Points Scoring in Football Leagues

Jörg Thomas

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Points Scoring in Football Leagues

Contents

- Question
- Occasion/Background
- Measure of Points Achievement
- Further Measurements
- Time Series
- Comparisons
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Question (1)

Development of Points Scoring (Points per Game – PPG) in League Football in Europe in Recent Decades

From season to season:

- Do the higher-ranked teams always score more points?
- Are the lower-ranked teams scoring fewer and fewer points?
- Will the gap in points scoring increase?

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Question (2)

Differences within the Leagues, between the First and Last Places over Time

Romania: Divizia C, Seria A VIII-A
Season: 1983/1984

Place	team	Sp.	G.	u.	v.	Goal	Differen	Points
1.	Muresul Deva	30	16	6	8	53: 33	+20	38- 22
2.	UMT Timisoara	30	14	3	13	57: 37	+20	31- 29
3.	Mecanica Orastie	30	15	1	14	49: 53	-4	31- 29
4.	Minerul Paroseni	30	13	5	12	41: 46	-5	31- 29
5.	Minerul Moldova-Noua	30	14	2				
6.	Minerul Stiinta Vulcan	30	13	4				
7.	Metalul Bocsa	30	13	3				
8.	Dacia Orastil	30	11	7				
9.	Minerul Certej	30	13	3				
10.	Metalul Otelu-Rosu	30	14	1				
11.	Minerul Anina	30	13	3				
12.	Victoria Calan	30	13	3				
13.	Constructorul Timisoara	30	13	3				
14.	Minerul Oravita	30	13	3	14	39: 45	-6	29- 31
15.	Minerul Ghelar	30	12	5	13	35: 52	-17	29- 31
16.	Minerul Aninoasa	30	11	6	13	32: 39		28- 32

Significant differences
- Within the league
- the top-ranked
- the last-placed

England: Premier League
Season: 2018/2019

Place	team	Sp.	G.	u.	v.	Goals	Difference	Points
1.	Manchester City	38	32	2	4	95: 23	+72	98
2.	Liverpool FC		30	7	1	89: 22	+67	97
3.	Chelsea FC		21	9	8	63: 39	+24	72
4.	Tottenham Hotspur			2	13	67: 39	+28	71
5.				7	10	73: 51	+22	70
6.				9	10	65: 54	+11	66
7.					13	47: 46	+1	57
8.					14	54: 46	+8	54
9.						51: 48	+3	52
10.					16	52: 55	-3	52
11.					16	52: 59	-7	50
12.				7	17	51: 53	-2	49
13.	Newcastle United			9	17	42: 48	-6	45
14.	AFC Bournemouth			6	19	56: 70	-14	45
15.	FC Burnley		11	7	20	45: 68	-23	40
16.	FC Southampton		9	12	17	45: 65	-20	39
17.	Brighton & Hove Albion	38	9	9	20	35: 60	-25	36
18.	Cardiff City	38	10	4	24	34: 69	-35	34
19.	Fulham FC	38	7	5	26	34: 81	-47	26
20.	Huddersfield Town	38	3	7	28	22: 76	-54	16

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Question (3)

