The soccerbars Package for LaTeX*

— version 0.7 —

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Abstract

The soccerbars package provides macros to generate word-sized tallies for series of association football (soccer) match results. These are intended for the augmentation of league tables and the discussion of streaks with the actual sequence of results.

Contents

*Soccerbars are based on previous work with Bobo Nick (while at the University of Konstanz), discussions with David Schoch (The University of Manchester), and prototyping with Lukas Knoflach (TU Graz). Eren Akbiyik (ETH Zürich) provides implementations of soccerbars for use with python and R at https://github.com/snlab-eakbiyik/soccerbars.

1 Introduction

Since the very first season of the Football League in 1888/1889, and the introduction of the 2-point system a few matchdays in, news reports feature league tables recording the number of matches played, wins, losses, draws, accumulated goals for and against, and points. These data have later been augmented with goal differences, and are sometimes broken down into results home and away.

Another, more detailed, representation that compactly records all results of an entire season, albeit not in the order in which they came about, are cross-tables. The following combination of detailed and summarized information was printed as part of a season wrap-up in *The Cricket and Football Field*, a weekly sports paper out of Bolton [3].[1]

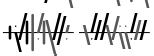
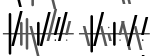
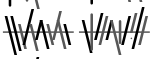
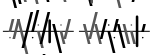
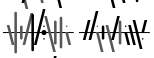
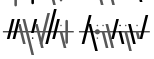
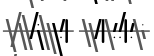
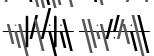
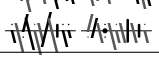
	Accrington.	Aston Villa.	Blackburn Rovers.	Bolton Wanderers.	Burnley.	Derby County.	Everton.	Notts County.	Preston North End.	Stoke.	West Bromwich Albion.	W'lv'h'pton Wanderers.	SUMMARY. G'ls. For.	Agst.	Played.	Won.	Lost.	Drawn.	Points.
Preston North End....	D W 0-0 2-0	D W 1-1 2-0	W D 1-0 2-2	W W 3-1 5-2	W D 5-2 2-2	W W 3-2 5-0	W W 3-0 2-0	W W 7-0 4-1	.....	W W 7-0 3-0	W W 3-0 5-0	W W 4-0 5-2	74	15	22	18	0	4	40
Aston Villa	W D 4-3 1-1	.....	W L 6-1 1-5	W W 3-2 6-2	W L 4-2 0-4	W L 4-2 2-5	W L 2-1 0-2	W W 9-1 4-2	D L 1-1 0-2	W D 5-1 1-1	W D 2-0 3-3	D W 1-1 2-1	61	43	22	12	5	5	29
W'hampton Wandrs ..	D W 4-4 4-0	D L 1-1 1-2	D D 2-2 2-2	W L 3-2 1-2	W W 4-1 4-0	W L 4-1 0-3	W W 5-0 2-1	L W 0-3 2-1	L L 0-4 2-5	W W 1-0 4-1	W W 2-1 3-1	.....	51	37	22	12	6	4	28
Blackburn Rovers	D W 5-5 2-0	L W 1-6 5-1	.....	D L 4-4 2-3	W W 7-1 4-2	W W 2-0 3-0	W L 3-0 1-3	D W 3-3 5-2	L D 0-1 2-2	W L 5-2 1-2	L D 6-2 1-2	W L 2-2 2-2	66	45	22	10	6	6	26
Bolton Wanderers	W W 4-1 3-2	L L 2-3 2-6	D W 4-4 3-2	.....	L L 3-4 1-4	L W 3-6 3-2	W L 6-2 1-2	W W 4-0 7-3	L L 1-3 2-5	W D 2-1 2-2	W L 5-1 1-2	L W 2-3 2-1	63	59	22	10	10	2	22
West Brom. Albion ..	D L 2-2 1-2	L D 0-2 3-3	L W 2-6 2-1	L W 1-5 2-1	W L 4-3 0-2	W W 2-1 5-0	W W 4-1 1-0	D L 4-2 1-2	D L 0-3 0-5	W W 2-0 2-0	.....	L L 1-2 1-3	40	46	22	10	10	2	22
Accrington	.....	D L 3-4 1-1	D L 5-5 0-2	L L 1-4 2-3	W D 5-1 2-2	D W 1-1 6-2	L W 1-2 3-1	D L 3-3 1-2	D L 0-0 0-2	W W 4-2 2-0	D W 2-2 2-1	D L 4-4 0-4	43	48	22	6	8	8	20
Everton	W L 2-1 1-3	L W 1-2 2-0	L W 0-3 3-1	L W 2-6 2-1	D W 2-2 3-2	W W 4-2 6-2	.....	W L 2-1 1-3	L L 0-3 0-2	D W 0-0 2-1	L L 1-4	L L 0-5 1-2	35	47	22	9	11	2	20
Burnley	L D 1-5 2-2	L W 2-4 4-0	L L 1-7 2-4	W W 4-3 4-1	.....	W L 1-0 0-1	D L 2-2 2-3	L W 1-6 1-0	L D 2-5 2-2	L W 3-4 2-1	L W 3-4 2-0	L L 1-4 0-4	42	62	22	7	12	3	17
Derby County	D L 1-1 2-6	L W 2-4 5-2	L L 0-2 0-3	W L 6-3 2-3	L W 0-1 1-0	.....	L L 2-4 2-6	W W 3-2 5-3	L L 2-3 0-5	W D 2-1 1-1	L L 1-2 0-5	L W 1-4 3-0	41	61	22	7	13	2	16
Notts County	D W 3-3 2-1	L L 1-9 2-4	D L 3-3 2-5	L L 4-4 3-7	W L 6-1 0-1	L L 2-3 3-5	L W 1-2 3-1	.....	L L 0-7 1-4	L L 0-3 0-3	L W 2-4 2-1	W L 3-0 1-2	40	73	22	5	15	2	12
Stoke	L L 2-4 0-2	L D 1-5 1-1	L W 2-5 2-1	L D 1-2 2-2	W L 4-3 1-2	L D 1-2 1-1	D L 0-0 1-2	W W 3-0 3-0	L L 0-7 0-3	.....	L L 0-2 0-2	L L 0-1 1-4	25	51	22	4	14	4	12

