-01-11 Newcastle-Everton	1.80	2.17			
		2020-01-11 Tottenham-Brighton	1.80	2.16			
		2020-02-11 Fulham-West Brom	1.84	2.15			
				MaxAHA	AvgAHH	\	
league	season	game					

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ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.09	1.83	
		2020-01-11	Man United-Arsenal	1.90	2.04	
		2020-01-11	Newcastle-Everton	1.83	2.12	
		2020-01-11	Tottenham-Brighton	1.84	2.09	
		2020-02-11	Fulham-West Brom	1.86	2.10	
				AvgAHA	B365CH	\
league	season	game				
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.05	2.60	
		2020-01-11	Man United-Arsenal	1.84	1.95	
		2020-01-11	Newcastle-Everton	1.77	3.30	
		2020-01-11	Tottenham-Brighton	1.80	1.55	
		2020-02-11	Fulham-West Brom	1.80	2.40	
				B365CD	B365CA	\
league	season	game				
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	3.50	2.62	
		2020-01-11	Man United-Arsenal	3.60	3.80	
		2020-01-11	Newcastle-Everton	3.30	2.25	
		2020-01-11	Tottenham-Brighton	4.33	6.00	
		2020-02-11	Fulham-West Brom	3.30	3.00	
				BWCH	BWCD	\
league	season	game				
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.50	3.60	
		2020-01-11	Man United-Arsenal	1.95	3.60	
		2020-01-11	Newcastle-Everton	3.30	3.30	
		2020-01-11	Tottenham-Brighton	1.57	4.25	
		2020-02-11	Fulham-West Brom	2.45	3.30	
				BWCA	IWCH	\
league	season	game				
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.70	2.55	
		2020-01-11	Man United-Arsenal	3.90	2.00	
		2020-01-11	Newcastle-Everton	2.25	3.15	
		2020-01-11	Tottenham-Brighton	5.50	1.60	
		2020-02-11	Fulham-West Brom	2.95	2.40	
				IWCD	IWCA	\
league	season	game				
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	3.50	2.70	
		2020-01-11	Man United-Arsenal	3.50	3.80	
		2020-01-11	Newcastle-Everton	3.35	2.30	
		2020-01-11	Tottenham-Brighton	4.20	5.75	
		2020-02-11	Fulham-West Brom	3.05	3.10	
				PSCH	PSCD	\
league	season	game				
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.69	3.56	
		2020-01-11	Man United-Arsenal	2.02	3.65	
		2020-01-11	Newcastle-Everton	3.34	3.43	
		2020-01-11	Tottenham-Brighton	1.61	4.36	

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			2020-02-11	Fulham-West Brom	2.48	3.32	
					PSCA	WHCH	\
league	season	game					
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.73	2.60		
		2020-01-11	Man United-Arsenal	3.97	2.00		
		2020-01-11	Newcastle-Everton	2.33	3.40		
		2020-01-11	Tottenham-Brighton	5.77	1.57		
		2020-02-11	Fulham-West Brom	3.19	2.40		
					WHCD	WHCA	\
league	season	game					
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	3.50	2.62		
		2020-01-11	Man United-Arsenal	3.50	3.80		
		2020-01-11	Newcastle-Everton	3.25	2.25		
		2020-01-11	Tottenham-Brighton	4.00	6.00		
		2020-02-11	Fulham-West Brom	3.20	3.10		
					VCCH	VCCD	\
league	season	game					
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.50	3.60		
		2020-01-11	Man United-Arsenal	1.95	3.50		
		2020-01-11	Newcastle-Everton	3.30	3.30		
		2020-01-11	Tottenham-Brighton	1.57	4.20		
		2020-02-11	Fulham-West Brom	2.40	3.25		
					VCCA	MaxCH	\
league	season	game					
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.70	2.70		
		2020-01-11	Man United-Arsenal	4.00	2.06		
		2020-01-11	Newcastle-Everton	2.25	3.62		
		2020-01-11	Tottenham-Brighton	5.75	1.63		
		2020-02-11	Fulham-West Brom	3.10	2.48		
					MaxCD	MaxCA	\
league	season	game					
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	3.70	2.80		
		2020-01-11	Man United-Arsenal	3.75	4.00		
		2020-01-11	Newcastle-Everton	3.50	2.34		
		2020-01-11	Tottenham-Brighton	4.45	6.39		
		2020-02-11	Fulham-West Brom	3.45	3.22		
					AvgCH	AvgCD	\
league	season	game					
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.57	3.55		
		2020-01-11	Man United-Arsenal	1.99	3.59		
		2020-01-11	Newcastle-Everton	3.34	3.33		
		2020-01-11	Tottenham-Brighton	1.59	4.29		
		2020-02-11	Fulham-West Brom	2.41	3.27		
					AvgCA	\	
league	season	game					

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ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.69		
		2020-01-11	Man United-Arsenal	3.87		
		2020-01-11	Newcastle-Everton	2.27		
		2020-01-11	Tottenham-Brighton	5.62		
		2020-02-11	Fulham-West Brom	3.09		
				B365C>2.5 \		
league	season	game				
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	1.66		
		2020-01-11	Man United-Arsenal	1.90		
		2020-01-11	Newcastle-Everton	2.00		
		2020-01-11	Tottenham-Brighton	1.66		
		2020-02-11	Fulham-West Brom	2.05		
				B365C<2.5 \		
league	season	game				
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.20		
		2020-01-11	Man United-Arsenal	1.90		
		2020-01-11	Newcastle-Everton	1.80		
		2020-01-11	Tottenham-Brighton	2.20		
		2020-02-11	Fulham-West Brom	1.85		
				PC>2.5 PC<2.5 \		
league	season	game				
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	1.70	2.29	
		2020-01-11	Man United-Arsenal	1.96	1.96	
		2020-01-11	Newcastle-Everton	2.12	1.81	
		2020-01-11	Tottenham-Brighton	1.68	2.32	
		2020-02-11	Fulham-West Brom	2.05	1.88	
				MaxC>2.5 \		
league	season	game				
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	1.71		
		2020-01-11	Man United-Arsenal	1.99		
		2020-01-11	Newcastle-Everton	2.14		
		2020-01-11	Tottenham-Brighton	1.72		
		2020-02-11	Fulham-West Brom	2.11		
				MaxC<2.5 \		
league	season	game				
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	2.37		
		2020-01-11	Man United-Arsenal	2.10		
		2020-01-11	Newcastle-Everton	1.92		
		2020-01-11	Tottenham-Brighton	2.37		
		2020-02-11	Fulham-West Brom	1.92		
				AvgC>2.5 \		
league	season	game				
ENG-Premier League	2021	2020-01-11	Aston Villa-Southampton	1.66		
		2020-01-11	Man United-Arsenal	1.88		
		2020-01-11	Newcastle-Everton	2.04		
		2020-01-11	Tottenham-Brighton	1.65		

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			2020-02-11 Fulham-West Brom	2.02		
				AvgC<2.5	AHCh	\
league	season	game				
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	2.24	0.00		
		2020-01-11 Man United-Arsenal	1.95	-0.50		
		2020-01-11 Newcastle-Everton	1.80	0.25		
		2020-01-11 Tottenham-Brighton	2.27	-1.00		
		2020-02-11 Fulham-West Brom	1.81	-0.25		
				B365CAHH		\
league	season	game				
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	1.93			
		2020-01-11 Man United-Arsenal	2.00			
		2020-01-11 Newcastle-Everton	1.95			
		2020-01-11 Tottenham-Brighton	2.06			
		2020-02-11 Fulham-West Brom	2.06			
				B365CAHA	PCAHH	\
league	season	game				
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	1.97	1.95		
		2020-01-11 Man United-Arsenal	1.90	2.03		
		2020-01-11 Newcastle-Everton	1.95	1.93		
		2020-01-11 Tottenham-Brighton	1.84	2.11		
		2020-02-11 Fulham-West Brom	1.84	2.11		
				PCAHA	MaxCAHH	\
league	season	game				
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	1.98	1.97		
		2020-01-11 Man United-Arsenal	1.90	2.05		
		2020-01-11 Newcastle-Everton	2.00	1.99		
		2020-01-11 Tottenham-Brighton	1.84	2.13		
		2020-02-11 Fulham-West Brom	1.84	2.12		
				MaxCAHA		\
league	season	game				
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	2.04			
		2020-01-11 Man United-Arsenal	1.92			
		2020-01-11 Newcastle-Everton	2.03			
		2020-01-11 Tottenham-Brighton	1.99			
		2020-02-11 Fulham-West Brom	1.87			
				AvgCAHH	AvgCAHA	
league	season	game				
ENG-Premier League	2021	2020-01-11 Aston Villa-Southampton	1.89	1.98		
		2020-01-11 Man United-Arsenal	2.00	1.88		
		2020-01-11 Newcastle-Everton	1.93	1.95		
		2020-01-11 Tottenham-Brighton	2.02	1.86		
		2020-02-11 Fulham-West Brom	2.08	1.82		

..... doc/datasources/MatchHistory.ipynb ends here.

The following section was generated from doc/datasources/SoFIFA.ipynb

```
[3]: import soccerdata as sd
```

2.7 SoFIFA

```
[4]: sofifa = sd.SoFIFA(leagues="ENG-Premier League", versions="latest")
print(sofifa.__doc__)
```

Provides pd.DataFrames from data at <http://sofifa.com>.

Data will be downloaded as necessary and cached locally in
`~/soccerdata/data/SoFIFA`.

Parameters

leagues : string or iterable, optional

IDs of leagues to include.

versions : string, int or list of int, optional

FIFA releases to include. Should be specified by their ID used in the URL (e.g., 230034). Alternatively, the string "all" can be used to include all versions and "latest" to include the latest version only. Defaults to "latest".

proxy : 'tor' or dict or list(dict) or callable, optional

Use a proxy to hide your IP address. Valid options are:

- "tor": Uses the Tor network. Tor should be running in the background on port 9050.
- dict: A dictionary with the proxy to use. The dict should be a mapping of supported protocols to proxy addresses. For example::

```
{
    'http': 'http://10.10.1.10:3128',
    'https': 'http://10.10.1.10:1080',
}
```

- list(dict): A list of proxies to choose from. A different proxy will be selected from this list after failed requests, allowing rotating proxies.

- callable: A function that returns a valid proxy. This function will be called after failed requests, allowing rotating proxies.

no_cache : bool

If True, will not use cached data.

no_store : bool

If True, will not store downloaded data.

data_dir : Path

Path to directory where data will be cached.

2.7.1 EA Sports FIFA team ratings

```
[5]: team_ratings = sofifa.read_team_ratings()
team_ratings.head()
```

```
[5]:
```

		overall	attack	midfield	defence	\
league	team					
ENG-Premier League	AFC Bournemouth	74	75	73	73	
	Arsenal	82	82	84	81	
	Aston Villa	79	79	77	79	
	Brentford	75	74	75	76	
	Brighton & Hove Albion	77	75	77	78	


```

transfer_budget players \
league      team
ENG-Premier League AFC Bournemouth      €0      29
                  Arsenal              €0      32
                  Aston Villa          €0      32
                  Brentford            €0      31
                  Brighton & Hove Albion €0      28

```



```

fifa_edition      update
league      team
ENG-Premier League AFC Bournemouth      FIFA 23 May 26, 2023
                  Arsenal              FIFA 23 May 26, 2023
                  Aston Villa          FIFA 23 May 26, 2023
                  Brentford            FIFA 23 May 26, 2023
                  Brighton & Hove Albion FIFA 23 May 26, 2023

```

2.7.2 EA Sports FIFA player ratings

```
[6]: player_ratings = sofifa.read_player_ratings(team="Arsenal")
player_ratings.head()
```

```
[6]:
```

	fifa_edition	update	overall	rating	potential	\
player						
Aaron Ramsdale	FIFA 23	May 26, 2023	83		86	
Ainsley Maitland-Niles	FIFA 23	May 26, 2023	73		75	
Albert-Mboyoy Sambu Lokonga	FIFA 23	May 26, 2023	75		82	
Amario Cozier-Duberry	FIFA 23	May 26, 2023	59		77	
Arthur Okonkwo	FIFA 23	May 26, 2023	66		75	


```

crossing finishing heading accuracy shortpassing \
player
Aaron Ramsdale      15      14      15      56
Ainsley Maitland-Niles 67      58      54      74
Albert-Mboyoy Sambu Lokonga 68      53      61      79
Amario Cozier-Duberry 58      57      38      55
Arthur Okonkwo      10       6      12      33

```



```

volleys dribbling curve fk_accuracy longpassing \
player

```

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Aaron Ramsdale	16	18	17	16	57
Ainsley Maitland-Niles	44	71	64	50	66
Albert-Mboyo Sambi Lokonga	58	78	71	68	77
Amario Cozier-Duberry	60	60	53	41	44
Arthur Okonkwo	7	9	12	20	20

player	ballcontrol	acceleration	sprints	speed	agility
Aaron Ramsdale	36		47	50	53
Ainsley Maitland-Niles	73		79	77	79
Albert-Mboyo Sambi Lokonga	81		63	69	78
Amario Cozier-Duberry	58		72	69	73
Arthur Okonkwo	17		44	44	40

player	reactions	balance	shotpower	jumping	stamina
Aaron Ramsdale	82	49	65	66	35
Ainsley Maitland-Niles	70	69	67	66	69
Albert-Mboyo Sambi Lokonga	72	68	68	71	77
Amario Cozier-Duberry	50	68	56	44	55
Arthur Okonkwo	63	31	47	50	29

player	strength	longshots	aggression	interceptions
Aaron Ramsdale	59	15	35	24
Ainsley Maitland-Niles	67	62	65	70
Albert-Mboyo Sambi Lokonga	63	63	72	77
Amario Cozier-Duberry	45	45	55	27
Arthur Okonkwo	50	7	20	11

player	positioning	vision	penalties	composure
Aaron Ramsdale	18	65	25	65
Ainsley Maitland-Niles	69	67	69	70
Albert-Mboyo Sambi Lokonga	65	75	41	80
Amario Cozier-Duberry	59	56	55	55
Arthur Okonkwo	6	35	19	30

player	defensive	awareness	standing	tackle	sliding	tackle
Aaron Ramsdale		20		16		15
Ainsley Maitland-Niles		66		74		72
Albert-Mboyo Sambi Lokonga		64		73		68
Amario Cozier-Duberry		28		28		24
Arthur Okonkwo		13		13		12

player	gk_diving	gk_handling	gk_kicking	gk_positioning
Aaron Ramsdale	84	79	87	79
Ainsley Maitland-Niles	15	9	7	10
Albert-Mboyo Sambi Lokonga	14	7	6	13
Amario Cozier-Duberry	11	12	9	13

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Arthur Okonkwo	64	65	63	67
gk_reflexes				
player				
Aaron Ramsdale	86			
Ainsley Maitland-Niles	13			
Albert-Mboyi Sambu Lokonga	9			
Amario Cozier-Duberry	7			
Arthur Okonkwo	66			

[7]: `sofifa.read_teams()`

```
[7]:
```

	team	league	fifa_edition	\
team_id				
10	Manchester City	ENG-Premier League	FIFA 23	
9	Liverpool	ENG-Premier League	FIFA 23	
1	Arsenal	ENG-Premier League	FIFA 23	
5	Chelsea	ENG-Premier League	FIFA 23	
11	Manchester United	ENG-Premier League	FIFA 23	
18	Tottenham Hotspur	ENG-Premier League	FIFA 23	
13	Newcastle United	ENG-Premier League	FIFA 23	
2	Aston Villa	ENG-Premier League	FIFA 23	
19	West Ham United	ENG-Premier League	FIFA 23	
95	Leicester City	ENG-Premier League	FIFA 23	
110	Wolverhampton Wanderers	ENG-Premier League	FIFA 23	
14	Nottingham Forest	ENG-Premier League	FIFA 23	
1808	Brighton & Hove Albion	ENG-Premier League	FIFA 23	
7	Everton	ENG-Premier League	FIFA 23	
1799	Crystal Palace	ENG-Premier League	FIFA 23	
144	Fulham	ENG-Premier League	FIFA 23	
8	Leeds United	ENG-Premier League	FIFA 23	
17	Southampton	ENG-Premier League	FIFA 23	
1925	Brentford	ENG-Premier League	FIFA 23	
1943	AFC Bournemouth	ENG-Premier League	FIFA 23	
update				
team_id				
10	May 26, 2023			
9	May 26, 2023			
1	May 26, 2023			
5	May 26, 2023			
11	May 26, 2023			
18	May 26, 2023			
13	May 26, 2023			
2	May 26, 2023			
19	May 26, 2023			
95	May 26, 2023			
110	May 26, 2023			
14	May 26, 2023			
1808	May 26, 2023			
7	May 26, 2023			
1799	May 26, 2023			

