
soccerdata

Release 1.8.8

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Feb 01, 2026

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Release v1.8.8. (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, Sofascore, SoFIFA, Understat and WhoScored.

```
import soccerdata as sd

# Create a scraper class instance for the 2020/21 Premier League
fbref = sd.FBref('ENG-Premier League', '2021')

# Fetch data
games = fbref.read_schedule()
team_season_stats = fbref.read_team_season_stats(stat_type="passing")
player_season_stats = fbref.read_player_season_stats(stat_type="standard")
```

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	Arse-nal	29	38.0	53	455	141	31.0	11.9	3.71	0.1	0.33	16.9	23	6	6	53.4	49.0	0.11	-	-
		As-ton Vill	24	38.0	52	518	179	34.6	13.6	4.71	0.09	0.26	16.4	15	5	6	52.9	48.4	0.1	-	-
		Bri	27	38.0	39	476	129	27.1	12.4	3.39	0.07	0.26	16.6	14	6	9	51.6	44.8	0.1	-	-
		Bur-ley	25	38.0	32	383	125	32.6	10.0	3.29	0.08	0.23	16.6	15	3	3	39.9	37.6	0.1	-	-
		Che	27	38.0	56	553	194	35.1	14.4	5.11	0.09	0.24	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()
>>> ['Big 5 European Leagues Combined', 'ENG-Premier League', 'ESP-La Liga', 'FRA-Ligue 1',
    'GER-Bundesliga', 'ITA-Serie A', 'INT-World Cup', 'INT-Women's World Cup']
```

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:

SOCcerDATA_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.

SOCcerDATA_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 `SOCcerDATA_NOSTORE` is the option to use. By default, data is retrieved from the cache.

SOCcerDATA_NOSTORE

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

SOCcerDATA_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.

SOCcerDATA_LOGLEVEL

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

Example:

```
# bash
export SOCcerDATA_DIR = "~/soccerdata"
export SOCcerDATA_NOCACHE = "False"
export SOCcerDATA_NOSTORE = "False"
export SOCcerDATA_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 `SOCCERDATA_DIR/config/teamname_replacements.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 “Tottenham 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 Opta data.

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__)
```

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

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```

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				
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:

- "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',
}
```

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```

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

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

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league	season	game	game_id	\
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	season	game	league_id	
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]:
```

league	season	game	team	is_
ENG-Premier League	2021	2020-07-26 West Ham United-Aston Villa	Aston Villa	False
			West Ham United	True

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	
			West Ham United	


```
↪ capacity \
```

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': '...

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```

                                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

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

                                saves \
league          season game          team
ENG-Premier League 2021   2020-07-26 West Ham United-Aston Villa Aston Villa
                                West Ham United
                                3
                                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

```

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```

↪      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
                                Conor_
↪Hourihane      Center Left Midfielder
                                Douglas_
↪Luiz      Defensive Midfielder
                                Ezri Konsa _
↪      Center Right Defender
                                Frédéric_
↪Guilbert      Right Back

```

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```

↪      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
                                Conor_
↪Hourihane      10
                                Douglas_
↪Luiz          4
                                Ezri Konsa _
↪      5
                                Frédéric_
↪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
                                Conor_
↪Hourihane  start
                                Douglas_
↪Luiz      start
                                Ezri Konsa _
↪      start
                                Frédéric_
↪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
                                Conor_
↪Hourihane      76
                                Douglas_
↪Luiz          end
                                Ezri Konsa _
↪      end
                                Frédéric_
↪Guilbert      76

↪      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 _

```

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↪	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								
							Frédéric		
↪	Guilbert	0.0							
↪	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							
							Conor		

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↪Hourihane	0.0						Douglas	↪
↪Luiz	0.0						Ezri Konsa	↪
↪	0.0						Frédéric	↪
↪Guilbert	0.0							↪
↪ 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						Douglas	↪
↪Luiz	0.0						Ezri Konsa	↪
↪	0.0						Frédéric	↪
↪Guilbert	0.0							↪
↪ shots_on_target \								

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```

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
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_

```

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```

↪Gilbert          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_
↪Gilbert         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_
↪Gilbert         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_
↪Gilbert         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	

			Short		\		
			TotDist	PrgDist	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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				2020-10-24 West Ham-Manchester City	
↪ Matchweek 6					
					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

→ match_report \
league      season team      game
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...

Notes
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>

```

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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[illegible]

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↪	\					↪
↪	TotDist					↪
league	season	game	team	player		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace	Andros	↪
↪Townsend	184					
↪Kouyaté	207				Cheikhou	↪
↪Eze	177				Eberechi	↪
↪McArthur	322				James	↪
↪McCarthy	281				James	↪
↪	\					↪
↪	PrgDist					↪
league	season	game	team	player		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace	Andros	↪
↪Townsend	68					
↪Kouyaté	109				Cheikhou	↪
↪Eze	46				Eberechi	↪
↪McArthur	159				James	↪
↪McCarthy	75				James	↪
↪	Short \					↪
↪	Cmp					↪
league	season	game	team	player		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace	Andros	↪
↪Townsend	8					
↪Kouyaté	3				Cheikhou	↪
↪Eze	2				Eberechi	↪
↪McArthur	2				James	↪
↪McCarthy	4				James	↪
↪	\					↪
↪	Att					↪