Differences within the Leagues, between the First and Last Places over Time

Germany (FRG): Bundesliga
Season: 1968/1969

Place	team	Sp.	G.	u.	v.	Goals	Difference	Points
1.	FC Bayern Munich	34	18	10	6	61 : 31	1.97	46 - 22
2.	Alemannia Aachen	34	16	6	12	57 : 51	1.12	38 - 30
3.	Borussia Mönchengladbach	34	13	11	10	61 : 46	1.33	37 - 31
4.	Eintracht Braunschweig	34	13	11	10	46 : 43	1.07	37 - 31
5.	VfB Stuttgart	34	14	8				
6.	Hamburger SV	34	13	10				
7.	FC Schalke 04	34	14	7				
8.	Eintracht Frankfurt	34	13	8				
9.	Werder Bremen	34	14	6				
10.	TSV 1860 Munich	34	15	4				
11.	Hannover 96	34	9	14				
12.	MSV Duisburg	34	8	16	10	33 : 37	0.89	32 - 36
13.	1. FC Köln	34	13	6	15	47 : 56	0.84	32 - 36
14.	Hertha BSC	34	12	8	14	31 : 39	0.79	32 - 36
15.	1. FC Kaiserslautern	34	12	6	16	45 : 47	0.96	30 - 38
16.	Borussia Dortmund	34	11	8	15	49 : 54	0.91	30 - 38
17.	1. FC Nürnberg	34	9	11	14	45 : 55	0.82	29 - 39
18.	Kickers Offenbach	34	10	8	16	42 : 59	0.71	28 - 40

Germany: 1st Bundesliga
Season: 2023/2024

Place	team	Sp.	G.	u.	v.	Goals	Difference	Points
1.	Bayer 04 Leverkusen	34	28	6	0	89 : 24	+65	90
2.	VfB Stuttgart		23	4	7	78 : 39	+39	73
3.	FC Bayern Munich		23	3	8	94 : 45	+49	72
4.	RasenBallsport Leipzig			8	7	77 : 39	+38	65
5.				9	7	68 : 43	+25	63
6.					9	51 : 50	+1	47
7.					14	66 : 66	+0	46
8.					12	50 : 55	-5	42
9.					14	48 : 54	-6	42
10.					14	45 : 58	-13	42
11.				9	15	50 : 60	-10	39
12.	VfL Wolfsburg			7	17	41 : 56	-15	37
13.	1. FSV Mainz 05		7	14	13	39 : 51	-12	35
14.	Borussia Mönchengladbach		7	13	14	56 : 67	-11	34
15.	1. FC Union Berlin		9	6	19	33 : 58	-25	33
16.	VfL Bochum	34	7	12	15	42 : 74	-32	33
17.	1. FC Köln	34	5	12	17	28 : 60	-32	27
18.	SV Darmstadt 98	34	3	8	23	30 : 86	-56	17

Significant differences
- Within the league
- the top-ranked
- the last-placed

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Question (4)

Behavior of Point Scoring over Time

- Seasonal specialty
- Seasonal fluctuations
- National peculiarity
- Long-term development
- Comparable to other sports
- Comparable to other league concepts (transfer market, draft system)

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Occasion/Background

European Cup of State champions



UEFA CHAMPIONS LEAGUE®

Since the introduction of the UEFA Champions League, especially with the opening of the field to "non-champions" for the 1997/1998 season, there has been a concentration in such a way that fewer and fewer associations and fewer and fewer different teams are represented in the final rounds of the competition.
[This needs to be shown!]

Can this trend be observed in individual European football leagues?

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Measure of Points Achieved (1)

Assessment of Points Scored during a Playing Season

Table

Place	team	Sp.	G.	u.	v.	Goals	Difference	Points
1.	Bayer 04 Leverkusen	34	28	6	0	89 : 24	+65	90
2.	VfB Stuttgart	34	23	4	7	78 : 39	+39	73
3.	FC Bayern Munich	34	23	3	8	94 : 45	+49	72
4.	RasenBallsport Leipzig	34	19	8	7	77 : 39	+38	65
5.	Borussia Dortmund	34	18	9	7	68 : 43	+25	63
6.	Eintracht Frankfurt	34	11	14	9	51 : 50	+1	47
7.	TSG 1899 Hoffenheim	34	13	7	14	66 : 66	+0	46
8.	1. FC Heidenheim	34	10	12	12	50 : 55	-5	42
9.	Werder Bremen	34	11	9	14	48 : 54	-6	42
10.	SC Freiburg	34	11	9	14	45 : 58	-13	42
11.	FC Augsburg	34	10	9	15	50 : 60	-10	39
12.	VfL Wolfsburg	34	10	7	17	41 : 56	-15	37
13.	1. FSV Mainz 05	34	7	14	13	39 : 51	-12	35
14.	Borussia Mönchengladbach	34	7	13	14	56 : 67	-11	34
15.	1. FC Union Berlin	34	9	6	19	33 : 58	-25	33
16.	VfL Bochum	34	7	12	15	42 : 74	-32	33
17.	1. FC Köln	34	5	12	17	28 : 60	-32	27
18.	SV Darmstadt 98	34	3	8	23	30 : 86	-56	17