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```

144      May 26, 2023
8        May 26, 2023
17       May 26, 2023
1925     May 26, 2023
1943     May 26, 2023

```

```
[8]: sofifa.read_players(team="Arsenal")
```

```

[8]:
      player_id      player      team      league \
      player_id      player      team      league \
233934      Aaron Ramsdale Arsenal  ENG-Premier League
231936      Benjamin White Arsenal  ENG-Premier League
243715      William Saliba Arsenal  ENG-Premier League
232580      Gabriel dos S. Magalhães Arsenal  ENG-Premier League
227813      Oleksandr Zinchenko Arsenal  ENG-Premier League
205498      Luiz Frello Filho Jorge Arsenal  ENG-Premier League
222665      Martin Ødegaard Arsenal  ENG-Premier League
199503      Granit Xhaka Arsenal  ENG-Premier League
246669      Bukayo Saka Arsenal  ENG-Premier League
230666      Gabriel Fernando de Jesus Arsenal  ENG-Premier League
251566      Gabriel Teodoro Martinelli Silva Arsenal  ENG-Premier League
207421      Leandro Trossard Arsenal  ENG-Premier League
236988      Eddie Nketiah Arsenal  ENG-Premier League
209989      Thomas Partey Arsenal  ENG-Premier League
256958      Fábio Daniel Ferreira Vieira Arsenal  ENG-Premier League
226491      Kieran Tierney Arsenal  ENG-Premier League
265693      Jakub Kiwior Arsenal  ENG-Premier League
233267      Matt Turner Arsenal  ENG-Premier League
228295      Rob Holding Arsenal  ENG-Premier League
240273      Emile Smith Rowe Arsenal  ENG-Premier League
231448      Reiss Nelson Arsenal  ENG-Premier League
211454      Mohamed Elneny Arsenal  ENG-Premier League
232938      Takehiro Tomiyasu Arsenal  ENG-Premier League
247731      Matthew Smith Arsenal  ENG-Premier League
248732      Karl Hein Arsenal  ENG-Premier League
259403      Joel Ideho Arsenal  ENG-Premier League
260141      Cătălin Căpîrjan Arsenal  ENG-Premier League
259095      George Lewis Arsenal  ENG-Premier League
271743      Amario Cozier-Duberry Arsenal  ENG-Premier League
271808      Lino Sousa Arsenal  ENG-Premier League
259097      Salah-Eddine Oulad M'Hand Arsenal  ENG-Premier League
274387      Reuell Walters Arsenal  ENG-Premier League
270390      Marcus Vincius Oliveira Alencar Arsenal  ENG-Premier League
260653      Brooke Norton-Cuffy Arsenal  ENG-Premier League
260144      Charlie Patino Arsenal  ENG-Premier League
251530      Nuno Albertino Varela Tavares Arsenal  ENG-Premier League
247463      Folarin Balogun Arsenal  ENG-Premier League
246671      Arthur Okonkwo Arsenal  ENG-Premier League
241928      Albert Sambi Lokonga Arsenal  ENG-Premier League
235755      Auston Trusty Arsenal  ENG-Premier League
226110      Nicolas Pépé Arsenal  ENG-Premier League
225782      Ainsley Maitland-Niles Arsenal  ENG-Premier League

```

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222562	Rúnar Alex Rúnarsson	Arsenal	ENG-Premier League
206654	Pablo Mari Villar	Arsenal	ENG-Premier League
201118	Cédric Ricardo Alves Soares	Arsenal	ENG-Premier League

player_id	fifa_edition	update
233934	FIFA 23	May 26, 2023
231936	FIFA 23	May 26, 2023
243715	FIFA 23	May 26, 2023
232580	FIFA 23	May 26, 2023
227813	FIFA 23	May 26, 2023
205498	FIFA 23	May 26, 2023
222665	FIFA 23	May 26, 2023
199503	FIFA 23	May 26, 2023
246669	FIFA 23	May 26, 2023
230666	FIFA 23	May 26, 2023
251566	FIFA 23	May 26, 2023
207421	FIFA 23	May 26, 2023
236988	FIFA 23	May 26, 2023
209989	FIFA 23	May 26, 2023
256958	FIFA 23	May 26, 2023
226491	FIFA 23	May 26, 2023
265693	FIFA 23	May 26, 2023
233267	FIFA 23	May 26, 2023
228295	FIFA 23	May 26, 2023
240273	FIFA 23	May 26, 2023
231448	FIFA 23	May 26, 2023
211454	FIFA 23	May 26, 2023
232938	FIFA 23	May 26, 2023
247731	FIFA 23	May 26, 2023
248732	FIFA 23	May 26, 2023
259403	FIFA 23	May 26, 2023
260141	FIFA 23	May 26, 2023
259095	FIFA 23	May 26, 2023
271743	FIFA 23	May 26, 2023
271808	FIFA 23	May 26, 2023
259097	FIFA 23	May 26, 2023
274387	FIFA 23	May 26, 2023
270390	FIFA 23	May 26, 2023
260653	FIFA 23	May 26, 2023
260144	FIFA 23	May 26, 2023
251530	FIFA 23	May 26, 2023
247463	FIFA 23	May 26, 2023
246671	FIFA 23	May 26, 2023
241928	FIFA 23	May 26, 2023
235755	FIFA 23	May 26, 2023
226110	FIFA 23	May 26, 2023
225782	FIFA 23	May 26, 2023
222562	FIFA 23	May 26, 2023
206654	FIFA 23	May 26, 2023
201118	FIFA 23	May 26, 2023

doc/datasources/SoFIFA.ipynb ends here.

The following section was generated from doc/datasources/Understat.ipynb

```
[2]: import soccerdata as sd
```

2.8 Understat

```
[3]: understat = sd.Understat(leagues="ENG-Premier League", seasons="2015/2016")
print(understat.__doc__)
```

Provides pd.DataFrames from data at <https://understat.com>.

Data will be downloaded as necessary and cached locally in
`~/soccerdata/data/Understat`.

Parameters

proxy : 'tor' or dict or list(dict) or callable, optional

Use a proxy to hide your IP address. Valid options are:

- "tor": Uses the Tor network. Tor should be running in the background on port 9050.
- dict: A dictionary with the proxy to use. The dict should be a mapping of supported protocols to proxy addresses. For example::

```
{
    'http': 'http://10.10.1.10:3128',
    'https': 'http://10.10.1.10:1080',
}
```

- list(dict): A list of proxies to choose from. A different proxy will be selected from this list after failed requests, allowing rotating proxies.
- callable: A function that returns a valid proxy. This function will be called after failed requests, allowing rotating proxies.

no_cache : bool

If True, will not use cached data.

no_store : bool

If True, will not store downloaded data.

data_dir : Path

Path to directory where data will be cached.

2.8.1 Leagues

```
[4]: leagues = understat.read_leagues()
leagues.head()
```

```
[4]:
```

	league_id	url
league		
ENG-Premier League	1	https://understat.com/league/EPL

2.8.2 Seasons

```
[5]: seasons = understat.read_seasons()
seasons.head()

[5]:
```

	league	season	league_id	season_id	\
	ENG-Premier League	1516	1	2015	

```

url

league      season
ENG-Premier League 1516  https://understat.com/league/EPL/2015
```

2.8.3 Schedule

```
[6]: schedule = understat.read_schedule()
schedule.head()

[6]:
```

	league	season	game	league_id	\
	ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa	1	
			2015-08-08 Chelsea-Swansea	1	
			2015-08-08 Everton-Watford	1	
			2015-08-08 Leicester-Sunderland	1	
			2015-08-08 Manchester United-Tottenham	1	

```

season_id \

league      season game
ENG-Premier League 1516 2015-08-08 Bournemouth-Aston Villa      2015
                        2015-08-08 Chelsea-Swansea              2015
                        2015-08-08 Everton-Watford              2015
                        2015-08-08 Leicester-Sunderland         2015
                        2015-08-08 Manchester United-Tottenham  2015

game_id \

league      season game
ENG-Premier League 1516 2015-08-08 Bournemouth-Aston Villa      82
                        2015-08-08 Chelsea-Swansea              86
                        2015-08-08 Everton-Watford              83
                        2015-08-08 Leicester-Sunderland         84
                        2015-08-08 Manchester United-Tottenham  81

date \

league      season game
ENG-Premier League 1516 2015-08-08 Bournemouth-Aston Villa      2015-08-08 18:00:00
                        2015-08-08 Chelsea-Swansea              2015-08-08 20:30:00
                        2015-08-08 Everton-Watford              2015-08-08 18:00:00
                        2015-08-08 Leicester-Sunderland         2015-08-08 18:00:00
                        2015-08-08 Manchester United-Tottenham  2015-08-08 15:45:00

home_team_id \

league      season game
```

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ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	73
		2015-08-08	Chelsea-Swansea	80
		2015-08-08	Everton-Watford	72
		2015-08-08	Leicester-Sunderland	75
		2015-08-08	Manchester United-Tottenham	89

			away_team_id \	
league	season	game		
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa	71	
		2015-08-08 Chelsea-Swansea	84	
		2015-08-08 Everton-Watford	90	
		2015-08-08 Leicester-Sunderland	77	
		2015-08-08 Manchester United-Tottenham	82	

			home_team \	
league	season	game		
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa	Bournemouth	
		2015-08-08 Chelsea-Swansea	Chelsea	
		2015-08-08 Everton-Watford	Everton	
		2015-08-08 Leicester-Sunderland	Leicester	
		2015-08-08 Manchester United-Tottenham	Manchester United	

			away_team \	
league	season	game		
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa	Aston Villa	
		2015-08-08 Chelsea-Swansea	Swansea	
		2015-08-08 Everton-Watford	Watford	
		2015-08-08 Leicester-Sunderland	Sunderland	
		2015-08-08 Manchester United-Tottenham	Tottenham	

			away_team_code \	
league	season	game		
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa	AVL	
		2015-08-08 Chelsea-Swansea	SWA	
		2015-08-08 Everton-Watford	WAT	
		2015-08-08 Leicester-Sunderland	SUN	
		2015-08-08 Manchester United-Tottenham	TOT	

			home_team_code \	
league	season	game		
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa	BOU	
		2015-08-08 Chelsea-Swansea	CHE	
		2015-08-08 Everton-Watford	EVE	
		2015-08-08 Leicester-Sunderland	LEI	
		2015-08-08 Manchester United-Tottenham	MUN	

			home_goals \	
league	season	game		
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa	0	
		2015-08-08 Chelsea-Swansea	2	
		2015-08-08 Everton-Watford	2	
		2015-08-08 Leicester-Sunderland	4	

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			2015-08-08 Manchester United-Tottenham	1
				away_goals \
league	season	game		
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa	1	
		2015-08-08 Chelsea-Swansea	2	
		2015-08-08 Everton-Watford	2	
		2015-08-08 Leicester-Sunderland	2	
		2015-08-08 Manchester United-Tottenham	0	
			home_xg \	
league	season	game		
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa	0.876106	
		2015-08-08 Chelsea-Swansea	0.64396	
		2015-08-08 Everton-Watford	0.604226	
		2015-08-08 Leicester-Sunderland	2.56803	
		2015-08-08 Manchester United-Tottenham	0.627539	
			away_xg \	
league	season	game		
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa	0.782253	
		2015-08-08 Chelsea-Swansea	2.59203	
		2015-08-08 Everton-Watford	0.557892	
		2015-08-08 Leicester-Sunderland	1.45946	
		2015-08-08 Manchester United-Tottenham	0.6746	
			is_result \	
league	season	game		
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa	True	
		2015-08-08 Chelsea-Swansea	True	
		2015-08-08 Everton-Watford	True	
		2015-08-08 Leicester-Sunderland	True	
		2015-08-08 Manchester United-Tottenham	True	
			has_data \	
league	season	game		
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa	True	
		2015-08-08 Chelsea-Swansea	True	
		2015-08-08 Everton-Watford	True	
		2015-08-08 Leicester-Sunderland	True	
		2015-08-08 Manchester United-Tottenham	True	
			url	
league	season	game		
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa	https://understat.com/	
		2015-08-08 Chelsea-Swansea	https://understat.com/	
		2015-08-08 Everton-Watford	https://understat.com/	
		2015-08-08 Leicester-Sunderland	https://understat.com/	

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```
↪match/84
2015-08-08 Manchester United-Tottenham https://understat.com/
↪match/81
```

2.8.4 Team match stats

```
[7]: team_match_stats = understat.read_team_match_stats()
team_match_stats.head()
```

```
[7]: league_id \
league      season game
ENG-Premier League 1516  2015-08-08 Bournemouth-Aston Villa      1
                               2015-08-08 Chelsea-Swansea        1
                               2015-08-08 Everton-Watford        1
                               2015-08-08 Leicester-Sunderland    1
                               2015-08-08 Manchester United-Tottenham 1

season_id \
league      season game
ENG-Premier League 1516  2015-08-08 Bournemouth-Aston Villa    2015
                               2015-08-08 Chelsea-Swansea        2015
                               2015-08-08 Everton-Watford        2015
                               2015-08-08 Leicester-Sunderland    2015
                               2015-08-08 Manchester United-Tottenham 2015

game_id \
league      season game
ENG-Premier League 1516  2015-08-08 Bournemouth-Aston Villa    82
                               2015-08-08 Chelsea-Swansea        86
                               2015-08-08 Everton-Watford        83
                               2015-08-08 Leicester-Sunderland    84
                               2015-08-08 Manchester United-Tottenham 81

date \
league      season game
ENG-Premier League 1516  2015-08-08 Bournemouth-Aston Villa    2015-08-08 18:00:00
                               2015-08-08 Chelsea-Swansea        2015-08-08 20:30:00
                               2015-08-08 Everton-Watford        2015-08-08 18:00:00
                               2015-08-08 Leicester-Sunderland    2015-08-08 18:00:00
                               2015-08-08 Manchester United-Tottenham 2015-08-08 15:45:00

home_team_id \
league      season game
ENG-Premier League 1516  2015-08-08 Bournemouth-Aston Villa    73
                               2015-08-08 Chelsea-Swansea        80
                               2015-08-08 Everton-Watford        72
                               2015-08-08 Leicester-Sunderland    75
                               2015-08-08 Manchester United-Tottenham 89

away_team_id \
league      season game
```

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ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	71
		2015-08-08	Chelsea-Swansea	84
		2015-08-08	Everton-Watford	90
		2015-08-08	Leicester-Sunderland	77
		2015-08-08	Manchester United-Tottenham	82

				home_team \
league	season	game		
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	Bournemouth
		2015-08-08	Chelsea-Swansea	Chelsea
		2015-08-08	Everton-Watford	Everton
		2015-08-08	Leicester-Sunderland	Leicester
		2015-08-08	Manchester United-Tottenham	Manchester United

				away_team \
league	season	game		
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	Aston Villa
		2015-08-08	Chelsea-Swansea	Swansea
		2015-08-08	Everton-Watford	Watford
		2015-08-08	Leicester-Sunderland	Sunderland
		2015-08-08	Manchester United-Tottenham	Tottenham

				away_team_code \
league	season	game		
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	AVL
		2015-08-08	Chelsea-Swansea	SWA
		2015-08-08	Everton-Watford	WAT
		2015-08-08	Leicester-Sunderland	SUN
		2015-08-08	Manchester United-Tottenham	TOT

				home_team_code \
league	season	game		
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	BOU
		2015-08-08	Chelsea-Swansea	CHE
		2015-08-08	Everton-Watford	EVE
		2015-08-08	Leicester-Sunderland	LEI
		2015-08-08	Manchester United-Tottenham	MUN

				... \
league	season	game		...
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	...
		2015-08-08	Chelsea-Swansea	...
		2015-08-08	Everton-Watford	...
		2015-08-08	Leicester-Sunderland	...
		2015-08-08	Manchester United-Tottenham	...

				away_ppda \
league	season	game		
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	11.846154
		2015-08-08	Chelsea-Swansea	8.833333
		2015-08-08	Everton-Watford	17.157895
		2015-08-08	Leicester-Sunderland	9.555556

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			2015-08-08 Manchester United-Tottenham	8.21875	
					away_deep_completions ↵
↵ \					
league	season	game			
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa		2	
		2015-08-08 Chelsea-Swansea		5	
		2015-08-08 Everton-Watford		4	
		2015-08-08 Leicester-Sunderland		6	
		2015-08-08 Manchester United-Tottenham		10	
					home_points \
league	season	game			
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa		0	
		2015-08-08 Chelsea-Swansea		1	
		2015-08-08 Everton-Watford		1	
		2015-08-08 Leicester-Sunderland		3	
		2015-08-08 Manchester United-Tottenham		3	
					home_expected_points \
league	season	game			
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa		1.3912	
		2015-08-08 Chelsea-Swansea		0.1836	
		2015-08-08 Everton-Watford		1.3301	
		2015-08-08 Leicester-Sunderland		2.1323	
		2015-08-08 Manchester United-Tottenham		1.2482	
					home_goals \
league	season	game			
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa		0	
		2015-08-08 Chelsea-Swansea		2	
		2015-08-08 Everton-Watford		2	
		2015-08-08 Leicester-Sunderland		4	
		2015-08-08 Manchester United-Tottenham		1	
					home_xg \
league	season	game			
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa		0.876106	
		2015-08-08 Chelsea-Swansea		0.64396	
		2015-08-08 Everton-Watford		0.604226	
		2015-08-08 Leicester-Sunderland		2.56803	
		2015-08-08 Manchester United-Tottenham		0.627539	
					home_np_xg \
league	season	game			
ENG-Premier League	1516	2015-08-08 Bournemouth-Aston Villa		0.876106	
		2015-08-08 Chelsea-Swansea		0.64396	
		2015-08-08 Everton-Watford		0.604226	
		2015-08-08 Leicester-Sunderland		1.80686	
		2015-08-08 Manchester United-Tottenham		0.627539	
					home_np_xg_difference ↵