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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
↪Eze	2			James
↪McArthur	6			James
↪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						Cheikhou
↪Kouyaté	50.0						Eberechi
↪Eze	100.0						James
↪McArthur	73.3						James
↪McCarthy	60.0						
↪							
↪	Long						
↪							
↪	Cmp						
league	season	game			team		player
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	Crystal Palace	Andros		
↪Townsend	1						Cheikhou
↪Kouyaté	3						Eberechi
↪Eze	2						James
↪McArthur	1						James
↪McCarthy	3						
↪							
↪							
↪	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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	←McArthur	7							James_
	←McCarthy	5							
		\							
	Cmp%								
league		season game				team		player	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton				Crystal Palace		Andros_	
←Townsend	16.7							Cheikhou_	
←Kouyaté	50.0							Eberechi_	
←Eze	66.7							James_	
←McArthur	14.3							James_	
←McCarthy	60.0								
Ast	\								
league		season game				team		player	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton				Crystal Palace		Andros_	
←Townsend	1							Cheikhou_	
←Kouyaté	0							Eberechi_	
←Eze	0							James_	
←McArthur	0							James_	
←McCarthy	0								
xAG	\								
league		season game				team		player	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton				Crystal Palace		Andros_	
←Townsend	0.6							Cheikhou_	
←Kouyaté	0.0							Eberechi_	
←Eze	0.0							James_	
←McArthur	0.4							James_	
←McCarthy	0.0								
xA	\								

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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						Cheikhou	
↪Kouyaté	0						Eberechi	
↪Eze	0						James	
↪McArthur	0						James	
↪McCarthy	0							
↪	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...

```

```

                                notes \
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>

                                game_id
league      season game
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]:                                jersey_number \
league      season game
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

                                player \
league      season game
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

                                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  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/MatchHistory.ipynb

[3]: import soccerdata as sd

2.4 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`.

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```

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.

```

2.4.1 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	

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2.4. Match History

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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		
		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		

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			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								
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								

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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
	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

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			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							
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							

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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			
		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			

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			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				
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				

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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		
		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		

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			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/Sofascore.ipynb

```
[1]: import pandas as pd

pd.set_option("display.max_columns", None)
```

```
[2]: %env SOCCERDATA_LOGLEVEL=ERROR
%env SOCCERDATA_NOCACHE=True
%env SOCCERDATA_NOSTORE=True

env: SOCCERDATA_LOGLEVEL=ERROR
env: SOCCERDATA_NOCACHE=True
env: SOCCERDATA_NOSTORE=True
```

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

2.5 Sofascore

```
[4]: sofascore = sd.Sofascore(leagues="ESP-La Liga", seasons="2022/2023")
print(sofascore.__doc__)

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::

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```

    {
        '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 = sofascore.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	Atlético 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

```
[8]: schedule = sofascore.read_schedule()
schedule.head()
```

```
[8]:
```

				round	week	\
league	season	game				
ESP-La Liga	2223	2022-08-12 Osasuna-Sevilla		None	1	
		2022-08-13 Barcelona-Rayo Vallecano		None	1	
		2022-08-13 Celta Vigo-Espanyol		None	1	
		2022-08-13 Real Valladolid-Villarreal		None	1	
		2022-08-14 Almería-Real Madrid		None	1	
						date \
league	season	game				
ESP-La Liga	2223	2022-08-12 Osasuna-Sevilla		2022-08-12	15:00:00	
		2022-08-13 Barcelona-Rayo Vallecano		2022-08-13	15:00:00	
		2022-08-13 Celta Vigo-Espanyol		2022-08-13	11:00:00	

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		2022-08-13	Real Valladolid-Villarreal	2022-08-13 13:00:00	
		2022-08-14	Almería-Real Madrid	2022-08-14 16:00:00	
				home_team \	
league	season	game			
ESP-La Liga	2223	2022-08-12	Osasuna-Sevilla	Osasuna	
		2022-08-13	Barcelona-Rayó Vallecano	Barcelona	
		2022-08-13	Celta Vigo-Espanyol	Celta Vigo	
		2022-08-13	Real Valladolid-Villarreal	Real Valladolid	
		2022-08-14	Almería-Real Madrid	Almería	
				away_team \	
league	season	game			
ESP-La Liga	2223	2022-08-12	Osasuna-Sevilla	Sevilla	
		2022-08-13	Barcelona-Rayó Vallecano	Rayó Vallecano	
		2022-08-13	Celta Vigo-Espanyol	Espanyol	
		2022-08-13	Real Valladolid-Villarreal	Villarreal	
		2022-08-14	Almería-Real Madrid	Real Madrid	
				home_score \	
league	season	game			
ESP-La Liga	2223	2022-08-12	Osasuna-Sevilla	2	
		2022-08-13	Barcelona-Rayó Vallecano	0	
		2022-08-13	Celta Vigo-Espanyol	2	
		2022-08-13	Real Valladolid-Villarreal	0	
		2022-08-14	Almería-Real Madrid	1	
				away_score	game_id
league	season	game			
ESP-La Liga	2223	2022-08-12	Osasuna-Sevilla	1	10408559
		2022-08-13	Barcelona-Rayó Vallecano	0	10408557
		2022-08-13	Celta Vigo-Espanyol	2	10408645
		2022-08-13	Real Valladolid-Villarreal	3	10408563
		2022-08-14	Almería-Real Madrid	2	10408712

[]:

..... doc/datasources/Sofascore.ipynb ends here.