W—won. L—lost. D—drawn.

A perspective that is supported by neither representation, but the subject of many a conversation, are series: going unbeaten in 34 matches, conceding only two goals in the first eleven matches with a new manager, losing six in a row at home, and so on. Despite frequently referring to a team's form, or recent performance, the closest news reports come to non-verbal representations of such series are charts depicting a team's wins, draws, and losses over the last maybe five, seven, or ten matches.

This is what soccerbars are made for: compact representations designed to integrate a sequence of results into text, tables, and graphics. Below is the first season of the Football League showing for each team all of its results in the order in which the matches were played.

[1] The one result missing is an Everton loss at West Bromwich which is, however, printed in the home team's row.

#	Team	Season	W	D	L	GF	GA	Pts
1	Preston North End		18	4	0	74	15	40
2	Aston Villa		12	5	5	61	43	29
3	Wolverhampton Wanderers		12	4	6	51	37	28
4	Blackburn Rovers		10	6	6	66	45	26
5	Bolton Wanderers		10	2	10	63	59	22
6	West Bromwich Albion		10	2	10	40	46	22
7	Accrington		6	8	8	48	48	20
8	Everton		9	2	11	35	47	20
9	Burnley		7	3	12	42	62	17
10	Derby County		7	2	13	41	61	16
11	Notts County		5	2	15	40	73	12
12	Stoke		4	4	14	26	51	12

Each tally represents one match result, and it is gray for away matches. Wins are depicted as forward leaning, draws vertical, and losses backward leaning. The length above and below the horizontal baseline represent goals for and against. It is readily observed that only two out of 132 matches ended in a goalless draw (Preston N.E. at Accrington and Everton at Stoke), and that winners Preston North End had by far the most clean sheets (13, marked with small dots where a single-goal line would end). Other than the loss-less season of the first winners, the improvement of Bolton and Derby during the second round is notable, whereas the opposite can be said of Everton. Like Everton, teams in the bottom half of the table each tallied only a single away win all season; except Derby County who actually had two, and rather wild ones.

Fast forward 131 years, Liverpool had a stunning season  as well, with only two draws and one loss (none of them at home) in the 31 matches they needed to claim the 2019/2020 Premiership.

With a waiting time of 29 matches in between  two wins across the second half of the 2019/2020 season and first half of 2020/2021, Schalke just barely avoided to match the longest non-winning streak  in Bundesliga history, a record set by Tasmania Berlin in their single season of membership in the top flight, 1965/1966.

2 Design

Soccerbars are micro-visualizations that integrate with text to support and illustrate statements with detailed data.

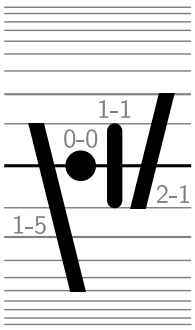
They instantiate Edward Tufte's marvelous idea of sparklines [8], i.e., to use intense, word-sized, high-resolution graphics to present extensive sequence data within eyespan. Sparklines are popular for univariate time-series data such as stock prices, and available in the sparklines package [5].