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```

↪ \
league          season game
ENG-Premier League 1516  2015-08-08 Bournemouth-Aston Villa      0.093853
                        2015-08-08 Chelsea-Swansea          -1.1869
                        2015-08-08 Everton-Watford           0.046334
                        2015-08-08 Leicester-Sunderland      0.3474
                        2015-08-08 Manchester United-Tottenham -0.047061

                        home_ppda \
league          season game
ENG-Premier League 1516  2015-08-08 Bournemouth-Aston Villa      6.9
                        2015-08-08 Chelsea-Swansea          10.363636
                        2015-08-08 Everton-Watford           6.65
                        2015-08-08 Leicester-Sunderland      10.88
                        2015-08-08 Manchester United-Tottenham 13.826087

                        home_deep_completions
league          season game
ENG-Premier League 1516  2015-08-08 Bournemouth-Aston Villa      11
                        2015-08-08 Chelsea-Swansea          10
                        2015-08-08 Everton-Watford           5
                        2015-08-08 Leicester-Sunderland      5
                        2015-08-08 Manchester United-Tottenham 4

[5 rows x 26 columns]

```

2.8.5 Player season stats

```
[8]: player_season_stats = understat.read_player_season_stats()
player_season_stats.head()
```

```

[8]: league          season player      league_id  season_id      team \
ENG-Premier League 1516  Aaron Cresswell      1         2015  West Ham
                        Aaron Lennon          1         2015  Everton
                        Aaron Ramsey          1         2015  Arsenal
                        Abdul Rahman Baba     1         2015  Chelsea
                        Adam Bogdan           1         2015  Liverpool

                        team_id  player_id position \
league          season player
ENG-Premier League 1516  Aaron Cresswell      81         534      D M
                        Aaron Lennon          72         593      F M S
                        Aaron Ramsey          83         504      M S
                        Abdul Rahman Baba     80         684      D S
                        Adam Bogdan           87         698      GK

                        matches  minutes  goals \
league          season player
ENG-Premier League 1516  Aaron Cresswell      37         3319      2
                        Aaron Lennon          25         1534      5

```

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		Aaron Ramsey	31	2624	5
		Abdul Rahman Baba	15	1018	0
		Adam Bogdan	2	180	0
			xg	np_goals	np_xg \
league	season	player			
ENG-Premier League	1516	Aaron Cresswell	1.092563	2	1.092563
		Aaron Lennon	2.226095	5	2.226095
		Aaron Ramsey	8.614323	5	8.614323
		Abdul Rahman Baba	0.379115	0	0.379115
		Adam Bogdan	0.0	0	0.0
			assists	xa	shots \
league	season	player			
ENG-Premier League	1516	Aaron Cresswell	4	3.294618	28
		Aaron Lennon	0	1.697951	18
		Aaron Ramsey	4	4.046242	69
		Abdul Rahman Baba	1	0.179241	6
		Adam Bogdan	0	0.0	0
			key_passes	yellow_cards	\
league	season	player			
ENG-Premier League	1516	Aaron Cresswell	40		1
		Aaron Lennon	23		1
		Aaron Ramsey	37		4
		Abdul Rahman Baba	3		1
		Adam Bogdan	0		0
			red_cards	xg_chain	xg_buildup
league	season	player			
ENG-Premier League	1516	Aaron Cresswell	0	10.339367	6.831139
		Aaron Lennon	0	5.535392	1.90374
		Aaron Ramsey	0	23.282566	14.176444
		Abdul Rahman Baba	0	3.869669	3.490554
		Adam Bogdan	0	0.120216	0.120216

2.8.6 Player match stats

```
[9]: player_match_stats = understat.read_player_match_stats()
player_match_stats.head()
```

```
[9]:
```

league_id \					
league	season	game	team	player	
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	Aston Villa	Ashley Westwood
	1				Brad Guzan
	1				Carlos Sánchez
	1				Ciaran Clark

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↪	1								Gabriel	↪
↪	Agbonlahor	1								↪
↪	season_id \									↪
league	season	game			team		player			
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	Aston Villa	Ashley Westwood					↪
↪	2015									↪
↪	2015						Brad Guzan			↪
↪	2015						Carlos Sánchez			↪
↪	2015						Ciaran Clark			↪
↪	2015						Gabriel			↪
↪	Agbonlahor	2015								↪
↪	game_id \									↪
league	season	game			team		player			
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	Aston Villa	Ashley Westwood					↪
↪	82									↪
↪	82						Brad Guzan			↪
↪	82						Carlos Sánchez			↪
↪	82						Ciaran Clark			↪
↪	82						Gabriel			↪
↪	Agbonlahor	82								↪
↪	team_id \									↪
league	season	game			team		player			
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	Aston Villa	Ashley Westwood					↪
↪	71									↪
↪	71						Brad Guzan			↪
↪	71						Carlos Sánchez			↪
↪	71						Ciaran Clark			↪
↪	71						Gabriel			↪
↪	Agbonlahor	71								↪
↪	player_id \									↪
league	season	game			team		player			
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	Aston Villa	Ashley Westwood					↪
↪	669									↪
↪	669						Brad Guzan			↪

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↪	662						Carlos Sánchez	↪
↪	667						Ciaran Clark	↪
↪	875						Gabriel	↪
↪	Agbonlahor	890						↪
↪	position \							↪
league	season	game		team		player		
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	Aston Villa	Ashley Westwood			↪
↪	MC					Brad Guzan		↪
↪	GK					Carlos Sánchez		↪
↪	Sub					Ciaran Clark		↪
↪	DC					Gabriel		↪
↪	Agbonlahor	FW						↪
↪	position_id \							↪
league	season	game		team		player		
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	Aston Villa	Ashley Westwood			↪
↪	9					Brad Guzan		↪
↪	1					Carlos Sánchez		↪
↪	17					Ciaran Clark		↪
↪	3					Gabriel		↪
↪	Agbonlahor	15						↪
↪	minutes \							↪
league	season	game		team		player		
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	Aston Villa	Ashley Westwood			↪
↪	90					Brad Guzan		↪
↪	90					Carlos Sánchez		↪
↪	18					Ciaran Clark		↪
↪	90					Gabriel		↪
↪	Agbonlahor	90						↪
↪	goals \							↪

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```

league          season game          team      player
ENG-Premier League 1516   2015-08-08 Bournemouth-Aston Villa Aston Villa Ashley Westwood
↳              0
                                   Brad Guzan
↳              0
                                   Carlos Sánchez
↳              0
                                   Ciaran Clark
↳              0
                                   Gabriel
↳ Agbonlahor      0
                                  

↳  own_goals \
league          season game          team      player
ENG-Premier League 1516   2015-08-08 Bournemouth-Aston Villa Aston Villa Ashley Westwood
↳              0
                                   Brad Guzan
↳              0
                                   Carlos Sánchez
↳              0
                                   Ciaran Clark
↳              0
                                   Gabriel
↳ Agbonlahor      0
                                  

↳  shots \
league          season game          team      player
ENG-Premier League 1516   2015-08-08 Bournemouth-Aston Villa Aston Villa Ashley Westwood
↳              0
                                   Brad Guzan
↳              0
                                   Carlos Sánchez
↳              0
                                   Ciaran Clark
↳              0
                                   Gabriel
↳ Agbonlahor      2
                                  

↳  xg \
league          season game          team      player
ENG-Premier League 1516   2015-08-08 Bournemouth-Aston Villa Aston Villa Ashley Westwood
↳              0.0
                                   Brad Guzan
↳              0.0
                                   Carlos Sánchez
↳              0.0
                                   Ciaran Clark
↳              0.0
                                   Gabriel

```

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2.8.7 Shot events

```
[10]: shot_events = understat.read_shot_events()
      shot_events.head()
```

```
[10]:
```

league_id \	league	season	game	team	player
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	Aston Villa	Gabriel
↪ Agbonlahor	1				Gabriel
↪ Agbonlahor	1				Idrissa Gueye
↪	1				Idrissa Gueye
↪	1				Leandro Bacuna
↪	1				

season_id \	league	season	game	team	player
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	Aston Villa	Gabriel
↪ Agbonlahor	2015				Gabriel
↪ Agbonlahor	2015				Idrissa Gueye
↪	2015				Idrissa Gueye
↪	2015				Leandro Bacuna
↪	2015				

game_id \	league	season	game	team	player
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	Aston Villa	Gabriel
↪ Agbonlahor	82				Gabriel
↪ Agbonlahor	82				Idrissa Gueye
↪	82				Idrissa Gueye
↪	82				Leandro Bacuna
↪	82				

date \	league	season	game	team	player
ENG-Premier League	1516	2015-08-08	Bournemouth-Aston Villa	Aston Villa	Gabriel
↪ Agbonlahor	2015-08-08	18:00:00			Gabriel

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```

league          season game          team      player
ENG-Premier League 1516  2015-08-08 Bournemouth-Aston Villa Aston Villa Gabriel
↳Agbonlahor      <NA>
                                   Gabriel
↳Agbonlahor      548651
                                   Idrissa Gueye
↳                548653
                                   Idrissa Gueye
↳                548657
                                   Leandro Bacuna
↳                <NA>
                                   Leandro Bacuna
↳                assist_player \
league          season game          team      player
ENG-Premier League 1516  2015-08-08 Bournemouth-Aston Villa Aston Villa Gabriel
↳Agbonlahor      <NA>
                                   Gabriel
↳Agbonlahor      Micah Richards
                                   Idrissa Gueye
↳                Jordan Veretout
                                   Idrissa Gueye
↳                Gabriel Agbonlahor
                                   Leandro Bacuna
↳                <NA>
                                   Leandro Bacuna
↳                xg \
league          season game          team      player
ENG-Premier League 1516  2015-08-08 Bournemouth-Aston Villa Aston Villa Gabriel
↳Agbonlahor      0.075484
                                   Gabriel
↳Agbonlahor      0.054676
                                   Idrissa Gueye
↳                0.018269
                                   Idrissa Gueye
↳                0.113668
                                   Leandro Bacuna
↳                0.097371
                                   Leandro Bacuna
↳                location_x \
league          season game          team      player
ENG-Premier League 1516  2015-08-08 Bournemouth-Aston Villa Aston Villa Gabriel
↳Agbonlahor      0.86
                                   Gabriel
↳Agbonlahor      0.795
                                   Idrissa Gueye
↳                0.742
                                   Idrissa Gueye
↳                0.883
                                   Leandro Bacuna

```

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```

↪      0.786

↪      location_y \
league      season game      team      player
ENG-Premier League 1516  2015-08-08 Bournemouth-Aston Villa Aston Villa Gabriel
↪Agbonlahor      0.503
                                Gabriel
↪Agbonlahor      0.507
                                Idrissa Gueye
↪      0.598
                                Idrissa Gueye
↪      0.561
                                Leandro Bacuna
↪      0.437

↪      minute \
league      season game      team      player
ENG-Premier League 1516  2015-08-08 Bournemouth-Aston Villa Aston Villa Gabriel
↪Agbonlahor      67
                                Gabriel
↪Agbonlahor      81
                                Idrissa Gueye
↪      26
                                Idrissa Gueye
↪      47
                                Leandro Bacuna
↪      42

↪      body_part \
league      season game      team      player
ENG-Premier League 1516  2015-08-08 Bournemouth-Aston Villa Aston Villa Gabriel
↪Agbonlahor      Left Foot
                                Gabriel
↪Agbonlahor      Left Foot
                                Idrissa Gueye
↪      Right Foot
                                Idrissa Gueye
↪      Left Foot
                                Leandro Bacuna
↪      Right Foot

↪      situation \
league      season game      team      player
ENG-Premier League 1516  2015-08-08 Bournemouth-Aston Villa Aston Villa Gabriel
↪Agbonlahor      Open Play
                                Gabriel
↪Agbonlahor      Open Play
                                Idrissa Gueye

```

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```

↳      Open Play
                                                    Idrissa Gueye
↳      Open Play
                                                    Leandro Bacuna
↳      Direct Freekick
                                                   
↳      result
league      season game      team      player
ENG-Premier League 1516    2015-08-08 Bournemouth-Aston Villa Aston Villa Gabriel
↳ Agbonlahor Blocked Shot
                                                    Gabriel
↳ Agbonlahor Saved Shot
                                                    Idrissa Gueye
↳ Missed Shot
                                                    Idrissa Gueye
↳ Saved Shot
                                                    Leandro Bacuna
↳ Blocked Shot

```

..... doc/datasources/Understat.ipynb ends here.

The following section was generated from doc/datasources/WhoScored.ipynb

```
[3]: import soccerdata as sd
```

2.9 WhoScored

```
[4]: ws = sd.WhoScored(leagues="ENG-Premier League", seasons=2021)
print(ws.__doc__)
```

```

/cw/dtaijupiter/NoCsBack/dtai/pieterr/Projects/soccerdata/soccerdata/_common.py:462:
↳ UserWarning: Season id "2021" is ambiguous: interpreting as "20-21"
warnings.warn(msg)

```

Provides pd.DataFrames from data available at <http://whoscored.com>.

Data will be downloaded as necessary and cached locally in
`~/soccerdata/data/WhoScored`.

Parameters

leagues : string or iterable, optional
IDs of Leagues to include.

seasons : string, int or list, optional
Seasons to include. Supports multiple formats.
Examples: '16-17'; 2016; '2016-17'; [14, 15, 16]

proxy : 'tor' or dict or list(dict) or callable, optional
Use a proxy to hide your IP address. Valid options are:

- "tor": Uses the Tor network. Tor should be running in the background on port 9050.

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```

- dict: A dictionary with the proxy to use. The dict should be
  a mapping of supported protocols to proxy addresses. For example::

      {
          'http': 'http://10.10.1.10:3128',
          'https': 'http://10.10.1.10:1080',
      }

- list(dict): A list of proxies to choose from. A different proxy will
  be selected from this list after failed requests, allowing rotating
  proxies.
- callable: A function that returns a valid proxy. This function will
  be called after failed requests, allowing rotating proxies.
no_cache : bool
    If True, will not use cached data.
no_store : bool
    If True, will not store downloaded data.
data_dir : Path
    Path to directory where data will be cached.
path_to_browser : Path, optional
    Path to the Chrome executable.
headless : bool, default: True
    If True, will run Chrome in headless mode. Setting this to False might
    help to avoid getting blocked.

```

2.9.1 Game schedule

```
[5]: epl_schedule = ws.read_schedule()
     epl_schedule.head()
```

```
[5]:
league          season game          game_id \
ENG-Premier League 2021  2020-09-12 Crystal Palace-Southampton    1485186
                        2020-09-12 Fulham-Arsenal            1485187
                        2020-09-12 Liverpool-Leeds United    1485188
                        2020-09-12 West Ham United-Newcastle United 1485191
                        2020-09-13 Tottenham-Everton         1485189

                        home_team \
league          season game          game_id \
ENG-Premier League 2021  2020-09-12 Crystal Palace-Southampton    Crystal Palace
                        2020-09-12 Fulham-Arsenal            Fulham
                        2020-09-12 Liverpool-Leeds United    Liverpool
                        2020-09-12 West Ham United-Newcastle United West Ham United
                        2020-09-13 Tottenham-Everton         Tottenham

                        away_team \
league          season game          game_id \
ENG-Premier League 2021  2020-09-12 Crystal Palace-Southampton    Southampton
```

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```

2020-09-12 Fulham-Arsenal Arsenal
2020-09-12 Liverpool-Leeds United Leeds United
2020-09-12 West Ham United-Newcastle United Newcastle United
2020-09-13 Tottenham-Everton Everton

↪ date \
league season game
ENG-Premier League 2021 2020-09-12 Crystal Palace-Southampton 2020-09-12 15:00:00
2020-09-12 Fulham-Arsenal 2020-09-12 12:30:00
2020-09-12 Liverpool-Leeds United 2020-09-12 17:30:00
2020-09-12 West Ham United-Newcastle United 2020-09-12 20:00:00
2020-09-13 Tottenham-Everton 2020-09-13 16:30:00

↪ url \
league season game
ENG-Premier League 2021 2020-09-12 Crystal Palace-Southampton https://www.
whoscored.com/Matches/1485186/Live...
2020-09-12 Fulham-Arsenal https://www.
whoscored.com/Matches/1485187/Live...
2020-09-12 Liverpool-Leeds United https://www.
whoscored.com/Matches/1485188/Live...
2020-09-12 West Ham United-Newcastle United https://www.
whoscored.com/Matches/1485191/Live...
2020-09-13 Tottenham-Everton https://www.
whoscored.com/Matches/1485189/Live...

stage
league season game
ENG-Premier League 2021 2020-09-12 Crystal Palace-Southampton NaN
2020-09-12 Fulham-Arsenal NaN
2020-09-12 Liverpool-Leeds United NaN
2020-09-12 West Ham United-Newcastle United NaN
2020-09-13 Tottenham-Everton NaN

```

2.9.2 Injured and suspended players

```
[6]: missing_players = ws.read_missing_players(match_id=1485184)
missing_players.head()
```