Points per Game (PPG)

Place	team	Sp.	G.	u.	v.	2 points	2 points/ game	3-point	3 points/ game
1.	Bayer 04 Leverkusen	34	28	6	0	62	1.82	90	2.65
2.	VfB Stuttgart	34	23	4	7	50	1.47	73	2.15
3.	FC Bayern Munich	34	23	3	8	49	1.44	72	2.12
4.	RasenBallsport Leipzig	34	19	8	7	46	1.35	65	1.91
5.	Borussia Dortmund	34	18	9	7	45	1.32	63	1.85
6.	Eintracht Frankfurt	34	11	14	9	36	1.06	47	1.38
7.	TSG 1899 Hoffenheim	34	13	7	14	33	0.97	46	1.35
8.	1. FC Heidenheim	34	10	12	12	32	0.94	42	1.24
9.	Werder Bremen	34	11	9	14	31	0.91	42	1.24
10.	SC Freiburg	34	11	9	14	31	0.91	42	1.24
11.	FC Augsburg	34	10	9	15	29	0.85	39	1.15
12.	VfL Wolfsburg	34	10	7	17	27	0.79	37	1.09
13.	1. FSV Mainz 05	34	7	14	13	28	0.82	35	1.03
14.	Borussia Mönchengladbach	34	7	13	14	27	0.79	34	1.00
15.	1. FC Union Berlin	34	9	6	19	24	0.71	33	0.97
16.	VfL Bochum	34	7	12	15	26	0.76	33	0.97
17.	1. FC Köln	34	5	12	17	22	0.65	27	0.79
18.	SV Darmstadt 98	34	3	8	23	14	0.41	17	0.50

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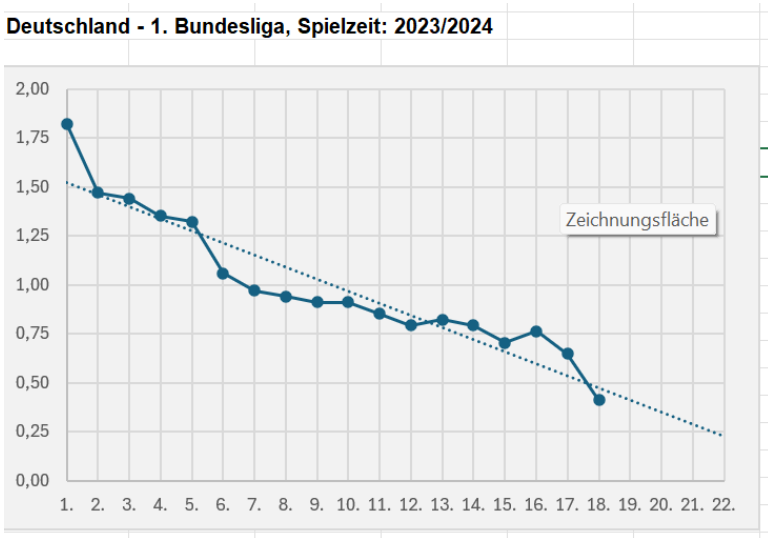
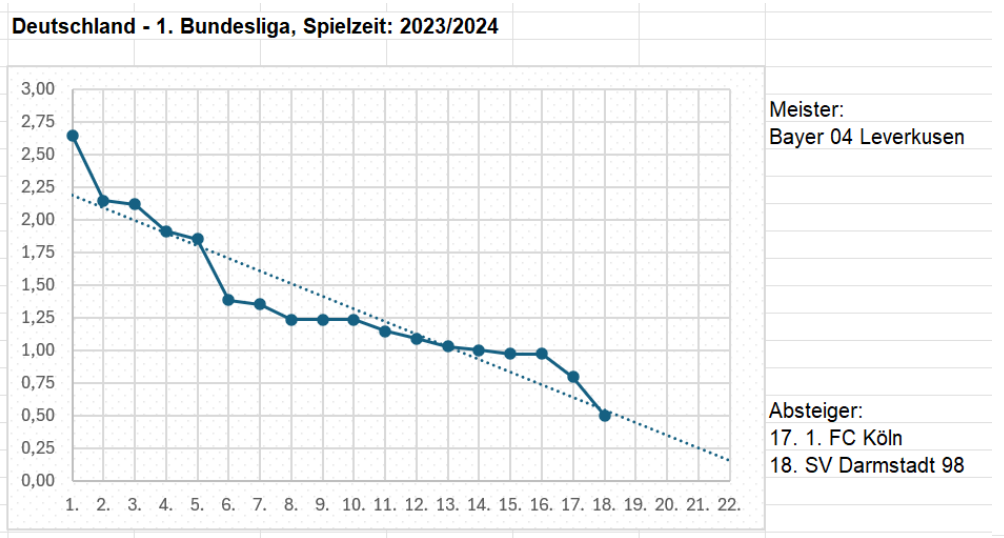
Measure of Points Achieved (2)