Since soccer results are multivariate (goals for and against, points awarded, home or away), there are different ways of encoding them in sparklines and, indeed, a number of alternatives have been proposed. Some of them straightforward, others rather involved.

Soccerbars have been derived from a design principle systematically extending the concept of sparklines. Instead of combining sparklines for multiple attributes, gestaltlines [2, 1] align glyphs designed to exploit Gestalt theory and thus facilitate the perception of trends, shifts, and outliers in multivariate sequences.

2.1 Basics

The primary metaphor is that of a tally. Instead of keeping separate tallies for wins, losses, and draws the result categories are distinguished by slant. A winning team can be thought of as charging forward and a losing team as skidding.



The slant is fixed rather than, say, dependent on the goal difference, to visually group stretches of results in the same category.

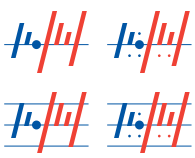
To represent goals for and against, the length of tallies is varied. Horizontal clipping at a goal-dependent height is preferred over goal-dependent lengths, though, because it yields an alignment of the number of goals a team scored no matter the outcome (and thus slant).

This idea is reinforced visually by clipping tallies for wins and losses horizontally. Caps of vertical tallies for draws are rounded to emphasize the difference from the other two outcomes, and place them more clearly in the same category as the dots for goalless matches.

In the majority of matches, no side scores more than two goals, but on occasion a team may well rack up eight or even more. The height at which a tally is clipped is therefore increased roughly according to the frequency with which the next goal occurs, and capped at nine. This limits the height required and favors the more frequent cases at the expense of differences in the regime where they matter less.

2.2 Extensions

The basic design can be augmented with two kinds of annotations that reference features of common interest explicitly.



France's road to victory at the World Cup Finals 2018 is shown four times on the right. The group phase of three matches is followed by four elimination rounds. Extra dots at the level of a single goal (top right soccerbar) facilitate counting the number of matches in which a team or its opponents did not score, and their alignment simultaneously creates the visual effect of another horizontal line because of the frequency of such events.

To distinguish better between higher scores, in spite of the non-linear scaling of heights, an extra line can be added at the statistically important threshold of two goals (bottom left). This can be seen, for instance, for the 4–3 against Argentina in the round of the last sixteen and the 4–2 against Croatia in the final.

Both extensions can be added independently via package options and switched on and off in the document as described in Section 3.1.

2.3 Alignment with Text

When displayed within text, soccerbars are vertically centered such that the levels of one goal for and against correspond to the height of the character 'x' and the baseline, i.e., they are `1ex` apart. High scores are allowed to stick out and overlap other content, as the LaTeX bounding box deliberately extends only to the levels of two goals for and against to avoid affecting the distance between baselines in a paragraph.

Over the last five and a half seasons, El Clásico, restricted to matches in La Liga, looked as follows

from either perspective.

While line thickness, slant, and horizontal spacing can be altered as described in Section 3.4, vertical spacing is tied to the size of the current font via length unit `ex`.

3 Using the Package

The soccerbars package provides three different ways to include word-size tallies of soccer results into LaTeX documents: a macro, an environment, and a file reader. They all produce the same kind of visualization but differ in the intended usage scenario.

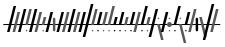
3.1 Loading and Options

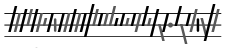
To make use of soccerbars, the file `soccerbars.sty` should be obtained from https://github.com/ubrandes-ethz/soccerbars and placed in a directory searched by the LaTeX installation. It is loaded by placing

```
\usepackage[⟨options⟩]{⟨soccerbars⟩}
```

in the preamble of a LaTeX document. Several other packages will be loaded automatically, because soccerbars depends explicitly on TikZ [7], csvsimple [6], and etoolbox [4], each with their own dependencies.

The following three package options allow to toggle design variants introduced in Section 2 and the distinction of away matches.

`zerodots` Marks each time that a team did not score a goal with a little dot tangential to the imaginary line at one goal. This makes it easier to appreciate that Liverpool went only three times without a goal  but had fifteen clean sheets, and even eight in a row.

`twogoalline` Adds an extra horizontal lines to mark the two-goal level with half the width of the zero-goal baseline. Thus, higher scores are more easily distinguished. Liverpool lost the two away matches out of those three in which they conceded more than two goals  but won all fourteen matches in which they scored more than two goals.