```

[6]:
↪ game_id \
league season game team player
ENG-Premier League 2021 2021-01-12 Burnley-Manchester United Burnley Charlie
Taylor 1485184 Dwight
McNeil 1485184 Jay
Rodriguez 1485184 Jimmy

```

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↪Dunne	1485184					Manchester United Eric	
↪Bailly	1485184						
↪	player_id \						
league	season	game		team		player	
ENG-Premier	League	2021	2021-01-12	Burnley-Manchester United	Burnley	Charlie	
↪Taylor	107462					Dwight	
↪McNeil	357427					Jay	
↪Rodriguez	33891					Jimmy	
↪Dunne	366743					Manchester United Eric	
↪Bailly	243814						
↪	reason \						
league	season	game		team		player	
ENG-Premier	League	2021	2021-01-12	Burnley-Manchester United	Burnley	Charlie	
↪Taylor	injured	doubtful				Dwight	
↪McNeil	injured	doubtful				Jay	
↪Rodriguez	injured	doubtful				Jimmy	
↪Dunne	injured	doubtful				Manchester United Eric	
↪Bailly	injured	doubtful					
↪	status						
league	season	game		team		player	
ENG-Premier	League	2021	2021-01-12	Burnley-Manchester United	Burnley	Charlie	
↪Taylor	Doubtful					Dwight	
↪McNeil	Doubtful					Jay	
↪Rodriguez	Doubtful					Jimmy	
↪Dunne	Doubtful					Manchester United Eric	
↪Bailly	Doubtful						

2.9.3 Match event stream data

```
[7]: events = ws.read_events(match_id=1485184)
events.head()
```

```
[7]:
```

league	season	game	id	period	\
ENG-Premier League	2021	2021-01-12 Burnley-Manchester United	2253458317	PreMatch	
			2253458375	PreMatch	
			2253487469	FirstHalf	
			2253487473	FirstHalf	
			2253487625	FirstHalf	

league	season	game	id	minute	\
ENG-Premier League	2021	2021-01-12 Burnley-Manchester United	2253458317	0	
			2253458375	0	
			2253487469	0	
			2253487473	0	
			2253487625	0	

league	season	game	id	expanded_	\
ENG-Premier League	2021	2021-01-12 Burnley-Manchester United	2253458317		
			2253458375		
			2253487469		
			2253487473		
			2253487625		

league	season	game	id	type	\
ENG-Premier League	2021	2021-01-12 Burnley-Manchester United	2253458317	FormationSet	
			2253458375	FormationSet	
			2253487469	Start	
			2253487473	Start	
			2253487625	Pass	

league	season	game	id	outcome_type	\
ENG-Premier League	2021	2021-01-12 Burnley-Manchester United	2253458317	Successful	
			2253458375	Successful	
			2253487469	Successful	
			2253487473	Successful	
			2253487625	Successful	

league	season	game	id	team	\
ENG-Premier League	2021	2021-01-12 Burnley-Manchester United	2253458317		
			2253458375		
			2253487469		
			2253487473		
			2253487625		

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```

league          season game          id
ENG-Premier League 2021  2021-01-12 Burnley-Manchester United 2253458317 Burnley
                                                    2253458375 Man Utd
                                                    2253487469 Burnley
                                                    2253487473 Man Utd
                                                    2253487625 Burnley

↪player \
league          season game          id
ENG-Premier League 2021  2021-01-12 Burnley-Manchester United 2253458317
↪NaN                                                    2253458375
↪NaN                                                    2253487469
↪NaN                                                    2253487473
↪NaN                                                    2253487625 Ashley
↪Westwood

↪          qualifiers \
league          season game          id
ENG-Premier League 2021  2021-01-12 Burnley-Manchester United 2253458317 [{'type': {
↪'displayName': 'TeamPlayerFormation...
                                                    2253458375 [{'type': {
↪'displayName': 'CaptainPlayerId', '...'
                                                    2253487469
↪          []
                                                    2253487473
↪          []
                                                    2253487625 [{'type': {
↪'displayName': 'Angle', 'value': 21...

league          season game          id          x \
ENG-Premier League 2021  2021-01-12 Burnley-Manchester United 2253458317 0.0
                                                    2253458375 0.0
                                                    2253487469 0.0
                                                    2253487473 0.0
                                                    2253487625 50.3

league          season game          id          y \
ENG-Premier League 2021  2021-01-12 Burnley-Manchester United 2253458317 0.0
                                                    2253458375 0.0
                                                    2253487469 0.0
                                                    2253487473 0.0
                                                    2253487625 50.3

end_x \

```

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league	season	game	id	
ENG-Premier League	2021	2021-01-12 Burnley-Manchester United	2253458317	NaN
			2253458375	NaN
			2253487469	NaN
			2253487473	NaN
			2253487625	30.5
league	season	game	id	end_y \
ENG-Premier League	2021	2021-01-12 Burnley-Manchester United	2253458317	NaN
			2253458375	NaN
			2253487469	NaN
			2253487473	NaN
			2253487625	50.3
league	season	game	id	goal_mouth_y ↵
ENG-Premier League	2021	2021-01-12 Burnley-Manchester United	2253458317	NaN
			2253458375	NaN
			2253487469	NaN
			2253487473	NaN
			2253487625	NaN
league	season	game	id	goal_mouth_z ↵
ENG-Premier League	2021	2021-01-12 Burnley-Manchester United	2253458317	NaN
			2253458375	NaN
			2253487469	NaN
			2253487473	NaN
			2253487625	NaN
league	season	game	id	is_touch \
ENG-Premier League	2021	2021-01-12 Burnley-Manchester United	2253458317	False
			2253458375	False
			2253487469	False
			2253487473	False
			2253487625	True
league	season	game	id	is_shot \
ENG-Premier League	2021	2021-01-12 Burnley-Manchester United	2253458317	NaN
			2253458375	NaN
			2253487469	NaN
			2253487473	NaN
			2253487625	NaN
league	season	game	id	is_goal \
ENG-Premier League	2021	2021-01-12 Burnley-Manchester United	2253458317	NaN

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					2253458375	NaN	
					2253487469	NaN	
					2253487473	NaN	
					2253487625	NaN	
							related_event_
↪id \							
league	season	game			id		
ENG-Premier League	2021	2021-01-12	Burnley-Manchester United		2253458317		↪
↪NaN							
					2253458375		↪
↪NaN							
					2253487469		↪
↪NaN							
					2253487473		↪
↪NaN							
					2253487625		↪
↪NaN							
							related_
↪player_id \							
league	season	game			id		
ENG-Premier League	2021	2021-01-12	Burnley-Manchester United		2253458317		↪
↪NaN							
					2253458375		↪
↪NaN							
					2253487469		↪
↪NaN							
					2253487473		↪
↪NaN							
					2253487625		↪
↪NaN							
							blocked_x \
league	season	game			id		
ENG-Premier League	2021	2021-01-12	Burnley-Manchester United		2253458317	NaN	
					2253458375	NaN	
					2253487469	NaN	
					2253487473	NaN	
					2253487625	NaN	
							blocked_y \
league	season	game			id		
ENG-Premier League	2021	2021-01-12	Burnley-Manchester United		2253458317	NaN	
					2253458375	NaN	
					2253487469	NaN	
					2253487473	NaN	
					2253487625	NaN	
							card_type \
league	season	game			id		
ENG-Premier League	2021	2021-01-12	Burnley-Manchester United		2253458317	NaN	

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					2253458375	NaN
					2253487469	NaN
					2253487473	NaN
					2253487625	NaN
						game_id \
league	season	game		id		
ENG-Premier League	2021	2021-01-12	Burnley-Manchester United	2253458317	1485184	
				2253458375	1485184	
				2253487469	1485184	
				2253487473	1485184	
				2253487625	1485184	
						team_id \
league	season	game		id		
ENG-Premier League	2021	2021-01-12	Burnley-Manchester United	2253458317	184	
				2253458375	32	
				2253487469	184	
				2253487473	32	
				2253487625	184	
						player_id
league	season	game		id		
ENG-Premier League	2021	2021-01-12	Burnley-Manchester United	2253458317	NaN	
				2253458375	NaN	
				2253487469	NaN	
				2253487473	NaN	
				2253487625	79050.0	

Match event stream data can be returned in various formats, which can be selected with the “output_fmt” parameter.

- `events` (default): Returns a dataframe with all events.
- `raw`: Returns the original unformatted WhoScored JSON.
- `spadl`: Returns a dataframe with the [SPADL representation](#) of the original events.
- `atomic-spadl`: Returns a dataframe with the [Atomic-SPADL representation](#) of the original events.
- `loader`: Returns a `socceration.data.opta.OptaLoader` instance

```
[12]: events = ws.read_events(match_id=1485184, output_fmt="raw")
```

```
import json
print(json.dumps(events[1485184][0], indent=2))

{
  "eventId": 2,
  "expandedMinute": 0,
  "id": 2253487473,
  "isTouch": false,
  "minute": 0,
  "outcomeType": {
    "displayName": "Successful",
    "value": 1
  }
}
```

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```

},
"period": {
  "displayName": "FirstHalf",
  "value": 1
},
"qualifiers": [],
"satisfiedEventsTypes": [],
"second": 0,
"teamId": 32,
"type": {
  "displayName": "Start",
  "value": 32
},
"x": 0,
"y": 0
}

```

```
[13]: actions = ws.read_events(match_id=1485184, output_fmt='spadl')
      actions.head()
```

```
[13]:
```

	game_id	original_event_id	period_id	time_seconds	team_id	player_id	\
0	1485184	2253487625	1	0.0	184	79050.0	
1	1485184	2253487639	1	2.0	184	131464.0	
2	1485184	NaN	1	4.5	184	80067.0	
3	1485184	2253487685	1	7.0	184	80067.0	
4	1485184	2253487689	1	11.0	184	93473.0	

	start_x	end_x	start_y	end_y	type_id	result_id	bodypart_id	\
0	52.815	32.025	34.204	34.204	0	1	0	
1	31.080	38.220	36.312	15.844	0	1	0	
2	38.220	43.365	15.844	12.512	21	1	0	
3	43.365	90.300	12.512	49.708	0	1	0	
4	90.300	105.000	49.708	38.828	11	0	0	

	action_id	player	team
0	0	Ashley Westwood	Burnley
1	1	James Tarkowski	Burnley
2	2	Matthew Lowton	Burnley
3	3	Matthew Lowton	Burnley
4	4	Robbie Brady	Burnley

```
[14]: atomic_actions = ws.read_events(match_id=1485184, output_fmt='atomic-spadl')
      atomic_actions.head()
```

```
[14]:
```

	game_id	original_event_id	action_id	period_id	time_seconds	team_id	\
0	1485184	2253487625	0	1	0.00	184	
1	1485184	2253487625	1	1	1.00	184	
2	1485184	2253487639	2	1	2.00	184	
3	1485184	2253487639	3	1	3.25	184	
4	1485184	NaN	4	1	4.50	184	

	player_id	x	y	dx	dy	type_id	bodypart_id	\
--	-----------	---	---	----	----	---------	-------------	---

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0	79050.0	52.815	34.204	-20.790	0.000	0	0
1	131464.0	32.025	34.204	0.000	0.000	23	0
2	131464.0	31.080	36.312	7.140	-20.468	0	0
3	80067.0	38.220	15.844	0.000	0.000	23	0
4	80067.0	38.220	15.844	5.145	-3.332	21	0
	player	team					
0	Ashley Westwood	Burnley					
1	James Tarkowski	Burnley					
2	James Tarkowski	Burnley					
3	Matthew Lowton	Burnley					
4	Matthew Lowton	Burnley					

```
[15]: # Scrape all games and return a socceraction.data.opta.OptaLoader
loader = ws.read_events(output_fmt='loader')

# Now use this loader to load the data
print("Games:")
df_games = loader.games(competition_id="ENG-Premier League", season_id="2021")
display(df_games.head())

print("Teams:")
df_teams = loader.teams(game_id=1485184)
display(df_teams.head())

print("Players:")
df_players = loader.players(game_id=1485184)
display(df_players.head())

print("Events:")
df_events = loader.events(game_id=1485184)
display(df_events.head())

# You can use the socceraction package to convert the events
# to SPADL and to compute xT or VAEP action values
```

Games:

	game_id	season_id	competition_id	game_day	game_date	\
0	1485494	2021	ENG-Premier League	None	2021-04-04 12:00:00	
1	1485300	2021	ENG-Premier League	None	2020-12-16 20:00:00	
2	1485264	2021	ENG-Premier League	None	2020-12-06 19:15:00	
3	1485519	2021	ENG-Premier League	None	2021-05-16 16:30:00	
4	1485436	2021	ENG-Premier League	None	2021-03-19 20:00:00	
	home_team_id	away_team_id	home_score	away_score	duration	\
0	18	184	3	2	98	
1	170	211	0	0	95	
2	26	161	4	0	97	
3	175	26	1	2	102	
4	170	19	1	2	100	
	referee	venue	attendance	home_manager	\	

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0	Andre Marriner	St. Mary's Stadium	0	Ralph Hasenhüttl
1	Robert Jones	Craven Cottage	0	Scott Parker
2	Craig Pawson	Anfield	2000	Jürgen Klopp
3	Mike Dean	The Hawthorns	0	Sam Allardyce
4	David Coote	Craven Cottage	0	Scott Parker

	away_manager
0	Sean Dyche
1	Graham Potter
2	Nuno Espírito Santo
3	Jürgen Klopp
4	Marcelo Bielsa

Teams:

	team_id	team_name
0	184	Burnley
1	32	Man Utd

Players:

	game_id	team_id	player_id	player_name	is_starter	minutes_played	\
0	1485184	184	105720	Nick Pope	True	102	
1	1485184	184	80067	Matthew Lowton	True	102	
2	1485184	184	94935	Ben Mee	True	102	
3	1485184	184	131464	James Tarkowski	True	102	
4	1485184	184	24148	Erik Pieters	True	102	

	jersey_number	starting_position
0	1	GK
1	2	DR
2	6	DC
3	5	DC
4	23	DL

Events:

	game_id	event_id	period_id	team_id	player_id	type_id	\
0	1485184	2253487473	1	32	NaN	32	
1	1485184	2253487469	1	184	NaN	32	
2	1485184	2253487625	1	184	79050.0	1	
3	1485184	2253487639	1	184	131464.0	1	
4	1485184	2253487685	1	184	80067.0	1	

	timestamp	minute	second	outcome	start_x	start_y	end_x	\
0	2021-01-12 20:15:00	0	0	True	0.0	0.0	0.0	
1	2021-01-12 20:15:00	0	0	True	0.0	0.0	0.0	
2	2021-01-12 20:15:00	0	0	True	50.3	50.3	30.5	
3	2021-01-12 20:15:02	0	2	True	29.6	53.4	36.4	
4	2021-01-12 20:15:07	0	7	True	41.3	18.4	86.0	

	end_y	qualifiers	\
0	0.0	{}	
1	0.0	{}	
2	50.3	{213: '3.1', 178: True, 141: '50.3', 212: '20...	

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```
3 23.3 {178: True, 213: '5.0', 212: '21.7', 141: '23...
4 73.1 {1: True, 213: '0.7', 56: 'Center', 178: True,...
```

	related_player_id	touch	shot	goal	type_name
0	NaN	False	False	False	start
1	NaN	False	False	False	start
2	NaN	True	False	False	pass
3	NaN	True	False	False	pass
4	NaN	True	False	False	pass

```
[ ]:
```

..... doc/datasources/WhoScored.ipynb ends here.

HOW-TO GUIDES

Here you'll find short answers to "How do I...?" types of questions. These how-to guides don't cover topics in depth – you'll find that material in the *API Reference*. However, these guides will help you quickly accomplish common tasks.

3.1 How to add custom leagues

SoccerData has built-in support to scrape data from the top-5 European leagues and the major international tournaments. The leagues available for each source can be listed with the `available_leagues()` class method.

```
import soccerdata as sd
sd.FBref.available_leagues()
>>> ['ENG-Premier League', 'ESP-La Liga', 'FRA-Ligue 1', 'GER-Bundesliga', 'ITA-Serie A']
```

This documentation explains how to add custom leagues.

Warning: Note that you might encounter errors when trying to scrape data for the leagues you added yourself. This is because the data provided for these leagues might have a different structure. If you encounter such an error, please do not open an issue on GitHub, but try to fix it yourself.

3.1.1 Adding a new league

Additional leagues can be configured in `SOCCKERDATA_DIR/config/league_dict.json`. This file should contain a mapping between a generic name for the league and the identifier used internally by each data source (see below) that you want to support. For example, for the Dutch Eredivisie this would be:

```
{
  "NED-Eredivisie": {
    "ClubElo": "NED_1",
    "MatchHistory": "N1",
    "SoFIFA": "[Netherlands] Eredivisie",
    "FBref": "Eredivisie",
    "ESPN": "ned.1",
    "FiveThirtyEight": "eredivisie",
    "WhoScored": "Netherlands - Eredivisie",
    "Sofascore": "Eredivisie",
    "season_start": "Aug",
    "season_end": "May"
  }
}
```

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```
}
}
```

The `season_end` and `season_start` fields are optional. This should be the month in which the last game and first game of a season are played, respectively. If they are not provided, June is used as the last month of the season and July as the first one.

Now, restart your Python session and check whether it is added to available leagues by running the command below.