A Measure of Points Scored in a Game

Graph showing points per game (2-point rule)



Graph showing points per game (3-point rule)



	Anzahl	Minimum	1. Quartil	Mittelwert	SD	Median	3. Quartil	Maximum
2-Punkte-Regel	18	0,41	0,79	1,00	0,34	0,91	1,26	1,82
3-Punkte-Regel	18	0,50	1,01	1,37	0,54	1,24	1,74	2,65

	Steigerung	Varianz
2-Punkte-Regel	-0,062	0,116
3-Punkte-Regel	-0,097	0,287

A measure for assessing the gradient in point achievement

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Measure of Points Achieved (3)

The measure of Points Scored in a Game

The regression coefficient of the slope in points per game (PPG) is a **measure** for assessing the gradient in scoring.

- Clarity
  Average point difference per game between the ranked teams
- Applicability
  For sports with a league/tournament system and win, (draw,) loss
- Comparability
  Establishment of a 2-point rule (always the same point base) and standardization to 20 teams.
- Robustness
  regression coefficient remains independent of variance

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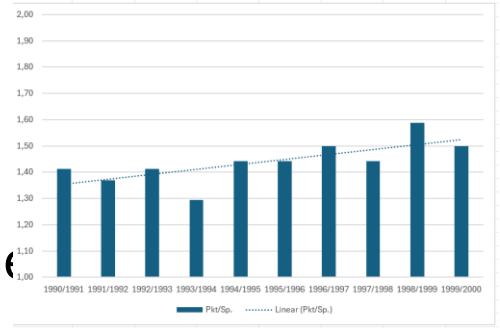
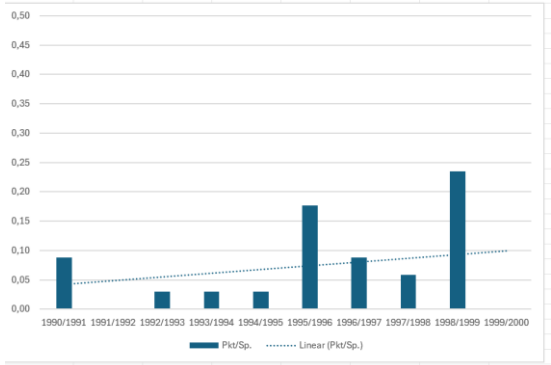
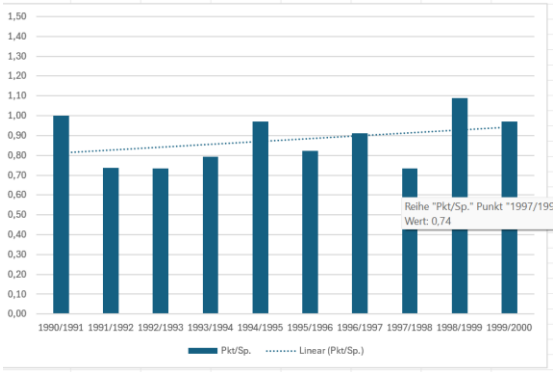
Further Measurements