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

[3]: import soccerdata as sd

2.6 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.
```

2.6.1 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

```

2.6.2 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-Mboyi Sambu 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-Mboyi Sambu 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-Mboyi Sambu 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-Mboyi Sambu 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-Mboyi Sambu Lokonga	65	75	41	80
Amario Cozier-Duberry	59	56	55	55
Arthur Okonkwo	6	35	19	30

player	defensiveawareness	standingtackle	slidingtackle
Aaron Ramsdale	20	16	15
Ainsley Maitland-Niles	66	74	72
Albert-Mboyi Sambu 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-Mboyi Sambu 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-Mboyo Sambi Lokonga	9			
Amario Cozier-Duberry	7			
Arthur Okonkwo	66			

[7]: sofifa.read_teams()

```
[7]:
      team_id      team      league fifa_edition \
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 \
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

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

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

2.7 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.

2.7.1 Leagues

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

```
[4]:
```

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

2.7.2 Seasons

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

[5]:
```

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


```
url

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

2.7.3 Schedule

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

[6]:
```

	league	season	game	league_id	\
league	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	

	league	season	game	season_id	\
league	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	

	league	season	game	game_id	\
league	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	

	league	season	game	date	\
league	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	

	league	season	game	home_team_id	\
league					

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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/match/82
		2015-08-08 Chelsea-Swansea		https://understat.com/match/86
		2015-08-08 Everton-Watford		https://understat.com/match/83
		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
```

2.7.4 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]

```

2.7.5 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	

2.7.6 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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[illegible]

2.7.7 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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```

↪ Agbonlahor 2015-08-08 18:00:00
                                                    Idrissa Gueye ↪
↪ 2015-08-08 18:00:00
                                                    Idrissa Gueye ↪
↪ 2015-08-08 18:00:00
                                                    Leandro Bacuna ↪
↪ 2015-08-08 18:00:00
                                                    ↪

↪ shot_id \
league          season game          team      player
ENG-Premier League 1516 2015-08-08 Bournemouth-Aston Villa Aston Villa Gabriel↪
↪ Agbonlahor 487146
                                                    Gabriel↪
↪ Agbonlahor 487150
                                                    Idrissa Gueye ↪
↪ 487136
                                                    Idrissa Gueye ↪
↪ 487144
                                                    Leandro Bacuna ↪
↪ 487141
                                                    ↪

↪ team_id \
league          season game          team      player
ENG-Premier League 1516 2015-08-08 Bournemouth-Aston Villa Aston Villa Gabriel↪
↪ Agbonlahor 71
                                                    Gabriel↪
↪ Agbonlahor 71
                                                    Idrissa Gueye ↪
↪ 71
                                                    Idrissa Gueye ↪
↪ 71
                                                    Leandro Bacuna ↪
↪ 71
                                                    ↪

↪ player_id \
league          season game          team      player
ENG-Premier League 1516 2015-08-08 Bournemouth-Aston Villa Aston Villa Gabriel↪
↪ Agbonlahor 890
                                                    Gabriel↪
↪ Agbonlahor 890
                                                    Idrissa Gueye ↪
↪ 668
                                                    Idrissa Gueye ↪
↪ 668
                                                    Leandro Bacuna ↪
↪ 674
                                                    ↪

↪ assist_player_id \

```

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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>
                                ↳

↳      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>
                                ↳

↳      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
                                ↳

↳      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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	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
```

2.8 WhoScored

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

```

/cw/dtaijupiter/NoCsBack/dtai/pieterr/Projects/soccerdata/soccerdata/_common.py:493:
↳ UserWarning: Season id "2021" is ambiguous: interpreting as "20-21"
warnings.warn(msg, stacklevel=1)

```

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. Only supported for Selenium <4.13.

```

2.8.1 Game schedule

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