`outlined` With this option, away matches are marked by outlining rather than a change in brightness. While the difference may be hard to tell  in small font, it creates an aesthetic of its own in large displays such as  .

Three options can be combined arbitrarily. Declaring, for instance,

```
\usepackage[zerodots,twogoalline]{soccerbars}
```

yields soccerbars such as  . Initially, only those design choices declared in package options are active, but in the document all three can be switched on and off using commands

```
\sbZeroDots     \sbTwoGoalLine     \sbOutlined
\sbNoZeroDots   \sbNoTwoGoalLine   \sbNotOutlined .
```

These commands apply locally within the current group, i.e., switching on no-goal dots temporarily by `{\sbZeroDots ...}` does not require switching off.

The change of colors and more basic stylistic adjustments are described in Sections 3.3 and 3.4.

3.2 Generating Soccerbars

Macro, environment, file reader

`\soccerbar{`⟨***results***⟩`}` This macro is the most straightforward way to generate a soccerbar. Its argument is a comma-separated list of match results in the form `(`⟨*goals for*⟩`-`⟨*goals against*⟩`)` for matches in which the current team is playing at home and `(`⟨*goals against*⟩`-`⟨*goals for*⟩`)*` in which it is playing away. As an example, consider this rocky start to a season

```
\soccerbar{(2-2), (0-3)*,(6-1), (1-1)*,(4-0),
           (2-3)*,(1-2), (2-2)*,(2-1), (5-1)*}
```

culminating in a loss at home  and a thrashing away. While some clubs might content themselves with it, a more club one may well sack its manager at this point.

`\begin{soccerbarenv} ...\end{soccerbarenv}` With the `soccerbarenv` environment, the identical soccerbar as above is obtained in more verbose form as

```
\begin{soccerbarenv}
  \home{2}{2} \away{0}{3} \home{6}{1}
  \away{1}{1} \home{4}{0} \away{2}{3}
  \home{1}{2} \away{2}{2} \home{2}{1}
  \away{5}{1}
\end{soccerbarenv}
```

The motivation for this alternative specification is that both the environment and the `\home` and `\away` commands have optional parameters by which colors can be changed per result, rather than for the entire soccerbar. This is described in more detail in the next section.

Note that, as in real life, `\home{1}{2}` and `\away{2}{1}` generally do not look the same, because away matches may be rendered differently.

`\csvsoccerbar{`⟨***team***⟩`}{`⟨***first match***⟩`}{`⟨***last match***⟩`}` For many, long, or partial sequences, it may be more convenient to gather match results from a file. It is assumed that they are stored in CSV (*comma separated values*) format with one match per row and four separate columns for home and away team names and the numbers of goals they scored. The filename and headers are declared once using the command `\sbCSVnames{`⟨*file*⟩`}{`⟨*hometeam*⟩`}{`⟨*awayteam*⟩`}{`⟨*homegoals*⟩`}{`⟨*awaygoals*⟩`}` and `\csvsoccerbar{`⟨*team*⟩`}{`⟨*first match*⟩`}{`⟨*last match*⟩`}` then yields a soccerbar for this team depicting results on the specified interval of matchdays (assuming they appear in the correct order in the file).

From a file `bl2019-20.csv` tabulating results as

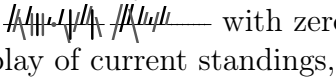
```
Spieltag,Heim,HT,GT,Gast
1,Bayern,2,2,Hertha BSC
1,Dortmund,5,1,Augsburg
...
```

the above start of the season and its continuation are obtained via

```
\sbCSVnames{bl2019-20.csv}{Heim}{Gast}{HT}{GT}
...
\csvsoccerbar{Bayern}{1}{10}
\csvsoccerbar{Bayern}{11}{34}
```

This yields  for the season, or one stepping stone to another treble.

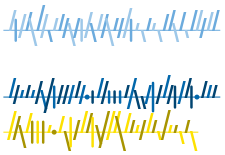
It is important to ensure that the encoding of the CSV file is the same as that of the LaTeX document, especially if team names contain accents or umlauts.

Scheduled matches that have not been played, yet, can be specified as `(-)`, `(-)*`, `\home{}{}`, `\away{}{}`, or missing entries in the CSV file and result in prolonged soccerbars  with zerodot-sized marks for upcoming matches. This is useful in the display of current standings, when hopes may still run high.