Further Measures for Assessing the Gradient in Point Achievement

- Master's PPG
- PPG gap between champion and runne up
- PPG's gap between champion an place







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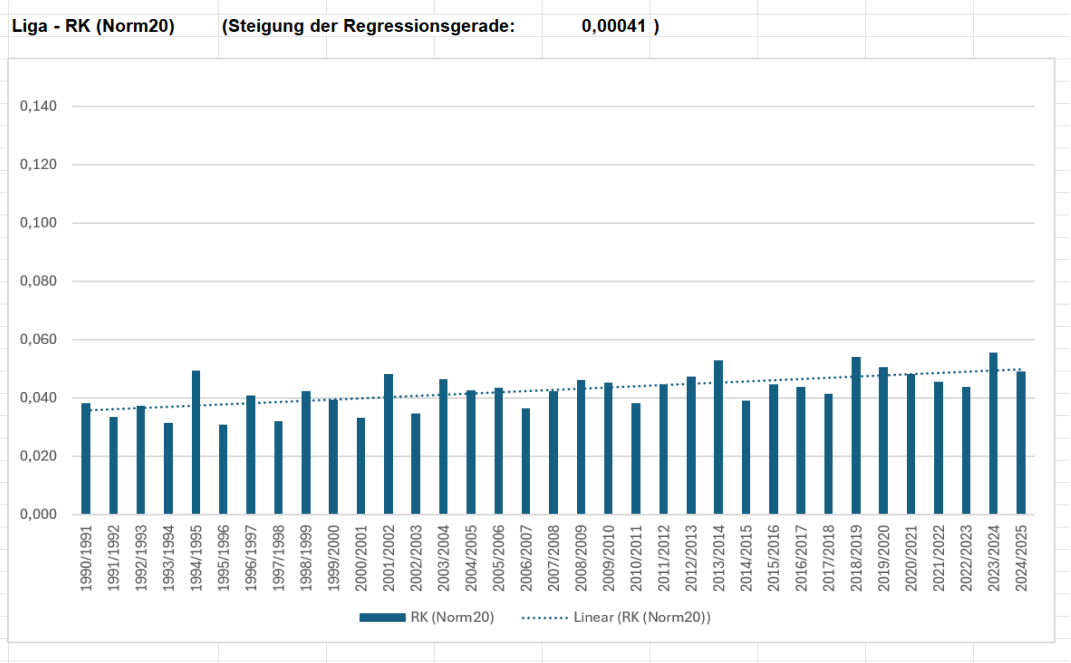
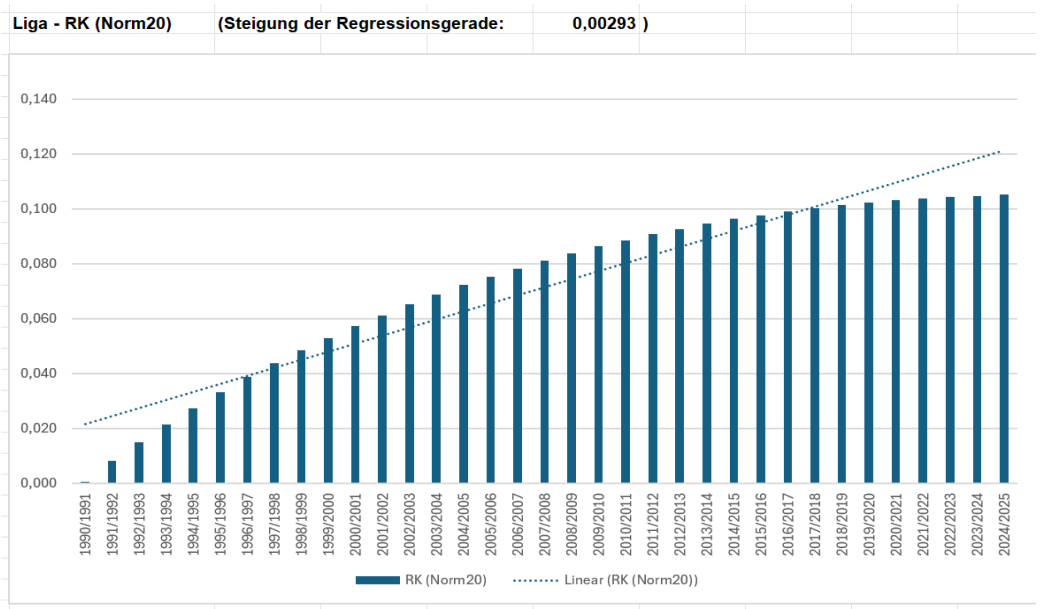
Time Series