```
[5]:
```

league	season	game	stage_id	\
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	18685	
		2020-09-12 Fulham-Arsenal	18685	
		2020-09-12 Liverpool-Leeds United	18685	
		2020-09-12 West Ham United-Newcastle	18685	
		2020-09-13 Tottenham-Everton	18685	

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	1485191	
		2020-09-13 Tottenham-Everton	1485189	

league	season	game	status	\
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	6	
		2020-09-12 Fulham-Arsenal	6	

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		2020-09-12	Liverpool-Leeds United	6
		2020-09-12	West Ham United-Newcastle	6
		2020-09-13	Tottenham-Everton	6
				start_time \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	2020-09-12T15:00:00
		2020-09-12	Fulham-Arsenal	2020-09-12T12:30:00
		2020-09-12	Liverpool-Leeds United	2020-09-12T17:30:00
		2020-09-12	West Ham United-Newcastle	2020-09-12T20:00:00
		2020-09-13	Tottenham-Everton	2020-09-13T16:30:00
				home_team_id \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	162
		2020-09-12	Fulham-Arsenal	170
		2020-09-12	Liverpool-Leeds United	26
		2020-09-12	West Ham United-Newcastle	29
		2020-09-13	Tottenham-Everton	30
				home_team \
league	season	game		
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-Everton	Tottenham
				home_yellow_cards \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	2
		2020-09-12	Fulham-Arsenal	2
		2020-09-12	Liverpool-Leeds United	1
		2020-09-12	West Ham United-Newcastle	2
		2020-09-13	Tottenham-Everton	1
				home_red_cards \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	0
		2020-09-12	Fulham-Arsenal	0
		2020-09-12	Liverpool-Leeds United	0
		2020-09-12	West Ham United-Newcastle	0
		2020-09-13	Tottenham-Everton	0
				away_team_id \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	18
		2020-09-12	Fulham-Arsenal	13
		2020-09-12	Liverpool-Leeds United	19
		2020-09-12	West Ham United-Newcastle	23
		2020-09-13	Tottenham-Everton	31

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				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 United-Newcastle	Newcastle
		2020-09-13	Tottenham-Everton	Everton
				away_yellow_cards \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	1
		2020-09-12	Fulham-Arsenal	2
		2020-09-12	Liverpool-Leeds United	0
		2020-09-12	West Ham United-Newcastle	2
		2020-09-13	Tottenham-Everton	0
				away_red_cards \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	0
		2020-09-12	Fulham-Arsenal	0
		2020-09-12	Liverpool-Leeds United	0
		2020-09-12	West Ham United-Newcastle	0
		2020-09-13	Tottenham-Everton	0
				has_incidents_summary \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	True
		2020-09-12	Fulham-Arsenal	True
		2020-09-12	Liverpool-Leeds United	True
		2020-09-12	West Ham United-Newcastle	True
		2020-09-13	Tottenham-Everton	True
				has_preview \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	True
		2020-09-12	Fulham-Arsenal	True
		2020-09-12	Liverpool-Leeds United	True
		2020-09-12	West Ham United-Newcastle	True
		2020-09-13	Tottenham-Everton	True
				score_changed_at \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	2020-09-12 15:14:31Z
		2020-09-12	Fulham-Arsenal	2020-09-12 13:48:13Z
		2020-09-12	Liverpool-Leeds United	2020-09-12 19:15:39Z
		2020-09-12	West Ham United-Newcastle	2020-09-12 21:45:39Z
		2020-09-13	Tottenham-Everton	2020-09-13 17:41:16Z
				elapsed \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	FT
		2020-09-12	Fulham-Arsenal	FT

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		2020-09-12	Liverpool-Leeds United	FT
		2020-09-12	West Ham United-Newcastle	FT
		2020-09-13	Tottenham-Everton	FT
last_scorer \				
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	0.0
		2020-09-12	Fulham-Arsenal	1.0
		2020-09-12	Liverpool-Leeds United	0.0
		2020-09-12	West Ham United-Newcastle	1.0
		2020-09-13	Tottenham-Everton	1.0
is_top_match \				
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	False
		2020-09-12	Fulham-Arsenal	True
		2020-09-12	Liverpool-Leeds United	True
		2020-09-12	West Ham United-Newcastle	False
		2020-09-13	Tottenham-Everton	True
home_team_country_code \				
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	gb-eng
		2020-09-12	Fulham-Arsenal	gb-eng
		2020-09-12	Liverpool-Leeds United	gb-eng
		2020-09-12	West Ham United-Newcastle	gb-eng
		2020-09-13	Tottenham-Everton	gb-eng
away_team_country_code \				
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	gb-eng
		2020-09-12	Fulham-Arsenal	gb-eng
		2020-09-12	Liverpool-Leeds United	gb-eng
		2020-09-12	West Ham United-Newcastle	gb-eng
		2020-09-13	Tottenham-Everton	gb-eng
comment_count \				
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	6
		2020-09-12	Fulham-Arsenal	15
		2020-09-12	Liverpool-Leeds United	61
		2020-09-12	West Ham United-Newcastle	10
		2020-09-13	Tottenham-Everton	32
is_lineup_confirmed \				
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	True
		2020-09-12	Fulham-Arsenal	True
		2020-09-12	Liverpool-Leeds United	True
		2020-09-12	West Ham United-Newcastle	True
		2020-09-13	Tottenham-Everton	True

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				is_stream_available \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	False
		2020-09-12	Fulham-Arsenal	False
		2020-09-12	Liverpool-Leeds United	False
		2020-09-12	West Ham United-Newcastle	False
		2020-09-13	Tottenham-Everton	False
				match_is_opta \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	False
		2020-09-12	Fulham-Arsenal	False
		2020-09-12	Liverpool-Leeds United	False
		2020-09-12	West Ham United-Newcastle	False
		2020-09-13	Tottenham-Everton	False
				home_team_country_name \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	England
		2020-09-12	Fulham-Arsenal	England
		2020-09-12	Liverpool-Leeds United	England
		2020-09-12	West Ham United-Newcastle	England
		2020-09-13	Tottenham-Everton	England
				away_team_country_name \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	England
		2020-09-12	Fulham-Arsenal	England
		2020-09-12	Liverpool-Leeds United	England
		2020-09-12	West Ham United-Newcastle	England
		2020-09-13	Tottenham-Everton	England
				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-Everton	2020-09-13 15:30:00+00:00
				home_score \
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-Everton	0
				away_score \
league	season	game		
ENG-Premier League	2021	2020-09-12	Crystal Palace-Southampton	0

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			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-Everton	1
↪	incidents \			
league	season	game		
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	[{'minute': '13', 'type': 1, 'subType': 1, 'pl...	
↪		2020-09-12 Fulham-Arsenal	[{'minute': '8', 'type': 1, 'subType': 1, 'pla...	
↪		2020-09-12 Liverpool-Leeds United	[{'minute': '4', 'type': 1, 'subType': 2, 'pla...	
↪		2020-09-12 West Ham United-Newcastle	[{'minute': '56', 'type': 1, 'subType': 1, 'pl...	
↪		2020-09-13 Tottenham-Everton	[{'minute': '55', 'type': 1, 'subType': 1, 'pl...	
			bets \	
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-Everton	None	
			aggregate_winner_field \	
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-Everton	None	
			winner_field \	
league	season	game		
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	0.0	
		2020-09-12 Fulham-Arsenal	1.0	
		2020-09-12 Liverpool-Leeds United	0.0	
		2020-09-12 West Ham United-Newcastle	1.0	
		2020-09-13 Tottenham-Everton	1.0	
			period \	
league	season	game		
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	7	
		2020-09-12 Fulham-Arsenal	7	
		2020-09-12 Liverpool-Leeds United	7	
		2020-09-12 West Ham United-Newcastle	7	
		2020-09-13 Tottenham-Everton	7	
			extra_result_field \	

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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-Everton	None
			home_extratime_score \
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-Everton	None
			away_extratime_score \
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-Everton	None
			home_penalty_score \
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-Everton	None
			away_penalty_score \
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-Everton	None
			started_at_utc \
league	season	game	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	2020-09-12T14:01:42Z
		2020-09-12 Fulham-Arsenal	2020-09-12T11:32:23Z
		2020-09-12 Liverpool-Leeds United	2020-09-12T16:30:21Z
		2020-09-12 West Ham United-Newcastle	2020-09-12T19:00:32Z
		2020-09-13 Tottenham-Everton	2020-09-13T15:30:20Z
			first_half_ended_at_utc ↵
↵ \			
league	season	game	
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton	None
		2020-09-12 Fulham-Arsenal	None

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			2020-09-12	Liverpool-Leeds United	None
			2020-09-12	West Ham United-Newcastle	None
			2020-09-13	Tottenham-Everton	None
					second_half_started_at_
↪ utc \					
league	season	game			
ENG-Premier League	2021	2020-09-12 Crystal Palace-Southampton			2020-09-12T15:04:
↪ 01Z					
		2020-09-12 Fulham-Arsenal			2020-09-12T12:35:
↪ 50Z					
		2020-09-12 Liverpool-Leeds United			2020-09-12T17:32:
↪ 57Z					
		2020-09-12 West Ham United-Newcastle			2020-09-12T20:03:
↪ 20Z					
		2020-09-13 Tottenham-Everton			2020-09-13T16:31:
↪ 33Z					
					stage
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-Everton			None

2.8.2 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	↪
↪ 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	↪

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↪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						

2.8.3 Match event stream data

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

[7]: league          season game          id          game_id \
ENG-Premier League 2021    2021-01-12 Burnley-Manchester United 2253458317 1485184
                                           2253458375 1485184
                                           2253487469 1485184
                                           2253487473 1485184
                                           2253487625 1485184

league          season game          id          period \
```