3.3 Changing Colors

Soccerbars are set in the current foreground color, by default with somewhat lighter shading of away matches. The base color can be set explicitly with an optional parameter available for both the `\soccerbar` macro and the `soccerbarenv` environment. Whether away matches are lighter, darker, or unaltered is determined by commands `\sbAwayBrighter` (default), `\sbAwayDarker`, and `\sbAwayKeepColor`.

```
\definecolor{skyblues}{RGB}{108,171,221}
\definecolor{nerazzuri}{HTML}{0267AB}
\definecolor{schwarzgelb}{HTML}{FDE100}
...
\soccerbar[skyblues]{(0-5)*,(2-2),...}
\sbAwayDarker
\soccerbar[nerazzurri]{(4-0),(1-2)*,...}
\soccerbar[schwarzgelb]{(5-1),(1-3)*,...}
```



Colors are specified according to the xcolor package which is automatically loaded by TikZ. Effects `\sbAwayBrighter` and `\sbAwayDarker` are realized by rendering away matches in colors `.!66!white` and `.!66!black`, respectively.

More detailed color choices are possible with the `soccerbarenv` environment. To be able to highlight, say, the above mentioned loss at home and thrashing away, an optional color parameter is accepted for each tally.

```
\begin{soccerbarenv}
  \home{2}{2} \away{0}{3} \home{6}{1} \away{1}{1} \home{4}{0} \away{2}{3}
  \home[blue]{1}{2} \away{2}{2} \home{2}{1} \away[red]{5}{1}
\end{soccerbarenv}
```

Changing colors according betting odds shows that not only the club had higher expectations. In the following, the predicted probability of winning encoded in betting odds is used to determine a tally's color on a gradient from white to red: the more red the less expected the outcome.

```
{\sbAwayKeepColor\begin{soccerbarenv}[gray]
  \home[red!85!white]{2}{2} \away[white!74!red]{0}{3}
  \home[white!92!red]{6}{1} \away[red!54!white]{1}{1}
  \home[white!88!red]{4}{0} \away[white!87!red]{2}{3}
  \home[red!89!white]{1}{2} \away[red!85!white]{2}{2}
  \home[white!90!red]{2}{1} \away[red!70!white]{5}{1}
\end{soccerbarenv}}
```

Half of these ten matches, and three of the last four, ended rather unexpectedly.

3.4 Other Settings

Most design choices other than the package options can be altered with the command `\sbSettings{`⟨*thickness*⟩`}{`⟨*zerodots*⟩`}{`⟨*zeroline*⟩`}{`⟨*slant*⟩`}{`⟨*spacing*⟩`}{`⟨*padding*⟩`}`. The six mandatory arguments are described below. Their default values can be re-established with `\sbDefaults`, which invokes

```
\sbSettings{0.18}{0.6}{0.2}{14}{0.8}{0.2}
```

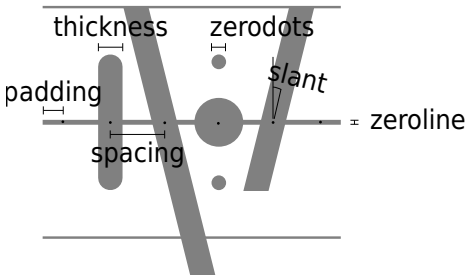
and also `\sbAwayBrighter` to set the lighter shading for away matches.

⟨***thickness***⟩ The thickness of a tally, specified as a multiple of `ex`, the height of an 'x' in the current font. This makes the thickness of tallies scale with their height and spacing. Other line widths are relative to this one. The default value of `0.18ex` is based on the stroke width of common fonts. Dots for a goalless draw have a matching radius, and are thus twice as wide as a tally.

⟨***zerodots***⟩ The diameter of the disk indicating that a team did not score, specified as a multiple of the first parameter. For these to be visible, option `zerodots` must have been included when loading the package or activated with `\sbZeroDots`.

⟨***zeroline***⟩ The thickness of the horizontal line at zero goals, specified as a multiple of the first parameter. Lines at the level of two goals are drawn at half the thickness, if any.

⟨***slant***⟩ The slant of a tally signifying a win or loss, i.e., the angle by which it is rotated out of the vertical position, specified in degrees. The default value of `14` is based on the slant of common fonts.