Assessment of the Development of Points Achievement over Time

Development of the regression coefficients



Comparisons with simulation to assess increases or decreases



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Compare (1)

Assessment of Developments in European Football Leagues

European football leagues

No.	sport	country	league
1.	football	Belgium	Division d'Honneur
2.	football	GDR	DS-Oberliga
3.	football	Germany	Bundesliga
4.	football	Germany	2nd Bundesliga
5.	football	Germany	3rd League
6.	football	England	Second Division
7.	football	England	First Division
8.	football	France	Division 1
9.	football	Greece	Alpha Ethnic
10.	football	Italy	Serie A
11.	football	Italy	Series B
12.	football	Luxembourg	Division d'honneur
13.	football	Netherlands	Eredivisie
14.	football	Austria	League (WFV)
15.	football	Portugal	Primeira Divisão
16.	football	Russia	Top League
17.	football	Saarland	League of Honor
18.	football	Scotland	Division One
19.	football	Switzerland	National League A
20.	football	Soviet Union	Perwaja Gruppa
21.	football	Spain	Primera División
22.	football	Spain	Segunda División
23.	football	Türkiye	Milli League

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Compare (2)

Assessment of Developments in German Leagues

German leagues

No.	sport	country	league
1.	basketball	Germany	Bundesliga
2.	ice hockey	Germany	Bundesliga
3.	ice hockey	Germany	German Ice Hockey League
4.	ice hockey	Germany	German Ice Hockey League 2
5.	football	Germany	Bundesliga
6.	football	Germany	2nd Bundesliga
7.	football	Germany	3rd League
8.	Handball	Germany	Bundesliga
9.	Handball	Germany	2nd Bundesliga
10.	Field hockey	Germany	Bundesliga
11.	Field hockey	Germany	2nd Bundesliga
12.	Indoor hockey	Germany	Bundesliga
13.	Indoor hockey	Germany	2nd Bundesliga
14.	volleyball	Germany	Women's Bundesliga

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Compare (3)

Assessment of Developments in Women’s Leagues

Women's leagues

No.	sport	country	league
1.	basketball	Germany	Women's Bundesliga
2.	ice hockey	Germany	Women's Bundesliga
3.	Field hockey	Germany	Women's Bundesliga
4.	Field hockey	Germany	2nd Women's Bundesliga
5.	football	Germany	Women's Bundesliga
6.	football	Germany	2nd Women's Bundesliga
7.	Indoor hockey	Germany	Women's Bundesliga
8.	Handball	Germany	Women's Bundesliga
9.	Handball	Germany	2nd Women's Bundesliga
10.	volleyball	Germany	2nd Women's Bundesliga