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ENG-Premier League 2021	2021-01-12	Burnley-Manchester United	2253458317	PreMatch	
			2253458375	PreMatch	
			2253487469	FirstHalf	
			2253487473	FirstHalf	
			2253487625	FirstHalf	
					minute \
league	season	game	id		
ENG-Premier League 2021	2021-01-12	Burnley-Manchester United	2253458317	0	
			2253458375	0	
			2253487469	0	
			2253487473	0	
			2253487625	0	
					second \
league	season	game	id		
ENG-Premier League 2021	2021-01-12	Burnley-Manchester United	2253458317	0.0	
			2253458375	0.0	
			2253487469	0.0	
			2253487473	0.0	
			2253487625	0.0	
					expanded_
↪minute \					
league	season	game	id		
ENG-Premier League 2021	2021-01-12	Burnley-Manchester United	2253458317		↪
↪0					
			2253458375		↪
↪0					
			2253487469		↪
↪0					
			2253487473		↪
↪0					
			2253487625		↪
↪0					
					type ↪
↪\					
league	season	game	id		
ENG-Premier League 2021	2021-01-12	Burnley-Manchester United	2253458317	FormationSet	
			2253458375	FormationSet	
			2253487469	Start	
			2253487473	Start	
			2253487625	Pass	
					outcome_type \
league	season	game	id		
ENG-Premier League 2021	2021-01-12	Burnley-Manchester United	2253458317	Successful	
			2253458375	Successful	
			2253487469	Successful	
			2253487473	Successful	
			2253487625	Successful	

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

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

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

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

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

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					2253487473	0.0	
					2253487625	50.3	
						end_x	\
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	
						end_y	\
league	season	game		id			
ENG-Premier League	2021	2021-01-12	Burnley-Manchester United	2253458317		NaN	
				2253458375		NaN	
				2253487469		NaN	
				2253487473		NaN	
				2253487625		50.3	
						goal_mouth_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	
						goal_mouth_z	↵
↵\							
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	

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```

↳               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          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
                                   2253458375      NaN
                                   2253487469      NaN
                                   2253487473      NaN
                                   2253487625      NaN

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

↳ id \
league          season game          id          related_event_
ENG-Premier League 2021  2021-01-12 Burnley-Manchester United 2253458317
↳ NaN

```

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↪NaN	2253458375	↪
↪NaN	2253487469	↪
↪NaN	2253487473	↪
↪NaN	2253487625	↪
related_		
↪player_id		
league	season	game
ENG-Premier League	2021	2021-01-12 Burnley-Manchester United
↪NaN	2253458317	↪
↪NaN	2253458375	↪
↪NaN	2253487469	↪
↪NaN	2253487473	↪
↪NaN	2253487625	↪
↪NaN		

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

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

```
import json # noqa
```

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

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

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```

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

```

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

```

/cw/dtaijupiter/NoCsBack/dtai/pieterr/Projects/soccerdata/.venv/lib/python3.11/site-
→packages/socceraction/spadl/opta.py:219: FutureWarning: Downcasting object dtype
→arrays on .fillna, .ffill, .bfill is deprecated and will change in a future version.
→Call result.infer_objects(copy=False) instead. To opt-in to the future behavior, set
→`pd.set_option('future.no_silent_downcasting', True)`
      ).bfill()

```

```
[9]:
```

	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	4	

	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

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

```

/cw/dtaijupiter/NoCsBack/dtai/pieterr/Projects/soccerdata/.venv/lib/python3.11/site-
→packages/socceraction/spadl/opta.py:219: FutureWarning: Downcasting object dtype
→arrays on .fillna, .ffill, .bfill is deprecated and will change in a future version.
→Call result.infer_objects(copy=False) instead. To opt-in to the future behavior, set
→`pd.set_option('future.no_silent_downcasting', True)`
      ).bfill()