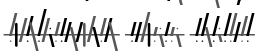
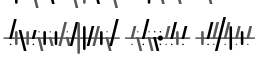
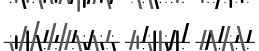
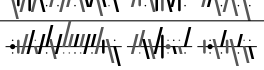
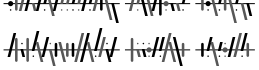
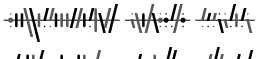
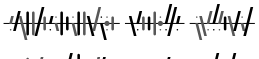
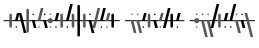
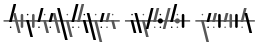
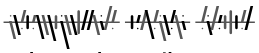
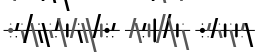
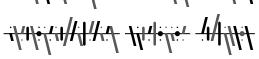
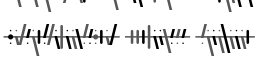
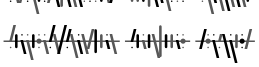
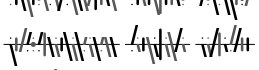
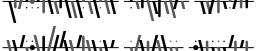
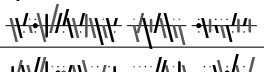
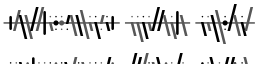
⟨***spacing***⟩ Space between the centers of consecutive tallies on the zero line, specified in multiples of the one-goal level (which, in turn, is fixed at `0.5ex`). The default of `0.8` thus corresponds to equidistant placement of tallies every `0.4ex`. With the default thickness of `0.18ex`, the `0.22ex` gaps between equally slanted tallies are slightly larger than the line width, avoiding irritating patterns, and dots for consecutive goalless scores just barely avoid touching.

⟨***padding***⟩ The length by which the horizontal line at zero goals is extended to the left and right, specified in multiples of the one-goal level (which, in turn, is fixed at `0.5ex`). The default value of `0.2` is sufficient to avoid slanted tallies sticking out.

4 The 2019/2020 Season

Across Europe, the 2019/2020 season was suspended in March 2020 and, except for France, resumed in May or June. The following tables therefore show soccerbars divided into three segments corresponding to the first round, the second round until the break due to the pandemic, and the rest of the season. In the Swiss Super League, teams play each other four times.

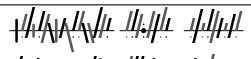
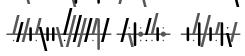
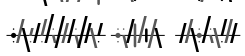
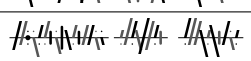
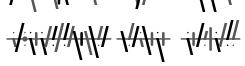
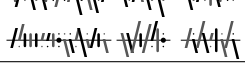
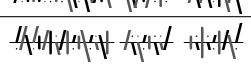
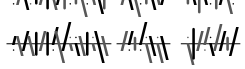
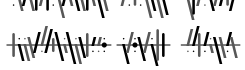
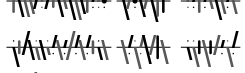
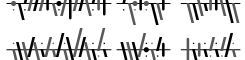
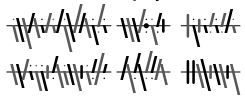
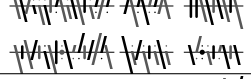
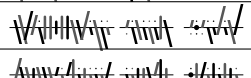
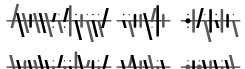
4.1 Premier League

#	Club	Season	W	D	L	GF	GA	GD	P
1	Liverpool		32	3	3	85	33	52	99
2	Manchester City		26	3	9	102	35	67	81
3	Manchester United		18	12	8	66	36	30	66
4	Chelsea		20	6	12	59	54	15	66
5	Leicester City		18	8	12	67	41	26	62
6	Tottenham Hotspur		16	11	11	61	47	14	59
7	Wolverhampton Wanderers		15	14	9	51	40	11	59
8	Arsenal		14	14	10	56	48	8	56
9	Sheffield United		14	12	12	39	39	0	54
10	Burnley		15	9	14	43	50	-7	54
11	Southampton		15	7	16	51	60	-9	52
12	Everton		13	10	15	44	56	-12	49
13	Newcastle United		11	11	16	38	58	-20	44
14	Crystal Palace		11	10	17	31	50	-19	43
15	Brighton and Hove Albion		9	14	15	39	54	-15	41
16	West Ham United		10	9	19	49	62	-13	39
17	Aston Villa		9	8	21	41	67	-26	35
18	Bournemouth		9	7	22	40	65	-25	34
19	Watford		8	10	20	26	64	-28	34
20	Norwich City		5	6	27	26	75	-49	21