```
>>> import soccerdata as sd
>>> sd.FBref.available_leagues()
[... , 'NED-Eredivisie', ...]
```

3.1.2 Internal identifiers

Below are instructions on how to find the internal identifiers for each data source.

ClubElo

The internal identifier has the format `{country_code}_{level}`. To get the country code, go to <https://clubelo.com/>, click on the league you want to add and take the three-letter code in the URL. For example, the URL for the Dutch Eredivisie is <http://clubelo.com/NED> which means that the country identifier is `NED`. The level is the number of the league, starting with 1 for the top league. The internal identifier for the Dutch Eredivisie is therefore `NED_1`.

MatchHistory

The internal identifier has the format `{country_code}{level}`. Download the CSV file corresponding corresponding to the league you would like to add from <https://www.football-data.co.uk/data.php> and take the value in the `Div` column.

SoFIFA

The internal identifier has the format `[{region}] {league name}`. Go to <https://sofifa.com/api/league> to get the list of available leagues. The `{region}` corresponds to the `nationName` field in the JSON response. The `{league name}` corresponds to the `value` field.

FBref

Go to <https://fbref.com/en/comps/> and take the value in the `Competition Name` column.

ESPN

The internal identifier has the format `{country_code}.{level}`. Go to <https://www.espn.com/soccer/competitions>, click on the league you want to add and take the value in the URL after `/league/_/name/`.

FiveThirtyEight

Go to <https://projects.fivethirtyeight.com/soccer-predictions/>, select the relevant league and take the value in the URL after `/soccer-predictions/`.

WhoScored

Go to <https://www.whoscored.com> and use the JavaScript console to get the value of the `allRegions` variable. The internal identifier has the format `{region name} - {league name}`.

FotMob

The internal identifier is identical in style to the general format: `[{region}]-{league name}`. Go to <https://www.fotmob.com/api/allLeagues> to get the list of available leagues. The `{region}` corresponds to the `ccode` field in the JSON response. The `{league name}` corresponds to the `name` field.

Sofascore

Go to <https://api.sofascore.com/api/v1/config/unique-tournaments/EN/football> to get the list of major leagues

and tournaments. Access `uniqueTournaments` in the JSON response, and the `{league name}` corresponds to the `name` field.

3.1.3 Troubleshooting

If you add a new league and it doesn't show up in the list of available leagues, there are a few things you can do to debug the problem.

1. Make sure to reload the soccerdata module after you modify the `league_dict.json` file. The most straightforward way to do this is to restart your notebook or Python interpreter.
2. Check whether your `league_dict.json` file is at the correct location. If so, you should see this appear in the log messages when importing the soccerdata library.

```
>>> import soccerdata as sd
[11/25/22 11:49:12] INFO      Custom team name replacements loaded from <path>/
↳ teamname_replacements.json.
↳
↳                                _config.py:83
INFO      Custom league dict loaded from <path>/league_dict.json.
↳
↳                                _config.py:153
```

3. Check whether the content of your `league_dict.json` file is valid JSON. You can check the file's syntax using Python's built-in `json.tool` module.

```
$ cat config/league_dict.json | python -m json.tool
Expecting ',' delimiter: line 1 column 10 (char 9)
```

3.2 How to use a proxy server

You can setup a SOCKS5 proxy with Tor. Checkout the [installation guide](#) on the Tor website for installation instructions. After installing Tor, make sure to start it up before scraping. This can easily be done by running the `tor` command from your terminal (in a separate window), Tor will start up and run on “localhost:9050” by default. Once Tor is running, you can enable the extension by setting `proxy='tor'`.

```
ws = sd.WhoScored(proxy='tor')
```

The code snippet above assumes you have a Tor proxy running on “localhost:9050”. Many distributions indeed default to having a SOCKS proxy listening on port 9050, but some may not. In particular, the Tor Browser Bundle defaults to listening on port 9150. You can specify a custom host and port as

```
ws = sd.WhoScored(proxy={
    "http": "socks5://127.0.0.1:9150",
    "https": "socks5://127.0.0.1:9150",
})
```


DATA ANALYSIS EXAMPLES

Below is a gallery of examples of data analysis using the soccerdata package. If you have an example you would like to share, please submit a pull request to the SoccerData GitHub repository.

The following section was generated from doc/examples/ClubElo - Evolution of current top teams.ipynb

```
[2]: import soccerdata as sd

[3]: %matplotlib inline
%config InlineBackend.figure_format = 'retina'

import matplotlib.pyplot as plt
import pandas as pd
import seaborn as sns

sns.set_context("notebook")
sns.set_style("whitegrid")
```

4.1 Evolution of top team's Elo ratings

How did the current top 5 teams in the world develop over time?

```
[4]: elo = sd.ClubElo()
current_elo = elo.read_by_date()
current_elo.head()

/cw/dtaijupiter/NoCsBack/dtai/pieterr/Projects/soccerdata/soccerdata/clubelo.py:18:
↳ FutureWarning: The argument 'infer_datetime_format' is deprecated and will be removed
↳ in a future version. A strict version of it is now the default, see https://pandas.
↳ pydata.org/pdeps/0004-consistent-to-datetime-parsing.html. You can safely remove this
↳ argument.
return pd.read_csv(
```

```
[4]:
```

	rank	country	level	elo	from	to	\
team							
Man City	1.0	ENG	1	2079.984619	2023-06-11	2023-08-11	
Liverpool	2.0	ENG	1	1949.932861	2023-06-11	2023-08-13	
Bayern	3.0	GER	1	1937.012451	2023-05-28	2023-08-18	
Arsenal	4.0	ENG	1	1928.216187	2023-06-11	2023-08-12	
Real Madrid	5.0	ESP	1	1907.589233	2023-06-08	2023-08-12	

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	league
team	
Man City	ENG-Premier League
Liverpool	ENG-Premier League
Bayern	GER-Bundesliga
Arsenal	ENG-Premier League
Real Madrid	ESP-La Liga

```
[5]: num_teams = 5
smoothing = 100
elo_top_development = pd.concat(
    [elo.read_team_history(team)['elo'].rolling(smoothing).mean()
      for team in current_elo.reset_index()['team'][:num_teams]
    ],
    axis=1)
elo_top_development.columns = current_elo.reset_index()['team'][:num_teams]
elo_top_development.fillna(method='ffill')

fig = plt.figure(figsize=(16, 10))
ax1 = fig.add_subplot(111, ylabel='ELO rolling avg.', xlabel='Date')
elo_top_development.plot(ax=ax1)
ax1.legend(loc='upper left', frameon=False, bbox_to_anchor=(0, 1.05), ncol=num_teams)
sns.despine();

/cw/dtaijupiter/NoCsBack/dtai/pieterr/Projects/soccerdata/soccerdata/clubelo.py:18:
↳ FutureWarning: The argument 'infer_datetime_format' is deprecated and will be removed
↳ in a future version. A strict version of it is now the default, see https://pandas.
↳ pydata.org/pdeps/0004-consistent-to-datetime-parsing.html. You can safely remove this
↳ argument.
    return pd.read_csv(
/cw/dtaijupiter/NoCsBack/dtai/pieterr/Projects/soccerdata/soccerdata/clubelo.py:18:
↳ FutureWarning: The argument 'infer_datetime_format' is deprecated and will be removed
↳ in a future version. A strict version of it is now the default, see https://pandas.
↳ pydata.org/pdeps/0004-consistent-to-datetime-parsing.html. You can safely remove this
↳ argument.
    return pd.read_csv(
/cw/dtaijupiter/NoCsBack/dtai/pieterr/Projects/soccerdata/soccerdata/clubelo.py:18:
↳ FutureWarning: The argument 'infer_datetime_format' is deprecated and will be removed
↳ in a future version. A strict version of it is now the default, see https://pandas.
↳ pydata.org/pdeps/0004-consistent-to-datetime-parsing.html. You can safely remove this
↳ argument.
    return pd.read_csv(
/cw/dtaijupiter/NoCsBack/dtai/pieterr/Projects/soccerdata/soccerdata/clubelo.py:18:
↳ FutureWarning: The argument 'infer_datetime_format' is deprecated and will be removed
↳ in a future version. A strict version of it is now the default, see https://pandas.
↳ pydata.org/pdeps/0004-consistent-to-datetime-parsing.html. You can safely remove this
↳ argument.
    return pd.read_csv(
/cw/dtaijupiter/NoCsBack/dtai/pieterr/Projects/soccerdata/soccerdata/clubelo.py:18:
↳ FutureWarning: The argument 'infer_datetime_format' is deprecated and will be removed
↳ in a future version. A strict version of it is now the default, see https://pandas.
```

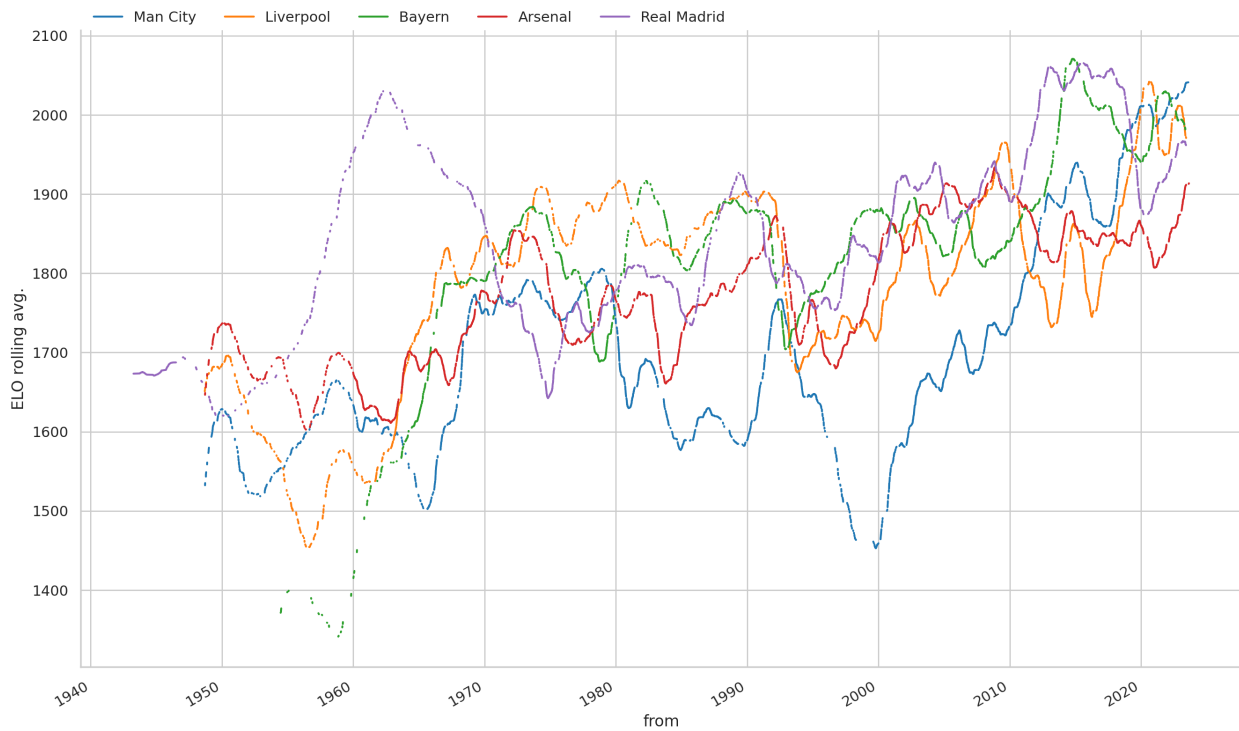
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```

↳ pydata.org/pdeps/0004-consistent-to-datetime-parsing.html. You can safely remove this.
↳ argument.
return pd.read_csv(

```



..... doc/examples/ClubElo - Evolution of current top teams.ipynb ends here.

The following section was generated from doc/examples/MatchHistory - Home advantage.ipynb

```
[2]: import soccerdata as sd
```

```

[3]: %matplotlib inline
%config InlineBackend.figure_format = 'retina'

import matplotlib.pyplot as plt
import pandas as pd
import seaborn as sns

sns.set_context("notebook")
sns.set_style("whitegrid")

```

4.2 Home team advantage in the Italian Serie A

We all know sports teams have an advantage when playing at home. Here's a look at home team advantage for 5 years of the Serie A.

```
[4]: seriea_hist = sd.MatchHistory('ITA-Serie A', range(2018, 2023))
      games = seriea_hist.read_games()
      games.sample(5)
```

```
/cw/dtaijupiter/NoCsBack/dtai/pieterr/Projects/soccerdata/soccerdata/_common.py:471:
↳UserWarning: Season id "2021" is ambiguous: interpreting as "20-21"
      warnings.warn(msg, stacklevel=1)
```

```
[4]:
```

					date	\
league	season	game				
ITA-Serie A	1819	2018-12-22	Lazio-Cagliari	2018-12-22	12:00:00	
	2021	2020-12-20	Torino-Bologna	2020-12-20	11:30:00	
	1819	2019-03-03	Udinese-Bologna	2019-03-03	12:00:00	
	2021	2021-02-20	Genoa-Verona	2021-02-20	17:00:00	
	1819	2019-03-10	Fiorentina-Lazio	2019-03-10	12:00:00	

				home_team	away_team	FTHG	\
league	season	game					
ITA-Serie A	1819	2018-12-22	Lazio-Cagliari	Lazio	Cagliari	3	
	2021	2020-12-20	Torino-Bologna	Torino	Bologna	1	
	1819	2019-03-03	Udinese-Bologna	Udinese	Bologna	2	
	2021	2021-02-20	Genoa-Verona	Genoa	Verona	2	
	1819	2019-03-10	Fiorentina-Lazio	Fiorentina	Lazio	1	

				FTAG	FTR	HTHG	HTAG	HTR	HS	\
league	season	game								
ITA-Serie A	1819	2018-12-22	Lazio-Cagliari	1	H	2	0	H	15	
	2021	2020-12-20	Torino-Bologna	1	D	0	0	D	13	
	1819	2019-03-03	Udinese-Bologna	1	H	1	1	D	11	
	2021	2021-02-20	Genoa-Verona	2	D	0	1	A	12	
	1819	2019-03-10	Fiorentina-Lazio	1	D	0	1	A	7	

				...	AvgC<2.5	AHCh	B365CAHH	\
league	season	game		...				
ITA-Serie A	1819	2018-12-22	Lazio-Cagliari	...	NaN	NaN	NaN	
	2021	2020-12-20	Torino-Bologna	...	2.25	0.0	1.91	
	1819	2019-03-03	Udinese-Bologna	...	NaN	NaN	NaN	
	2021	2021-02-20	Genoa-Verona	...	1.64	0.0	1.95	
	1819	2019-03-10	Fiorentina-Lazio	...	NaN	NaN	NaN	

				B365CAHA	PCAHH	PCAHA	\
league	season	game					
ITA-Serie A	1819	2018-12-22	Lazio-Cagliari	NaN	NaN	NaN	
	2021	2020-12-20	Torino-Bologna	2.02	1.92	2.0	
	1819	2019-03-03	Udinese-Bologna	NaN	NaN	NaN	
	2021	2021-02-20	Genoa-Verona	1.98	1.93	2.0	
	1819	2019-03-10	Fiorentina-Lazio	NaN	NaN	NaN	

				MaxCAHH	MaxCAHA	AvgCAHH	\
league	season	game					
ITA-Serie A	1819	2018-12-22	Lazio-Cagliari	NaN	NaN	NaN	
	2021	2020-12-20	Torino-Bologna	2.02	1.92	2.0	
	1819	2019-03-03	Udinese-Bologna	NaN	NaN	NaN	
	2021	2021-02-20	Genoa-Verona	1.98	1.93	2.0	
	1819	2019-03-10	Fiorentina-Lazio	NaN	NaN	NaN	

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league	season	game			
ITA-Serie A	1819	2018-12-22	Lazio-Cagliari	NaN	NaN
	2021	2020-12-20	Torino-Bologna	1.94	2.11
	1819	2019-03-03	Udinese-Bologna	NaN	NaN
	2021	2021-02-20	Genoa-Verona	2.07	2.00
	1819	2019-03-10	Fiorentina-Lazio	NaN	NaN

				AvgCAHA
league	season	game		
ITA-Serie A	1819	2018-12-22	Lazio-Cagliari	NaN
	2021	2020-12-20	Torino-Bologna	2.00
	1819	2019-03-03	Udinese-Bologna	NaN
	2021	2021-02-20	Genoa-Verona	1.93
	1819	2019-03-10	Fiorentina-Lazio	NaN