```

```
[10]:
```

	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	\
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

```
[11]: # 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	

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	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	\			
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	

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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...					
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	goal	shot	type_name		
0		NaN	False	False	start		
1		NaN	False	False	start		
2		NaN	True	False	pass		
3		NaN	True	False	pass		
4		NaN	True	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",
```

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```

    "season_end": "May"
  }
}

```

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}`.

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:
```

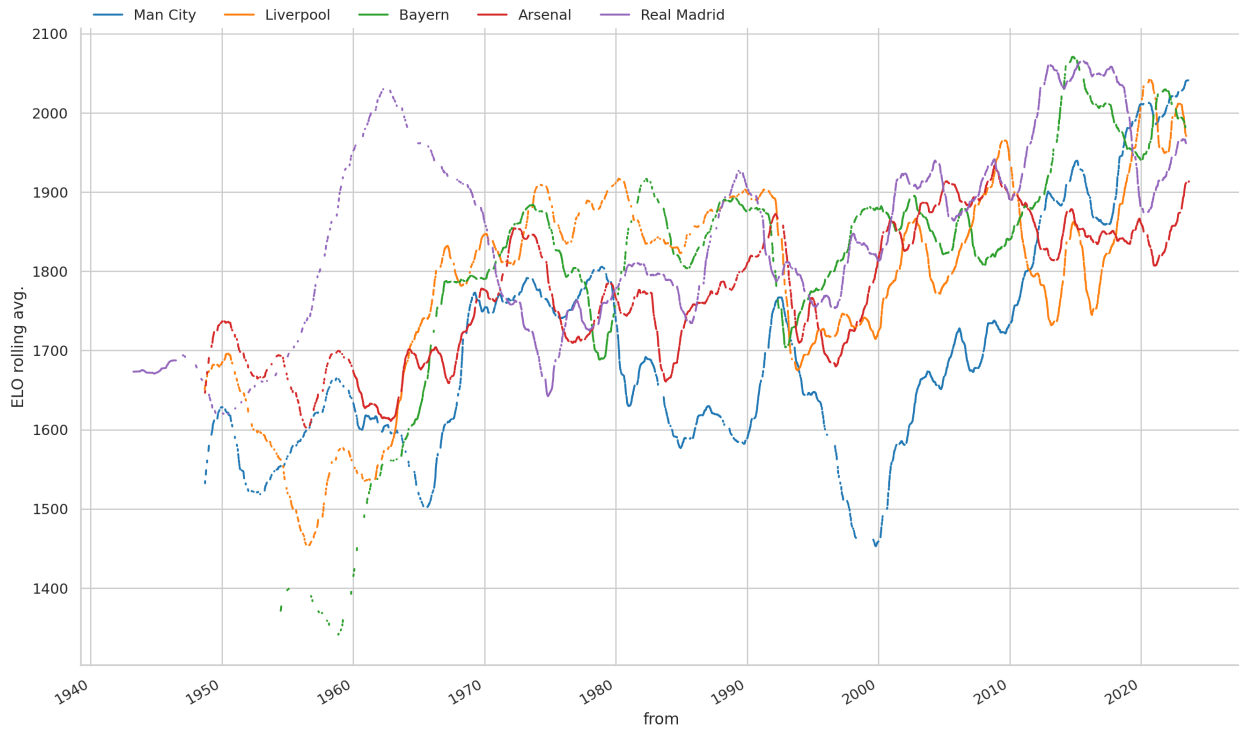
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```

↪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(

```



..... 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 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)
```

```
[4]:
```

league	season	game	date	\
ITA-Serie A	2223	2023-05-20	Cremonese-Bologna	2023-05-20 14:00:00
	2021	2020-12-06	Crotone-Napoli	2020-12-06 17:00:00
	1819	2019-05-26	Fiorentina-Genoa	2019-05-26 12:00:00
	2021	2020-11-01	Udinese-Milan	2020-11-01 11:30:00
	1819	2019-03-10	Frosinone-Torino	2019-03-10 12:00:00

league	season	game	home_team	away_team	FTHG	\
ITA-Serie A	2223	2023-05-20	Cremonese	Bologna	1	
	2021	2020-12-06	Crotone	Napoli	0	
	1819	2019-05-26	Fiorentina	Genoa	0	
	2021	2020-11-01	Udinese	Milan	1	
	1819	2019-03-10	Frosinone	Torino	1	

league	season	game	FTAG	FTR	HTHG	HTAG	HTR	HS	\
ITA-Serie A	2223	2023-05-20	5	A	0	3	A	13	
	2021	2020-12-06	4	A	0	1	A	4	
	1819	2019-05-26	0	D	0	0	D	5	
	2021	2020-11-01	2	A	0	1	A	7	
	1819	2019-03-10	2	A	1	0	H	9	

league	season	game	...	AvgC<2.5	AHCh	\
ITA-Serie A	2223	2023-05-20	...	1.8	0.50	
	2021	2020-12-06	...	2.3	1.25	
	1819	2019-05-26	...	NaN	NaN	
	2021	2020-11-01	...	2.0	0.50	
	1819	2019-03-10	...	NaN	NaN	

league	season	game	B365CAHH	B365CAHA	PCAHH	\
ITA-Serie A	2223	2023-05-20	1.84	2.06	1.85	
	2021	2020-12-06	1.99	1.94	1.98	
	1819	2019-05-26	NaN	NaN	NaN	
	2021	2020-11-01	1.95	1.98	1.93	
	1819	2019-03-10	NaN	NaN	NaN	

league	season	game	PCAHA	MaxCAHH	MaxCAHA	\
ITA-Serie A	2223	2023-05-20	2.08	1.90	2.15	
	2021	2020-12-06	1.94	2.03	1.96	