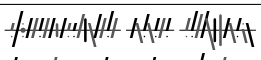
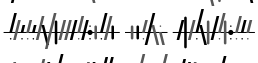
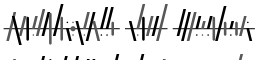
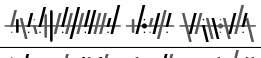
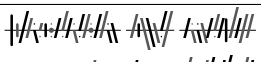
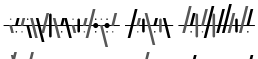
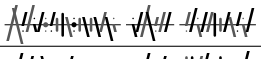
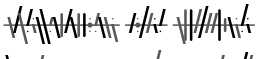
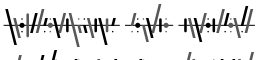
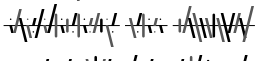
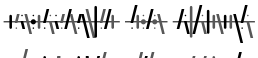
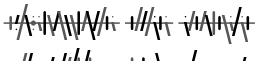
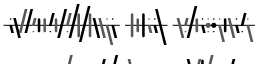
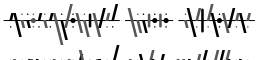
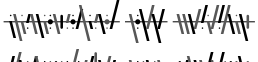
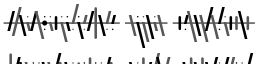
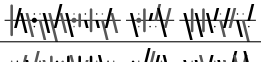
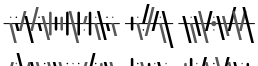
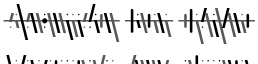
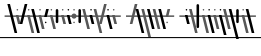
4.2 La Liga

#	Equipo	Resultados	PG	PE	PP	GF	GC	GD	Pts.
1	Real Madrid		26	9	3	70	25	45	87
2	Barcelona		25	7	6	86	38	48	82
3	Atlético		18	16	4	51	27	24	70
4	Sevilla		19	13	6	54	34	20	70
5	Villarreal		18	6	14	63	49	14	60
6	R. Sociedad		16	8	14	56	48	8	56
7	Granada		16	8	14	52	45	7	56
8	Getafe		14	12	12	43	37	6	54
9	Valencia		14	11	13	46	53	-7	53
10	Osasuna		13	13	12	46	54	-8	52
11	Athletic		13	12	13	41	38	3	51
12	Levante		14	7	17	47	53	-6	49
13	Real Valladolid		9	15	14	32	43	-11	42
14	Eibar		11	9	18	39	56	-17	42
15	Betis		10	11	17	48	60	-12	41
16	Alavés		10	9	19	34	59	-25	39
17	Celta		7	16	15	37	49	-12	37
18	Leganés		8	12	18	30	51	-21	36
19	Mallorca		9	6	23	40	65	-25	33
20	Espanyol		5	10	23	27	58	-31	25

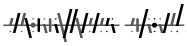
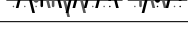
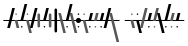
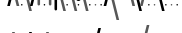
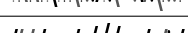
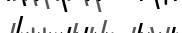
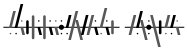
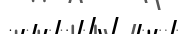
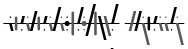
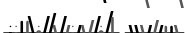
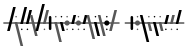
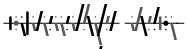
4.3 Bundesliga

#	Mannschaft	Verlauf	S	U	N	Tore	TD	Pkt
1	FC Bayern München		26	4	4	100:32	68	82
2	Borussia Dortmund		21	6	7	84:41	43	69
3	RB Leipzig		18	12	4	81:37	44	66
4	Bor. Mönchengladbach		20	5	9	66:40	26	65
5	Bayer 04 Leverkusen		19	6	9	61:44	17	63
6	TSG 1899 Hoffenheim		15	7	12	53:53	0	52
7	VfL Wolfsburg		13	10	11	48:46	2	49
8	SC Freiburg		13	9	12	48:47	1	48
9	Eintracht Frankfurt		13	6	15	59:60	-1	45
10	Hertha BSC		11	8	15	45:59	-11	41
11	1. FC Union Berlin		12	5	17	41:58	-17	41
12	FC Schalke 04		9	12	13	38:58	-20	39
13	1. FSV Mainz 05		11	4	19	44:65	-21	37
14	1. FC Köln		10	6	18	51:69	-18	36
15	FC Augsburg		9	9	16	45:63	-18	36
16	Werder Bremen		8	7	19	42:69	-27	31
17	Fortuna Düsseldorf		6	12	16	36:67	-31	30
18	SC Paderborn 07		4	8	22	37:74	-37	20

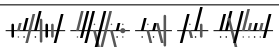
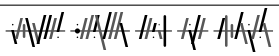
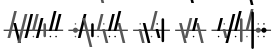
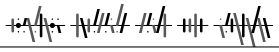
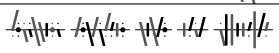
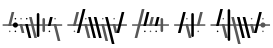
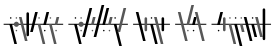
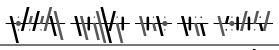
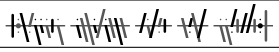
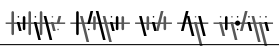
4.4 Serie A