[5 rows x 121 columns]

```
[5]: def home_away_results(games: pd.DataFrame):
    """Returns aggregated home/away results per team"""

    res = (
        pd.melt(games.reset_index(),
                id_vars=['date', 'FTR'],
                value_name='team', var_name='is_home',
                value_vars=['home_team', 'away_team']))

    res.is_home = res.is_home.replace(['home_team', 'away_team'], ['Home', 'Away'])
    res['win'] = res['lose'] = res['draw'] = 0
    res.loc[(res['is_home'] == 'Home') & (res['FTR'] == 'H'), 'win'] = 1
    res.loc[(res['is_home'] == 'Away') & (res['FTR'] == 'A'), 'win'] = 1
    res.loc[(res['is_home'] == 'Home') & (res['FTR'] == 'A'), 'lose'] = 1
    res.loc[(res['is_home'] == 'Away') & (res['FTR'] == 'H'), 'lose'] = 1
    res.loc[res['FTR'] == 'D', 'draw'] = 1

    g = res.groupby(['team', 'is_home'])
    w = (g.win.agg(['sum', 'mean'])
         .rename(columns={'sum': 'n_win', 'mean': 'win_pct'}))
    l = (g.lose.agg(['sum', 'mean'])
         .rename(columns={'sum': 'n_lose', 'mean': 'lose_pct'}))
    d = (g.draw.agg(['sum', 'mean'])
         .rename(columns={'sum': 'n_draw', 'mean': 'draw_pct'}))

    res = pd.concat([w, l, d], axis=1)
    return res
```

```
[6]: results = home_away_results(games)
     results.head(6)
```

```
[6]:
```

		n_win	win_pct	n_lose	lose_pct	n_draw	draw_pct
team	is_home						
Atalanta	Away	52	0.547368	16	0.168421	27	0.284211
	Home	56	0.589474	23	0.242105	16	0.168421

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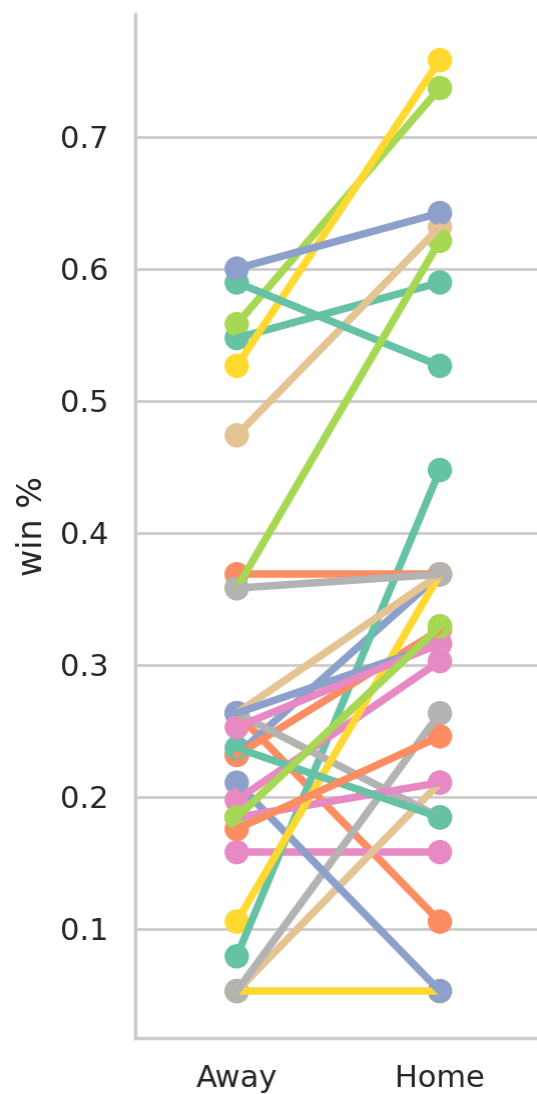
(continued from previous page)

Benevento	Away	10	0.263158	18	0.473684	10	0.263158
	Home	4	0.105263	20	0.526316	14	0.368421
Bologna	Away	22	0.231579	48	0.505263	25	0.263158
	Home	35	0.368421	29	0.305263	31	0.326316

The overall picture shows most teams have a clear advantage at home:

```
[7]: g = sns.FacetGrid(results.reset_index(), hue='team', palette='Set2', height=6, aspect=.5)
g.map(sns.pointplot, 'is_home', 'win_pct', order=["Away", "Home"])
g.set_axis_labels('', 'win %');
```

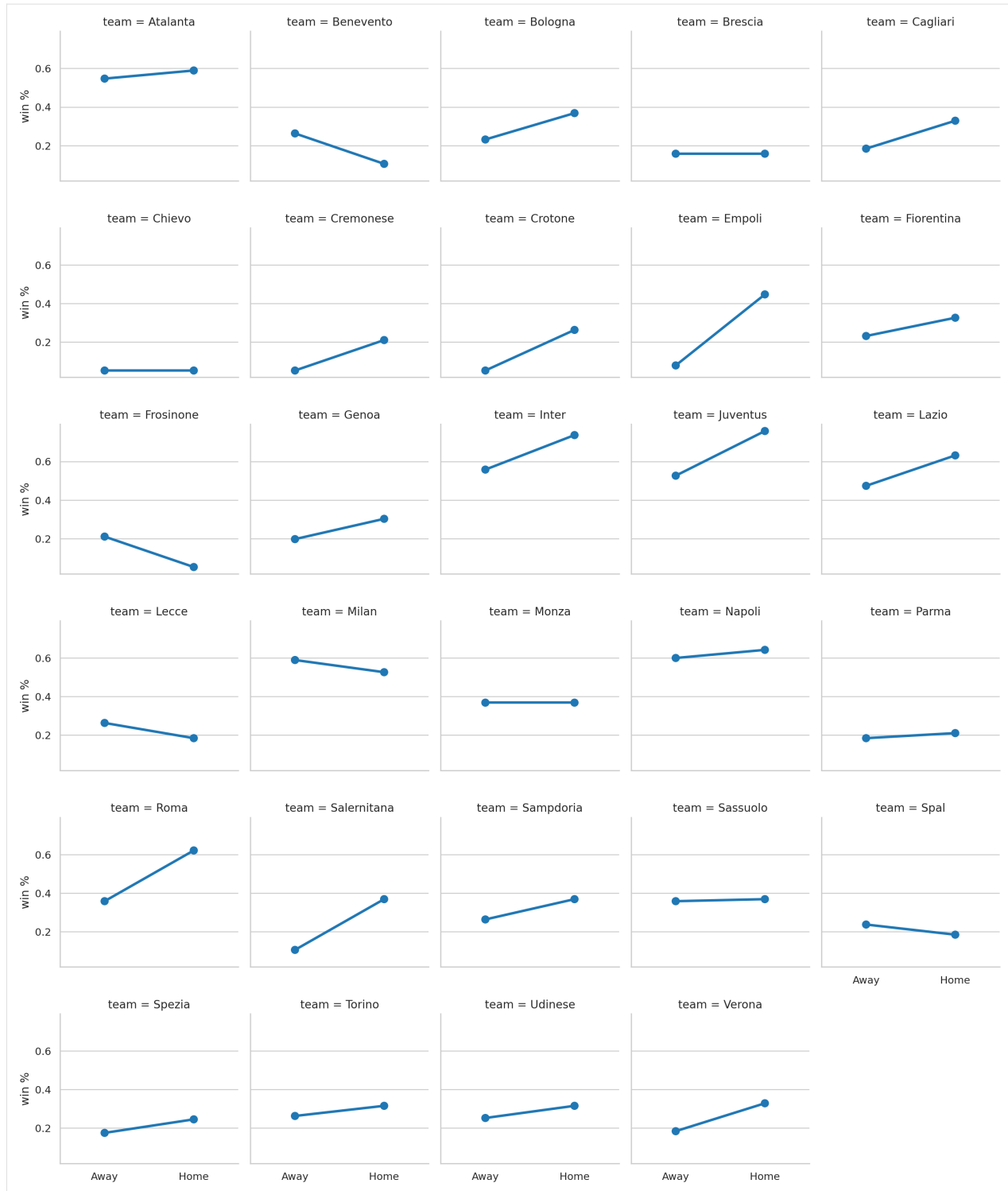
```
/cw/dtaijupiter/NoCsBack/dtai/pieterr/Projects/soccerdata/.venv/lib/python3.11/site-
packages/seaborn/axisgrid.py:118: UserWarning: The figure layout has changed to tight
self._figure.tight_layout(*args, **kwargs)
```



But there are a few exceptions.


```
[8]: g = sns.FacetGrid(results.reset_index(), col='team', col_wrap=5)
      g.map(sns.pointplot, 'is_home', 'win_pct', order=["Away", "Home"])
      g.set_axis_labels('', 'win %');

/cw/dtaijupyter/NoCsBack/dtai/pieterr/Projects/soccerdata/.venv/lib/python3.11/site-
↪packages/seaborn/axisgrid.py:118: UserWarning: The figure layout has changed to tight
      self._figure.tight_layout(*args, **kwargs)
```



doc/examples/MatchHistory - Home advantage.ipynb ends here.

API REFERENCE

This part of the documentation covers all the interfaces of the implemented data scrapers.

5.1 Club Elo

class `soccerdata.ClubElo`(*proxy=None, no_cache=False, no_store=False, data_dir=PosixPath('/home/docs/soccerdata/data/ClubElo')*)

Provides `pd.DataFrames` from CSV API at <http://api.clubelo.com>.

Data will be downloaded as necessary and cached locally in `~/soccerdata/data/ClubElo`.

Since the source does not provide league names, this class will not filter by league. League names will be inserted from the other sources where available. Leagues that are only covered by clubelo.com will have NaN values.

Parameters

- **proxy** (*'tor' or dict or list(dict) or callable, optional*) –

Use a proxy to hide your IP address. Valid options are:

- `'tor'`: Uses the Tor network. Tor should be running in the background on port 9050.
- `dict`: A dictionary with the proxy to use. The dict should be a mapping of supported protocols to proxy addresses. For example:

```
{
    'http': 'http://10.10.1.10:3128',
    'https': 'http://10.10.1.10:1080',
}
```

- `list(dict)`: A list of proxies to choose from. A different proxy will be selected from this list after failed requests, allowing rotating proxies.
- `callable`: A function that returns a valid proxy. This function will be called after failed requests, allowing rotating proxies.

- **no_cache** (*bool*) – If True, will not use cached data.
- **no_store** (*bool*) – If True, will not store downloaded data.
- **data_dir** (*Path*) – Path to directory where data will be cached.

read_by_date(*date=None*)

Retrieve ELO scores for all teams at specified date.

Elo scores are available as early as 1939. Values before 1960 should be considered provisional.

Parameters

date (*datetime object or string like 'YYYY-MM-DD'*) – Date for which to retrieve ELO scores. If no date is specified, get today's scores.

Raises

- **TypeError** – If date is not a date string or datetime object.
- **ValueError** – If data is an invalid date string.

Return type

pd.DataFrame

read_team_history(*team, max_age=1*)

Retrieve full ELO history for one club.

For the exact spelling of a club's name, check the result of [read_by_date\(\)](#) or [clubelo.com](#). You can also use alternative team names specified in *teamname_replacements.json*. Values before 1960 should be considered provisional.

Parameters

- **team** (*str*) – The club's name.
- **max_age** (*int for age in days, or timedelta object*) – The max. age of locally cached file before re-download.

Raises

- **TypeError** – If max_age is not an integer or timedelta object.
- **ValueError** – If no ratings for the given team are available.

Return type

pd.DataFrame

classmethod available_leagues()

Return a list of league IDs available for this source.

Return type

List[str]

get(*url, filepath=None, max_age=None, no_cache=False, var=None*)

Load data from *url*.

By default, the source of *url* is downloaded and saved to *filepath*. If *filepath* exists, the *url* is not visited and the cached data is returned.

Parameters

- **url** (*str*) – URL to download.
- **filepath** (*Path, optional*) – Path to save downloaded file. If None, downloaded data is not cached.
- **max_age** (*int for age in days, or timedelta object*) – The max. age of locally cached file before re-download.
- **no_cache** (*bool*) – If True, will not use cached data. Overrides the class property.
- **var** (*str or list of str, optional*) – Return a JavaScript variable instead of the page source.

Raises

TypeError – If max_age is not an integer or timedelta object.

Returns

File-like object of downloaded data.

Return type

io.BufferedIOBase

property leagues: List[str]

Return a list of selected leagues.

property seasons: List[str]

Return a list of selected seasons.

5.2 ESPN

class soccerdata.ESPN(*leagues=None, seasons=None, proxy=None, no_cache=False, no_store=False, data_dir=PosixPath('/home/docs/soccerdata/data/ESPN')*)

Provides pd.DataFrames from JSON api available at <http://site.api.espn.com>.

Data will be downloaded as necessary and cached locally in ~/soccerdata/data/ESPN.

Parameters

- **leagues** (*string or iterable, optional*) – IDs of leagues to include.
- **seasons** (*string, int or list, optional*) – Seasons to include. Supports multiple formats. Examples: '16-17'; 2016; '2016-17'; [14, 15, 16]
- **proxy** (*'tor' or dict or list(dict) or callable, optional*) –

Use a proxy to hide your IP address. Valid options are:

- "tor": Uses the Tor network. Tor should be running in the background on port 9050.
- dict: A dictionary with the proxy to use. The dict should be a mapping of supported protocols to proxy addresses. For example:

```
{
    'http': 'http://10.10.1.10:3128',
    'https': 'http://10.10.1.10:1080',
}
```

- list(dict): A list of proxies to choose from. A different proxy will be selected from this list after failed requests, allowing rotating proxies.
- callable: A function that returns a valid proxy. This function will be called after failed requests, allowing rotating proxies.

- **no_cache** (*bool*) – If True, will not use cached data.
- **no_store** (*bool*) – If True, will not store downloaded data.
- **data_dir** (*Path*) – Path to directory where data will be cached.

property seasons: List[str]

Return a list of selected seasons.

read_schedule(*force_cache=False*)

Retrieve the game schedule for the selected leagues and seasons.

Parameters

force_cache (*bool*) – By default no cached data is used for the current season. If True, will force the use of cached data anyway.

Return type

pd.DataFrame

read_matchsheet(*match_id=None*)

Retrieve match sheets for the selected leagues and seasons.

Parameters

match_id (*int or list of int, optional*) – Retrieve the match sheet for a specific game.

Raises

ValueError – If no games with the given IDs were found for the selected seasons and leagues.

Return type

pd.DataFrame.

read_lineup(*match_id=None*)

Retrieve lineups for the selected leagues and seasons.

Parameters

match_id (*int or list of int, optional*) – Retrieve the lineup for a specific game.

Raises

ValueError – If no games with the given IDs were found for the selected seasons and leagues.

Return type

pd.DataFrame.

classmethod available_leagues()

Return a list of league IDs available for this source.

Return type

List[str]

get(*url, filepath=None, max_age=None, no_cache=False, var=None*)

Load data from *url*.

By default, the source of *url* is downloaded and saved to *filepath*. If *filepath* exists, the *url* is not visited and the cached data is returned.

Parameters

- **url** (*str*) – URL to download.
- **filepath** (*Path, optional*) – Path to save downloaded file. If None, downloaded data is not cached.
- **max_age** (*int for age in days, or timedelta object*) – The max. age of locally cached file before re-download.
- **no_cache** (*bool*) – If True, will not use cached data. Overrides the class property.
- **var** (*str or list of str, optional*) – Return a JavaScript variable instead of the page source.

Raises

TypeError – If *max_age* is not an integer or timedelta object.

Returns

File-like object of downloaded data.

Return type

io.BufferedIOBase

property leagues: List[str]

Return a list of selected leagues.

5.3 FBref

class soccerdata.FBref(*leagues=None, seasons=None, proxy=None, no_cache=False, no_store=False, data_dir=PosixPath('/home/docs/soccerdata/data/FBref')*)

Provides pd.DataFrames from data at <http://fbref.com>.

Data will be downloaded as necessary and cached locally in ~/soccerdata/data/FBref.

Parameters

- **leagues** (*string or iterable, optional*) – IDs of leagues to include. For efficiently reading data from the Top-5 European leagues, use “Big 5 European Leagues Combined”.
- **seasons** (*string, int or list, optional*) – Seasons to include. Supports multiple formats. Examples: ‘16-17’; 2016; ‘2016-17’; [14, 15, 16]
- **proxy** (*‘tor’ or dict or list(dict) or callable, optional*) –

Use a proxy to hide your IP address. Valid options are:

- “tor”: Uses the Tor network. Tor should be running in the background on port 9050.
- dict: A dictionary with the proxy to use. The dict should be a mapping of supported protocols to proxy addresses. For example:

```
{
    'http': 'http://10.10.1.10:3128',
    'https': 'http://10.10.1.10:1080',
}
```

- list(dict): A list of proxies to choose from. A different proxy will be selected from this list after failed requests, allowing rotating proxies.
- callable: A function that returns a valid proxy. This function will be called after failed requests, allowing rotating proxies.
- **no_cache** (*bool*) – If True, will not use cached data.
- **no_store** (*bool*) – If True, will not store downloaded data.
- **data_dir** (*Path*) – Path to directory where data will be cached.

read_leagues(*split_up_big5=False*)

Retrieve selected leagues from the datasource.

Parameters

split_up_big5 (*bool*) – If True, it will load the “Big 5 European Leagues Combined” instead of each league individually.

Return type

pd.DataFrame

read_seasons(*split_up_big5=False*)

Retrieve the selected seasons for the selected leagues.

Parameters

split_up_big5 (*bool*) – If True, it will load the “Big 5 European Leagues Combined” instead of each league individually.