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	1819	2019-05-26	Fiorentina-Genoa	NaN	NaN	NaN
	2021	2020-11-01	Udinese-Milan	1.99	1.99	2.01
	1819	2019-03-10	Frosinone-Torino	NaN	NaN	NaN
				AvgCAHH	AvgCAHA	
league	season	game				
ITA-Serie A	2223	2023-05-20	Cremonese-Bologna	1.83	2.03	
	2021	2020-12-06	Crotone-Napoli	1.96	1.90	
	1819	2019-05-26	Fiorentina-Genoa	NaN	NaN	
	2021	2020-11-01	Udinese-Milan	1.93	1.94	
	1819	2019-03-10	Frosinone-Torino	NaN	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

    groups = res.groupby(["team", "is_home"])
    win = groups.win.agg(["sum", "mean"]).rename(columns={"sum": "n_win", "mean": "win_
    →pct"})
    loss = groups.lose.agg(["sum", "mean"]).rename(columns={"sum": "n_lose", "mean":
    →"lose_pct"})
    draw = groups.draw.agg(["sum", "mean"]).rename(columns={"sum": "n_draw", "mean":
    →"draw_pct"})

    res = pd.concat([win, loss, draw], 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
Benevento	Away	10	0.263158	18	0.473684	10	0.263158
	Home	4	0.105263	20	0.526316	14	0.368421

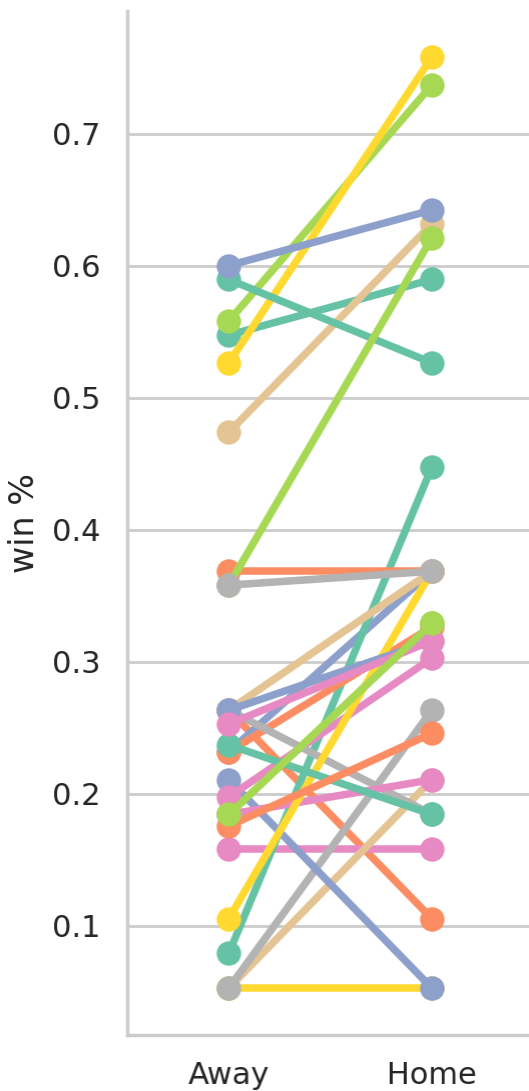
(continues on next page)

(continued from previous page)

Bologna	Away	22	0.231579	48	0.505263	25	0.263158
	Home	35	0.368421	29	0.305263	31	0.326316