#	Squadra	Risultati	V	N	P	GF	GS	DR	Pt
1	Juventus		26	5	7	76	43	33	83
2	Inter		24	10	4	81	36	45	82
3	Atalanta		23	9	6	98	48	50	78
4	Lazio		24	6	8	79	42	37	78
5	Roma		21	7	10	77	51	26	70
6	Milan		19	9	10	63	46	17	66
7	Napoli		18	8	12	61	50	11	62
8	Sassuolo		14	9	15	69	63	6	51
9	Fiorentina		12	13	13	51	48	3	49
10	Parma		14	7	17	56	57	-1	49
11	Verona		12	13	13	47	51	-4	49
12	Bologna		12	11	15	52	65	-13	47
13	Cagliari		11	12	15	52	56	-4	45
14	Udinese		12	9	17	37	51	-14	45
15	Sampdoria		12	6	20	48	65	-17	42
16	Torino		11	7	20	46	68	-22	40
17	Genoa		10	9	19	47	73	-26	39
18	Lecce		9	8	21	52	85	-33	35
19	Brescia		6	7	25	35	79	-44	25
20	SPAL		5	5	28	27	77	-50	20

4.5 Ligue 1

#	Équipe	Résultats	G.	N.	P.	p.	c.	Diff.	Pts.
1	Paris-SG		22	2	3	75	24	51	68
2	Marseille		16	8	4	41	29	12	56
3	Rennes		15	5	8	38	24	14	50
4	Lille		15	4	9	35	27	8	49
5	Reims		10	11	7	26	21	5	41
6	Nice		11	8	9	41	38	3	41
7	Lyon		11	7	10	42	27	15	40
8	Montpellier		11	7	10	35	34	1	40
9	Monaco		11	7	10	44	44	0	40
10	Angers		11	6	11	28	33	-5	39
11	Strasbourg		11	5	11	32	32	0	38
12	Bordeaux		9	10	9	40	34	6	37
13	Nantes		11	4	13	28	31	-3	37
14	Brest		8	10	10	34	37	-3	34
15	Metz		8	10	10	27	35	-8	34
16	Dijon		7	9	12	27	37	-10	30
17	Saint-Étienne		8	6	14	29	45	-16	30
18	Nîmes		7	6	15	29	44	-15	27
19	Amiens		4	11	13	31	50	-19	23
20	Toulouse		3	4	21	22	58	-36	13

4.6 Super League

#	Mannschaft	Verlauf	S	U	N	Tore	Diff	Pkt
1	BSC Young Boys		23	7	6	80:41	39	76
2	FC St. Gallen		21	5	10	79:56	23	68
3	FC Basel		18	8	10	74:38	36	62
4	Servette Genève		12	13	11	57:48	9	49
5	FC Lugano		11	14	11	46:46	0	47
6	FC Luzern		13	7	16	42:50	-8	46
7	FC Zürich		12	7	17	45:72	-27	43
8	FC Sion		10	9	17	40:55	-15	39
9	FC Thun		10	8	18	45:67	-22	38
10	Neuchâtel Xamax FCS		5	12	19	33:68	-35	27

References

[1] Ulrik Brandes and Bobo Nick. Asymmetric Relations in Longitudinal Social Networks. *IEEE Transactions on Visualization and Computer Graphics*, 17(12):2283–2290, 2011.

[2] Ulrik Brandes, Bobo Nick, Brigitte Rockstroh, and Astrid Steffen. Gestaltlines. *Computer Graphics Forum*, 32(3):171–180, 2013.

[3] *The Cricket and Football Field* (27 April 1889: p. 3). The Football League: Complete record of the season's results. https://www.britishnewspaperarchive.co.uk/viewer/BL/0000979/18890427/019/0003.

[4] Philipp Lehman and Joseph Wright. The etoolbox package, 2018. http://mirror.ctan.org/macros/latex/contrib/etoolbox/etoolbox.pdf.

[5] Andreas Loeffler and Dan Luecking. Sparklines, 2016. https://www.ctan.org/pkg/sparklines.

[6] Thomas F. Sturm. The csvsimple package, 2019. http://www.ctan.org/pkg/csvsimple.

[7] Till Tantau. The TikZ and PGF packages, 2019. http://mirrors.ctan.org/graphics/pgf/base/doc/pgfmanual.pdf.

[8] Edward R. Tufte. *Beautiful Evidence*. Graphics Press, 2006.