Return type

pd.DataFrame

read_team_season_stats(*stat_type='standard', opponent_stats=False*)

Retrieve aggregated season stats for all teams in the selected leagues and seasons.

The following stat types are available:

- ‘standard’
- ‘keeper’
- ‘keeper_adv’
- ‘shooting’
- ‘passing’
- ‘passing_types’
- ‘goal_shot_creation’
- ‘defense’
- ‘possession’
- ‘playing_time’
- ‘misc’

Parameters

- **stat_type** (*str*) – Type of stats to retrieve.
- **opponent_stats** (*bool*) – If True, will retrieve opponent stats.

Raises

ValueError – If *stat_type* is not valid.

Return type

pd.DataFrame

read_team_match_stats(*stat_type='schedule', opponent_stats=False, team=None, force_cache=False*)

Retrieve the match logs for all teams in the selected leagues and seasons.

The following stat types are available:

- ‘schedule’
- ‘keeper’
- ‘shooting’
- ‘passing’
- ‘passing_types’
- ‘goal_shot_creation’
- ‘defense’

- 'possession'
- 'misc'

Parameters

- **stat_type** (*str*) – Type of stats to retrieve.
- **opponent_stats** (*bool*) – If True, will retrieve opponent stats.
- **team** (*str or list of str, optional*) – Team(s) to retrieve. If None, will retrieve all teams.
- **force_cache** (*bool*) – By default no cached data is used for the current season. If True, will force the use of cached data anyway.

Raises

ValueError – If stat_type is not valid.

Return type

pd.DataFrame

read_player_season_stats(*stat_type='standard'*)

Retrieve players from the datasource for the selected leagues and seasons.

The following stat types are available:

- 'standard'
- 'shooting'
- 'passing'
- 'passing_types'
- 'goal_shot_creation'
- 'defense'
- 'possession'
- 'playing_time'
- 'misc'
- 'keeper'
- 'keeper_adv'

Parameters

stat_type (*str*) – Type of stats to retrieve.

Raises

TypeError – If stat_type is not valid.

Return type

pd.DataFrame

read_schedule(*force_cache=False*)

Retrieve the game schedule for the selected leagues and seasons.

Parameters

force_cache (*bool*) – By default no cached data is used for the current season. If True, will force the use of cached data anyway.

Return type

pd.DataFrame

read_player_match_stats(*stat_type='summary', match_id=None, force_cache=False*)

Retrieve the match stats for the selected leagues and seasons.

The following stat types are available:

- 'summary'
- 'keepers'
- 'passing'
- 'passing_types'
- 'defense'
- 'possession'
- 'misc'

Parameters

- **stat_type** (*str*) – Type of stats to retrieve.
- **match_id** (*int or list of int, optional*) – Retrieve the event stream for a specific game.
- **force_cache** (*bool*) – By default no cached data is used to scrape the list of available games for the current season. If True, will force the use of cached data anyway.

Raises

- **ValueError** – If no games with the given IDs were found for the selected seasons and leagues.
- **TypeError** – If *stat_type* is not valid.

Return type

pd.DataFrame

read_lineup(*match_id=None, force_cache=False*)

Retrieve lineups for the selected leagues and seasons.

Parameters

- **match_id** (*int or list of int, optional*) – Retrieve the lineup for a specific game.
- **force_cache** (*bool*) – By default no cached data is used to scrape the list of available games for the current season. If True, will force the use of cached data anyway.

Raises**ValueError** – If no games with the given IDs were found for the selected seasons and leagues.**Return type**

pd.DataFrame.

read_events(*match_id=None, force_cache=False*)

Retrieve match events for the selected seasons or selected matches.

The data returned includes the timing of goals, cards and substitutions. Also includes the players who are involved in the event.

Parameters

- **match_id** (*int or list of int, optional*) – Retrieve the events for a specific game.
- **force_cache** (*bool*) – By default no cached data is used to scrape the list of available games for the current season. If True, will force the use of cached data anyway.

Raises

ValueError – If no games with the given IDs were found for the selected seasons and leagues.

Return type

pd.DataFrame.

read_shot_events(*match_id=None, force_cache=False*)

Retrieve shooting data for the selected seasons or selected matches.

The data returned includes who took the shot, when, with which body part and from how far away. Additionally, the player creating the chance and also the creation before this are included in the data.

Parameters

- **match_id**(*int or list of int, optional*) – Retrieve the shots for a specific game.
- **force_cache** (*bool*) – By default no cached data is used to scrape the list of available games for the current season. If True, will force the use of cached data anyway.

Raises

ValueError – If no games with the given IDs were found for the selected seasons and leagues.

Return type

pd.DataFrame.

classmethod available_leagues()

Return a list of league IDs available for this source.

Return type

List[str]

5.4 FiveThirtyEight

```
class soccerdata.FiveThirtyEight(leagues=None, seasons=None, proxy=None, no_cache=False,  
                                no_store=False,  
                                data_dir=PosixPath('/home/docs/soccerdata/data/FiveThirtyEight'))
```

Provides pd.DataFrames from FiveThirtyEight’s “Club Soccer Predictions” project.

Data will be downloaded as necessary and cached locally in ~/soccerdata/data/FiveThirtyEight.

Original project and background info: <https://projects.fivethirtyeight.com/soccer-predictions/> and <https://fivethirtyeight.com/features/how-our-club-soccer-projections-work/>

Parameters

- **leagues** (*string or iterable, optional*) – IDs of leagues to include.
- **seasons** (*string, int or list, optional*) – Seasons to include. Supports multiple formats. Examples: ‘16-17’; 2016; ‘2016-17’; [14, 15, 16]
- **proxy** (*‘tor’ or dict or list(dict) or callable, optional*) –

Use a proxy to hide your IP address. Valid options are:

- “tor”: Uses the Tor network. Tor should be running in the background on port 9050.
- dict: A dictionary with the proxy to use. The dict should be a mapping of supported protocols to proxy addresses. For example:

```
{  
    'http': 'http://10.10.1.10:3128',  
    'https': 'http://10.10.1.10:1080',  
}
```

- list(dict): A list of proxies to choose from. A different proxy will be selected from this list after failed requests, allowing rotating proxies.
 - callable: A function that returns a valid proxy. This function will be called after failed requests, allowing rotating proxies.
- **no_cache** (*bool*) – If True, will not use cached data.
 - **no_store** (*bool*) – If True, will not store downloaded data.
 - **data_dir** (*Path*) – Path to directory where data will be cached.

read_games()

Retrieve all games for the selected leagues.

Return type

pd.DataFrame

read_forecasts()

Retrieve the forecasted results for the selected leagues.

Return type

pd.DataFrame

read_clinches()

Retrieve clinches for the selected leagues.

Return type

pd.DataFrame

classmethod available_leagues()

Return a list of league IDs available for this source.

Return type

List[str]

5.5 FotMob

```
class soccerdata.FotMob(leagues=None, seasons=None, proxy=None, no_cache=False, no_store=False,  
                        data_dir=PosixPath('/home/docs/soccerdata/data/FotMob'))
```

Provides pd.DataFrames from data available at <http://www.fotmob.com>.

Data will be downloaded as necessary and cached locally in ~/soccerdata/data/FotMob.

Parameters

- **leagues** (*string or iterable, optional*) – IDs of Leagues to include.
- **seasons** (*string, int or list, optional*) – Seasons to include. Supports multiple formats. Examples: ‘16-17’; 2016; ‘2016-17’; [14, 15, 16]

- **proxy** (*'tor' or dict or list(dict) or callable, optional*) –

Use a proxy to hide your IP address. Valid options are:

- **'tor'**: Uses the Tor network. Tor should be running in the background on port 9050.
- **dict**: A dictionary with the proxy to use. The dict should be a mapping of supported protocols to proxy addresses. For example:

```
{
    'http': 'http://10.10.1.10:3128',
    'https': 'http://10.10.1.10:1080',
}
```

- **list(dict)**: A list of proxies to choose from. A different proxy will be selected from this list after failed requests, allowing rotating proxies.
- **callable**: A function that returns a valid proxy. This function will be called after failed requests, allowing rotating proxies.

- **no_cache** (*bool*) – If True, will not use cached data.
- **no_store** (*bool*) – If True, will not store downloaded data.
- **data_dir** (*Path*) – Path to directory where data will be cached.

read_leagues()

Retrieve the selected leagues from the datasource.

Return type

pd.DataFrame

read_seasons()

Retrieve the selected seasons for the selected leagues.

Return type

pd.DataFrame

read_league_table(force_cache=False)

Retrieve the league table for the selected leagues.

Parameters

force_cache (*bool*) – By default no cached data is used for the current season. If True, will force the use of cached data anyway.

Return type

pd.DataFrame

read_schedule(force_cache=False)

Retrieve the game schedule for the selected leagues and seasons.

Parameters

force_cache (*bool*) – By default no cached data is used for the current season. If True, will force the use of cached data anyway.

Return type

pd.DataFrame

read_team_match_stats(stat_type='Top stats', opponent_stats=True, team=None, force_cache=False)

Retrieve the match stats for the selected leagues and seasons.

The following stat types are available:

- 'Top stats'
- 'Shots'
- 'Expected goals (xG)'
- 'Passes'
- 'Defence'
- 'Duels'
- 'Discipline'

Parameters

- **stat_type** (*str*) – Type of stats to retrieve.
- **opponent_stats** (*bool*) – If True, will retrieve opponent stats.
- **team** (*str or list of str, optional*) – Team(s) to retrieve. If None, will retrieve all teams.
- **force_cache** (*bool*) – By default no cached data is used to scrape the list of available games for the current season. If True, will force the use of cached data anyway.

Raises

- **TypeError** – If `stat_type` is not valid.
- **ValueError** – If no games with the given IDs were found for the selected seasons and leagues.

Return type

`pd.DataFrame`

`classmethod available_leagues()`

Return a list of league IDs available for this source.

Return type

`List[str]`

5.6 MatchHistory

```
class soccerdata.MatchHistory(leagues=None, seasons=None, proxy=None, no_cache=False,  
                               no_store=False,  
                               data_dir=PosixPath('/home/docs/soccerdata/data/MatchHistory'))
```

Provides `pd.DataFrames` from CSV files available at <http://www.football-data.co.uk/data.php>.

Data will be downloaded as necessary and cached locally in `~/soccerdata/data/MatchHistory`.

Parameters

- **leagues** (*string or iterable*) – IDs of leagues to include.
- **seasons** (*string, int or list*) – Seasons to include. Supports multiple formats. Examples: '16-17'; 2016; '2016-17'; [14, 15, 16]
- **proxy** (*'tor' or dict or list(dict) or callable, optional*) –

Use a proxy to hide your IP address. Valid options are:

- "tor": Uses the Tor network. Tor should be running in the background on port 9050.

- **dict**: A dictionary with the proxy to use. The dict should be a mapping of supported protocols to proxy addresses. For example:

```
{
    'http': 'http://10.10.1.10:3128',
    'https': 'http://10.10.1.10:1080',
}
```

- **list(dict)**: A list of proxies to choose from. A different proxy will be selected from this list after failed requests, allowing rotating proxies.
- **callable**: A function that returns a valid proxy. This function will be called after failed requests, allowing rotating proxies.
- **no_cache** (*bool*) – If True, will not use cached data.
- **no_store** (*bool*) – If True, will not store downloaded data.
- **data_dir** (*Path, optional*) – Path to directory where data will be cached.

property seasons: List[str]

Return a list of selected seasons.

read_games()

Retrieve game history for the selected leagues and seasons.

Column names are explained here: <http://www.football-data.co.uk/notes.txt>

Return type

pd.DataFrame

classmethod available_leagues()

Return a list of league IDs available for this source.

Return type

List[str]

get(url, filepath=None, max_age=None, no_cache=False, var=None)

Load data from *url*.

By default, the source of *url* is downloaded and saved to *filepath*. If *filepath* exists, the *url* is not visited and the cached data is returned.

Parameters

- **url** (*str*) – URL to download.
- **filepath** (*Path, optional*) – Path to save downloaded file. If None, downloaded data is not cached.
- **max_age** (*int for age in days, or timedelta object*) – The max. age of locally cached file before re-download.
- **no_cache** (*bool*) – If True, will not use cached data. Overrides the class property.
- **var** (*str or list of str, optional*) – Return a JavaScript variable instead of the page source.

Raises

TypeError – If *max_age* is not an integer or *timedelta* object.

Returns

File-like object of downloaded data.

Return type

io.BufferedIOBase

property leagues: List[str]

Return a list of selected leagues.

5.7 Sofascore

```
class soccerdata.Sofascore(leagues=None, seasons=None, proxy=None, no_cache=False, no_store=False,  
                           data_dir=PosixPath('/home/docs/soccerdata/data/Sofascore'))
```

Provides pd.DataFrames from data available at <http://www.sofascore.com>.

Data will be downloaded as necessary and cached locally in ~/soccerdata/data/Sofascore.

Parameters

- **leagues** (*string or iterable, optional*) – IDs of Leagues to include.
- **seasons** (*string, int or list, optional*) – Seasons to include. Supports multiple formats. Examples: '16-17'; 2016; '2016-17'; [14, 15, 16]
- **proxy** (*'tor' or dict or list(dict) or callable, optional*) –

Use a proxy to hide your IP address. Valid options are:

- 'tor': Uses the Tor network. Tor should be running in the background on port 9050.
- dict: A dictionary with the proxy to use. The dict should be a mapping of supported protocols to proxy addresses. For example:

```
{  
    'http': 'http://10.10.1.10:3128',  
    'https': 'http://10.10.1.10:1080',  
}
```

- list(dict): A list of proxies to choose from. A different proxy will be selected from this list after failed requests, allowing rotating proxies.
 - callable: A function that returns a valid proxy. This function will be called after failed requests, allowing rotating proxies.
- **no_cache** (*bool*) – If True, will not use cached data.
 - **no_store** (*bool*) – If True, will not store downloaded data.
 - **data_dir** (*Path*) – Path to directory where data will be cached.

read_leagues()

Retrieve the selected leagues from the datasource.

Return type

pd.DataFrame

read_seasons()

Retrieve the selected seasons for the selected leagues.

Return type

pd.DataFrame

read_league_table(*force_cache=False*)

Retrieve the league table for the selected leagues.

Parameters

force_cache (*bool*) – By default no cached data is used for the current season. If True, will force the use of cached data anyway.

Return type

pd.DataFrame

read_schedule(*force_cache=False*)

Retrieve the game schedule for the selected leagues and seasons.

Parameters

force_cache (*bool*) – By default no cached data is used for the current season. If True, will force the use of cached data anyway.

Return type

pd.DataFrame

5.8 SoFIFA

class soccerdata.**SoFIFA**(*leagues=None, versions='latest', proxy=None, no_cache=False, no_store=False, data_dir=PosixPath('/home/docs/soccerdata/data/SoFIFA')*)

Provides pd.DataFrames from data at <http://sofifa.com>.

Data will be downloaded as necessary and cached locally in ~/soccerdata/data/SoFIFA.

Parameters

- **leagues** (*string or iterable, optional*) – IDs of leagues to include.
- **versions** (*string, int or list of int, optional*) – FIFA releases to include. Should be specified by their ID used in the URL (e.g., 230034). Alternatively, the string “all” can be used to include all versions and “latest” to include the latest version only. Defaults to “latest”.
- **proxy** (*'tor' or dict or list(dict) or callable, optional*) –

Use a proxy to hide your IP address. Valid options are:

- “tor”: Uses the Tor network. Tor should be running in the background on port 9050.
- dict: A dictionary with the proxy to use. The dict should be a mapping of supported protocols to proxy addresses. For example:

```
{
    'http': 'http://10.10.1.10:3128',
    'https': 'http://10.10.1.10:1080',
}
```

- list(dict): A list of proxies to choose from. A different proxy will be selected from this list after failed requests, allowing rotating proxies.
- callable: A function that returns a valid proxy. This function will be called after failed requests, allowing rotating proxies.
- **no_cache** (*bool*) – If True, will not use cached data.
- **no_store** (*bool*) – If True, will not store downloaded data.

- **data_dir** (*Path*) – Path to directory where data will be cached.

read_leagues()

Retrieve selected leagues from the datasource.

Return type

pd.DataFrame

read_versions(max_age=1)

Retrieve available FIFA releases and rating updates.

Parameters

max_age (*int for age in days, or timedelta object*) – The max. age of the locally cached release history before a new version is downloaded.

Raises

TypeError – If max_age is not an integer or timedelta object.

Return type

pd.DataFrame

read_teams()

Retrieve all teams for the selected leagues.

Return type

pd.DataFrame

read_players(team=None)

Retrieve all players for the selected leagues.

Parameters

team (*str or list of str, optional*) – Team(s) to retrieve. If None, will retrieve all teams.

Raises

ValueError – If no data is found for the given team(s) in the selected leagues.

Return type

pd.DataFrame

classmethod available_leagues()

Return a list of league IDs available for this source.

Return type

List[str]

read_team_ratings()

Retrieve ratings for all teams in the selected leagues.

Return type

pd.DataFrame

read_player_ratings(team=None, player=None)

Retrieve ratings for players.