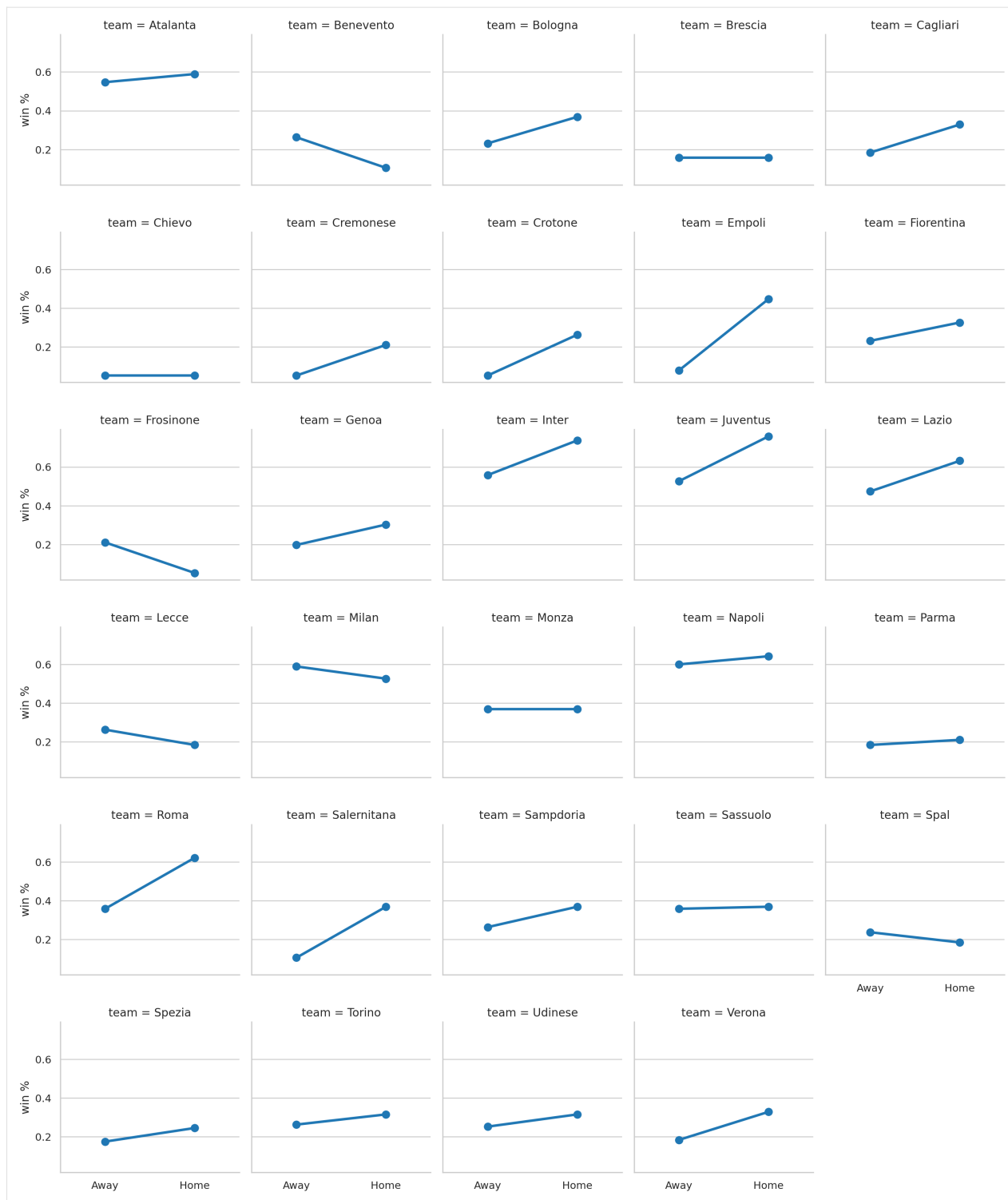
The overall picture shows most teams have a clear advantage at home:

```
[7]: g = sns.FacetGrid(results.reset_index(), hue="team", palette="Set2", height=6, aspect=0.5)
      g.map(sns.pointplot, "is_home", "win_pct", order=["Away", "Home"])
      g.set_axis_labels("", "win %");
```



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 %");
```



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.
- `str`: The address of the proxy server to use.
- `list(str)`: 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. To disable re-downloading, set to None.

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.BufferedReader

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.
- str: The address of the proxy server to use.
- list(str): 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.BufferedReader

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.
- str: The address of the proxy server to use.
- list(str): 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 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.
- str: The address of the proxy server to use.
- list(str): 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.

5.5 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 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.

- `str`: The address of the proxy server to use.
- `list(str)`: 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`

5.6 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.
- str: The address of the proxy server to use.
- list(str): 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`

5.7 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.
 - `str`: The address of the proxy server to use.
 - `list(str)`: 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.

5.8 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.
- str: The address of the proxy server to use.
- list(str): 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', retry_missing=True, on_error='raise'*)

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 usefull 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>
 - None: Doesn't return any data. This is useful to just cache the data without storing the events in memory.
- **retry_missing**(*bool*) – If no events were found for a game in a previous attempt, will retry to scrape the events
 - **on_error**(*"raise" or "skip", default: "raise"*) – Wheter to raise an exception or to skip the game if an error occurs.

Raises

- **ValueError** – If the given match_id could not be found in the selected seasons.
- **ConnectionError** – If the match page could not be retrieved.
- **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:

5.9 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'),  
                                             headers=None)
```

Base class for readers that use the Python requests module.

Parameters

- **leagues** (*str | list[str] | None*)
- **proxy** (*str | list[str] | Callable[[], str] | None*)
- **no_cache** (*bool*)
- **no_store** (*bool*)
- **data_dir** (*Path*)
- **headers** (*dict[str, str] | None*)

```
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 | list[str] | Callable[[], 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.

5.10 Utilities

`_common.SeasonCode(names=None, *, module=None, qualname=None, type=None, start=1, boundary=None)`

How to interpret season codes.

SINGLE_YEAR

Type

The season code is a single year, e.g. '2021'.

`soccerdata.MULTI_YEAR`

Type

The season code is a range of years, e.g. '2122'.

`_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 set up 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 double-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

To test out code changes, you'll need to set up a Python environment with all required dependencies. It's recommended to use `uv` to set up your environment. On macOS and Linux, you can use `curl` to download the installation script and execute it:

```
$ curl -LsSf https://astral.sh/uv/install.sh | sh
```

Information about installation options and instructions for Windows can be found in [uv's installation guide](#).

Next, create and activate a virtual environment using `uv` with a Python version that soccerdata supports:

```
$ uv venv --python 3.9
$ source .venv/bin/activate
```

Alternatively, you can use `pip`. You'll need to have at least the minimum Python version that soccerdata supports. Next, install the required dependencies in a virtual environment as follows:

```
$ python3 -m venv .venv
$ source .venv/bin/activate
$ python -m pip install -e .
$ python -m pip install -r requirements.txt
```

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:

```
$ make test
```

You can also run tests for a specific data source. For example, invoke the unit test suite like this to run tests for ClubElo only:

```
$ make test-class clubelo
```

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 double-quoted strings (e.g. `"#soccer"`), unless a double-quote occurs within the string.

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

```
$ make pre-commit-test
```

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 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:

```
$ make pre-commit-test
```

To automatically run the pre-commit checks before committing, you can run

```
$ make pre-commit-update
```

It is recommended to open an issue before starting work on anything.

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