Points Scoring in Football Leagues

Compare (4)

Assessment of Developments in North American Professional Leagues

North American professional leagues

No.	sport	country	league
1.	baseball	North America	Major Baseball League (MBL)
2.	basketball	North America	National Basketball Association (NBA)
3.	ice hockey	North America	National Hockey League (NHL)
4.	football	North America	National Football League (NFL)

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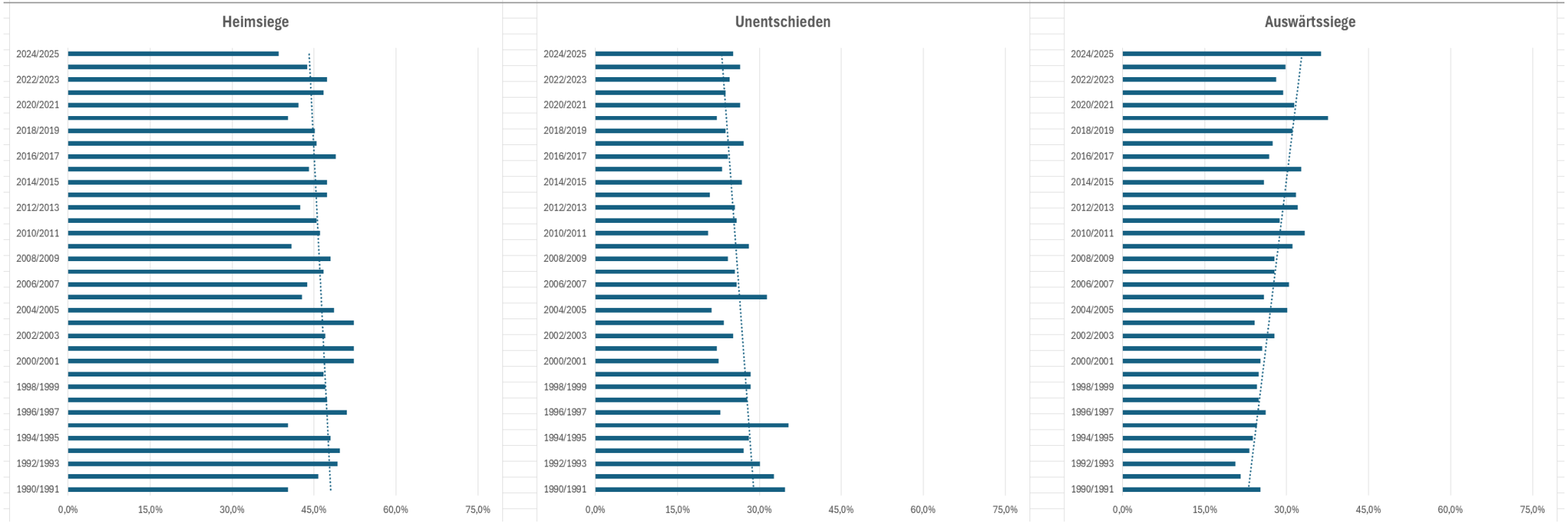
Further considerations (1)

Development of Records for Home Wins, Wraws, and Away Wins



Further considerations (2)