Parameters

- **team** (*str or list of str, optional*) – Team(s) to retrieve. If None, will retrieve all teams.
- **player** (*int or list of int, optional*) – Player(s) to retrieve. If None, will retrieve all players.

Return type
pd.DataFrame

5.9 Understat

class soccerdata.**Understat**(*leagues=None, seasons=None, proxy=None, no_cache=False, no_store=False, data_dir=PosixPath('/home/docs/soccerdata/data/Understat')*)

Provides pd.DataFrames from data at <https://understat.com>.

Data will be downloaded as necessary and cached locally in ~/soccerdata/data/Understat.

Parameters

- **proxy** (*'tor' or dict or list(dict) or callable, optional*) –

Use a proxy to hide your IP address. Valid options are:

- "tor": Uses the Tor network. Tor should be running in the background on port 9050.
- dict: A dictionary with the proxy to use. The dict should be a mapping of supported protocols to proxy addresses. For example:

```
{
    'http': 'http://10.10.1.10:3128',
    'https': 'http://10.10.1.10:1080',
}
```

- list(dict): A list of proxies to choose from. A different proxy will be selected from this list after failed requests, allowing rotating proxies.
- callable: A function that returns a valid proxy. This function will be called after failed requests, allowing rotating proxies.

- **no_cache** (*bool*) – If True, will not use cached data.
- **no_store** (*bool*) – If True, will not store downloaded data.
- **data_dir** (*Path*) – Path to directory where data will be cached.
- **leagues** (*str | List[str] | None*)
- **seasons** (*str | int | Iterable[str | int] | None*)

property seasons: List[str]

Return a list of selected seasons.

read_leagues()

Retrieve the selected leagues from the datasource.

Return type
pd.DataFrame

read_seasons()

Retrieve the selected seasons from the datasource.

Return type
pd.DataFrame

read_schedule(*include_matches_without_data=True, force_cache=False*)

Retrieve the matches for the selected leagues and seasons.

Parameters

- **include_matches_without_data** (*bool*) – By default matches with and without data are returned. If False, will only return matches with data.
- **force_cache** (*bool*) – By default no cached data is used for the current season. If True, will force the use of cached data anyway.

Return type

pd.DataFrame

read_team_match_stats(*force_cache=False*)

Retrieve the team match stats for the selected leagues and seasons.

Parameters

force_cache (*bool*) – By default no cached data is used for the current season. If True, will force the use of cached data anyway.

Return type

pd.DataFrame

read_player_season_stats(*force_cache=False*)

Retrieve the player season stats for the selected leagues and seasons.

Parameters

force_cache (*bool*) – By default no cached data is used for the current season. If True, will force the use of cached data anyway.

Return type

pd.DataFrame

read_player_match_stats(*match_id=None*)

Retrieve the player match stats for the selected leagues and seasons.

Parameters

match_id (*int or list of int, optional*) – Retrieve the player match stats for a specific match.

Raises

ValueError – If the given match_id could not be found in the selected seasons.

Return type

pd.DataFrame

read_shot_events(*match_id=None*)

Retrieve the shot events for the selected matches or the selected leagues and seasons.

Parameters

match_id (*int or list of int, optional*) – Retrieve the shot events for a specific match.

Raises

ValueError – If the given match_id could not be found in the selected seasons.

Return type

pd.DataFrame

classmethod `available_leagues()`

Return a list of league IDs available for this source.

Return type

`List[str]`

get(*url*, *filepath=None*, *max_age=None*, *no_cache=False*, *var=None*)

Load data from *url*.

By default, the source of *url* is downloaded and saved to *filepath*. If *filepath* exists, the *url* is not visited and the cached data is returned.

Parameters

- **url** (*str*) – URL to download.
- **filepath** (*Path*, *optional*) – Path to save downloaded file. If *None*, downloaded data is not cached.
- **max_age** (*int for age in days, or timedelta object*) – The max. age of locally cached file before re-download.
- **no_cache** (*bool*) – If *True*, will not use cached data. Overrides the class property.
- **var** (*str or list of str, optional*) – Return a JavaScript variable instead of the page source.

Raises

TypeError – If *max_age* is not an integer or *timedelta* object.

Returns

File-like object of downloaded data.

Return type

`io.BufferedReader`

property `leagues: List[str]`

Return a list of selected leagues.

5.10 WhoScored

```
class soccerdata.WhoScored(leagues=None, seasons=None, proxy=None, no_cache=False, no_store=False,
                             data_dir=PosixPath('/home/docs/soccerdata/data/WhoScored'),
                             path_to_browser=None, headless=False)
```

Provides `pd.DataFrames` from data available at <http://whoscored.com>.

Data will be downloaded as necessary and cached locally in `~/soccerdata/data/WhoScored`.

Parameters

- **leagues** (*string or iterable, optional*) – IDs of Leagues to include.
- **seasons** (*string, int or list, optional*) – Seasons to include. Supports multiple formats. Examples: '16-17'; 2016; '2016-17'; [14, 15, 16]
- **proxy** (*'tor' or dict or list(dict) or callable, optional*) –

Use a proxy to hide your IP address. Valid options are:

- "tor": Uses the Tor network. Tor should be running in the background on port 9050.

- **dict**: A dictionary with the proxy to use. The dict should be a mapping of supported protocols to proxy addresses. For example:

```
{  
    'http': 'http://10.10.1.10:3128',  
    'https': 'http://10.10.1.10:1080',  
}
```

- **list(dict)**: A list of proxies to choose from. A different proxy will be selected from this list after failed requests, allowing rotating proxies.
- **callable**: A function that returns a valid proxy. This function will be called after failed requests, allowing rotating proxies.
- **no_cache** (*bool*) – If True, will not use cached data.
- **no_store** (*bool*) – If True, will not store downloaded data.
- **data_dir** (*Path*) – Path to directory where data will be cached.
- **path_to_browser** (*Path, optional*) – Path to the Chrome executable.
- **headless** (*bool, default: True*) – If True, will run Chrome in headless mode. Setting this to False might help to avoid getting blocked. Only supported for Selenium <4.13.

read_schedule(*force_cache=False*)

Retrieve the game schedule for the selected leagues and seasons.

Parameters

force_cache (*bool*) – By default no cached data is used for the current season. If True, will force the use of cached data anyway.

Return type

pd.DataFrame

read_missing_players(*match_id=None, force_cache=False*)

Retrieve a list of injured and suspended players ahead of each game.

Parameters

- **match_id** (*int or list of int, optional*) – Retrieve the missing players for a specific game.
- **force_cache** (*bool*) – By default no cached data is used to scrapre the list of available games for the current season. If True, will force the use of cached data anyway.

Raises

ValueError – If the given match_id could not be found in the selected seasons.

Return type

pd.DataFrame

read_events(*match_id=None, force_cache=False, live=False, output_fmt='events'*)

Retrieve the the event data for each game in the selected leagues and seasons.

Parameters

- **match_id** (*int or list of int, optional*) – Retrieve the event stream for a specific game.
- **force_cache** (*bool*) – By default no cached data is used to scrape the list of available games for the current season. If True, will force the use of cached data anyway.

- **live** (*bool*) – If True, will not return a cached copy of the event data. This is useful to scrape live data.
- **output_fmt** (*str*, *default*: 'events') –

The output format of the returned data. Possible values are:

- 'events' (default): Returns a dataframe with all events.
- 'raw': Returns the original unformatted WhoScored JSON.
- 'spadl': Returns a dataframe with the SPADL representation of the original events. See <https://socceraction.readthedocs.io/en/latest/documentation/SPADL.html#spadl>
- 'atomic-spadl': Returns a dataframe with the Atomic-SPADL representation of the original events. See <https://socceraction.readthedocs.io/en/latest/documentation/SPADL.html#atomic-spadl>
- 'loader': Returns a `socceraction.data.opta.OptaLoader` instance, which can be used to retrieve the actual data. See <https://socceraction.readthedocs.io/en/latest/modules/generated/socceraction.data.opta.OptaLoader.html#socceraction.data.opta.OptaLoader> # noqa: E501
- None: Doesn't return any data. This is useful to just cache the data without storing the events in memory.

Raises

- **ValueError** – If the given `match_id` could not be found in the selected seasons.
- **ImportError** – If the requested output format is 'spadl', 'atomic-spadl' or 'loader' but the `socceraction` package is not installed.

Return type

See the description of the `output_fmt` parameter.

classmethod `available_leagues()`

Return a list of league IDs available for this source.

Return type

`List[str]`

If you would like to extend the functionality of `soccerdata`, you might also be interested in the following modules:

5.11 Base Readers

The logic for downloading data from the web is implemented in the base classes that are documented here. The base classes are not intended to be used directly but rather to be subclassed by the specific readers which implement the logic to parse the data.

The `BaseRequestsReader` is a wrapper around the `requests` library and is used by scrapers that do not require JavaScript to be executed. The `BaseSeleniumReader` is a wrapper around the `selenium` library and is used by scrapers that require JavaScript to be executed.

```
class soccerdata._common.BaseRequestsReader(leagues=None, proxy=None, no_cache=False,
                                             no_store=False,
                                             data_dir=PosixPath('/home/docs/soccerdata/data'))
```

Base class for readers that use the Python `requests` module.

Parameters

- **leagues** (*str* | *List[str]* | *None*)
- **proxy** (*str* | *Dict[str, str]* | *List[Dict[str, str]]* | *Callable[[], Dict[str, str]]* | *None*)
- **no_cache** (*bool*)
- **no_store** (*bool*)
- **data_dir** (*Path*)

classmethod **available_leagues()**

Return a list of league IDs available for this source.

Return type

List[str]

get(*url*, *filepath=None*, *max_age=None*, *no_cache=False*, *var=None*)

Load data from *url*.

By default, the source of *url* is downloaded and saved to *filepath*. If *filepath* exists, the *url* is not visited and the cached data is returned.

Parameters

- **url** (*str*) – URL to download.
- **filepath** (*Path*, *optional*) – Path to save downloaded file. If *None*, downloaded data is not cached.
- **max_age** (*int for age in days, or timedelta object*) – The max. age of locally cached file before re-download.
- **no_cache** (*bool*) – If *True*, will not use cached data. Overrides the class property.
- **var** (*str or list of str, optional*) – Return a JavaScript variable instead of the page source.

Raises

TypeError – If *max_age* is not an integer or *timedelta* object.

Returns

File-like object of downloaded data.

Return type

io.BufferedIOBase

property **leagues: List[str]**

Return a list of selected leagues.

property **seasons: List[str]**

Return a list of selected seasons.

class **soccerdata._common.BaseSeleniumReader**(*leagues=None*, *proxy=None*, *no_cache=False*,
no_store=False,
data_dir=PosixPath('/home/docs/soccerdata/data'),
path_to_browser=None, *headless=True*)

Base class for readers that use Selenium.

Parameters

- **leagues** (*str* | *List[str]* | *None*)

- **proxy** (*str* | *Dict[str, str]* | *List[Dict[str, str]]* | *Callable[[], Dict[str, str]]* | *None*)
- **no_cache** (*bool*)
- **no_store** (*bool*)
- **data_dir** (*Path*)
- **path_to_browser** (*Path* | *None*)
- **headless** (*bool*)

classmethod available_leagues()

Return a list of league IDs available for this source.

Return type

List[str]

get(*url*, *filepath=None*, *max_age=None*, *no_cache=False*, *var=None*)

Load data from *url*.

By default, the source of *url* is downloaded and saved to *filepath*. If *filepath* exists, the *url* is not visited and the cached data is returned.

Parameters

- **url** (*str*) – URL to download.
- **filepath** (*Path*, *optional*) – Path to save downloaded file. If *None*, downloaded data is not cached.
- **max_age** (*int for age in days, or timedelta object*) – The max. age of locally cached file before re-download.
- **no_cache** (*bool*) – If *True*, will not use cached data. Overrides the class property.
- **var** (*str or list of str, optional*) – Return a JavaScript variable instead of the page source.

Raises

TypeError – If *max_age* is not an integer or *timedelta* object.

Returns

File-like object of downloaded data.

Return type

io.BufferedIOBase

property leagues: List[str]

Return a list of selected leagues.

property seasons: List[str]

Return a list of selected seasons.

5.12 Utilities

`_common.season_code()`

Convert a string or int to a season code like '1718'.

Parameters

season (*str* | *int*)

Return type

str

`_common.make_game_id()`

Return a game id based on date, home and away team.

Parameters

row (*Series*)

Return type

str

`_common.standardize_colnames(cols=None)`

Convert DataFrame column names to snake case.

Parameters

- **df** (*DataFrame*)
- **cols** (*List[str]* | *None*)

Return type

DataFrame

`_common.get_proxy()`

Return a public proxy.

Return type

Dict[str, str]

`_common.check_proxy()`

Check if proxy is working.

Parameters

proxy (*dict*)

Return type

bool

Is web scraping legal?

Even though web scraping is ubiquitous, its legal status remains unclear. That is because whether web scraping is legal will depend on many aspects. It is always best to consult with a lawyer or legal expert to ensure that your web scraping activities are legal and comply with all applicable laws and regulations.

Something doesn't work

1. Have you updated to the newest version of soccerdata?
2. Clear the cache or run your script without caching enabled.
3. Does the log produce any warnings that sound like they might be related? Maybe the data you are looking for is not available or can not be processed correctly.
4. Open an issue on GitHub.

CONTRIBUTOR GUIDE

This document lays out guidelines and advice for contributing to this project. If you're thinking of contributing, please start by reading this document and getting a feel for how contributing to this project works. If you have any questions, feel free to reach out to [Pieter Robberechts](#), the primary maintainer.

The guide is split into sections based on the type of contribution you're thinking of making.

7.1 Bug Reports

Bug reports are hugely important! Before you raise one, though, please check through the [GitHub issues](#), **both open and closed**, to confirm that the bug hasn't been reported before.

When filing an issue, make sure to answer these questions:

- Which Python version are you using?
- Which version of soccerdata are you using?
- What did you do?
- What did you expect to see?
- What did you see instead?

The best way to get your bug fixed is to provide a test case, and/or steps to reproduce the issue.

7.2 Feature Requests

If you believe there is a feature missing, feel free to raise a feature request on the [Issue Tracker](#).

7.3 Documentation Contributions

Documentation improvements are always welcome! The documentation files live in the `docs/` directory of the code-base. They're written in [reStructuredText](#), and use [Sphinx](#) to generate the full suite of documentation.

You do not have to setup a development environment to make small changes to the docs. Instead, you can [edit files directly on GitHub](#) and suggest changes.

When contributing documentation, please do your best to follow the style of the documentation files. This means a soft-limit of 79 characters wide in your text files and a semi-formal, yet friendly and approachable, prose style.

When presenting Python code, use single-quoted strings (`'hello'` instead of `"hello"`).

7.4 Code Contributions

If you intend to contribute code, do not feel the need to sit on your contribution until it is perfectly polished and complete. It helps everyone involved for you to seek feedback as early as you possibly can. Submitting an early, unfinished version of your contribution for feedback can save you from putting a lot of work into a contribution that is not suitable for the project.

7.4.1 Setting up your development environment

You need Python 3.7.1+ and the following tools:

- Poetry
- Nox
- nox-poetry

Install the package with development requirements:

```
$ poetry install
```

You can now run an interactive Python session.

```
$ poetry run python
```

7.4.2 Steps for submitting Code

When contributing code, you'll want to follow this checklist:

1. Fork the repository on GitHub.
2. Run the tests to confirm they all pass on your system. If they don't, you'll need to investigate why they fail. If you're unable to diagnose this yourself, raise it as a bug report.
3. Write tests that demonstrate your bug or feature. Ensure that they fail.
4. Make your change.
5. Run the entire test suite again, confirming that all tests pass *including the ones you just added*.
6. Make sure your code follows the code style discussed below.
7. Send a GitHub Pull Request to the main repository's `master` branch. GitHub Pull Requests are the expected method of code collaboration on this project.

7.4.3 Testing the project

Run the full test suite:

```
$ nox
```

List the available Nox sessions:

```
$ nox --list-sessions
```

You can also run a specific Nox session. For example, invoke the unit test suite like this:

```
$ nox --session=tests
```

Unit tests are located in the `tests` directory, and are written using the `pytest` testing framework.

7.4.4 Code style

The soccerdata codebase uses the [PEP 8](#) code style. In addition, we have a few guidelines:

- Line-length can exceed 79 characters, to 100, when convenient.
- Line-length can exceed 100 characters, when doing otherwise would be *terribly* inconvenient.
- Always use single-quoted strings (e.g. `'#soccer'`), unless a single-quote occurs within the string.

To ensure all code conforms to this format. You can format the code using the pre-commit hooks.

```
$ nox --session=pre-commit
```

Docstrings are to follow the [numpydoc](#) guidelines.

7.4.5 Submitting changes

Open a [pull request](#) to submit changes to this project.

Your pull request needs to meet the following guidelines for acceptance:

- The Nox test suite must pass without errors and warnings.
- Include unit tests.
- If your changes add functionality, update the documentation accordingly.

Feel free to submit early, though. We can always iterate on this.

To run linting and code formatting checks before committing your change, you can install pre-commit as a Git hook by running the following command:

```
$ nox --session=pre-commit -- install
```

It is recommended to open an issue before starting work on anything.

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