Development of the Financial Resources of the Leagues and Clubs

- UEFA distributions
- TV money

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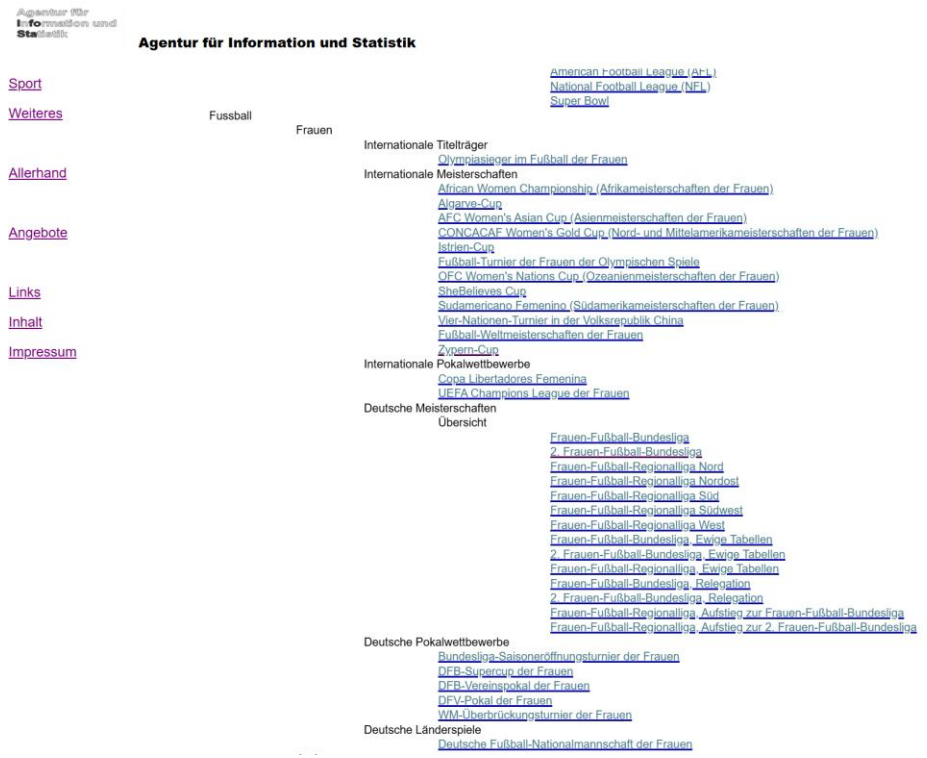
Database (1)

https://IfoSta.de

Goal:

- To document and present events and occurrences, usually with their entire history - from the beginnings to the present day.
- To present content quickly and comprehensively
- To enable comparability

Abstract:



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Database (2)

Structure:

category	documentation	Example	link
- international match	International Encounters	- List of international matches of the German national football team with overall record	LSp
- league	Leagues during the season	- Documentation of the 1st Bundesliga football season 2022/2023 (season progress with results)	BL2223
	League with overall overview	- Complete documentation of all Premier League seasons	ENG-PL
- tour	Documentation of a tour	- Documentation of the 2018 Formula 1 World Championship with 21 races	F1 World Championship 20218
	Tour overview	- Complete documentation of the Formula 1 World Championships from 1950 onwards	Formula 1 World Championship
- title fight	Documentation of the championships with overall overview	- Documentation of the Unofficial Football World Cup	inoff WM
- titleholder	Documentation of the title holders	- List of title winners in European football competitions with a complete overview	TT
- tournament	Documentation of the tournaments with an overall summary	- Documentation of the tournament results of the FIFA World Cups with an overall summary	World Cup
		- Documentation of the results of the handball tournaments at the Summer Olympic Games with an overall summary	HB
- Competition	Documentation of the competitions with an overall summary	- Documentation of the UEFA Champions League competitions with a complete overview	CL
		- Documentation of the Mitropa Cup competitions with a complete overview	MP
- competition	Documentation of the competitions with an overall summary	- Documentation of the medal rankings at the Summer Olympic Games with an overall overview	OS
		- Documentation of the medal rankings at the Winter Olympic Games with an overall overview	OW
Additionally:			
- Generally	General information	History of the German Football League System; List of league affiliations in the DFB Club Cup	league Cup
- team	Team name(s) Player name(s)	- Names of German football teams with their history, affiliations, leagues, and competitions	Teams
	Documentation of league and competition results	- Documentation of titles, records, rankings, and match results in German football (leagues and competitions)	Overview
		- Documentation of Borussia Dortmund's titles, records, rankings, and match results	BVB
		- Documentation of the titles, records, rankings, and match results of 1. FC Saarbrücken	1FCS

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Database (3)

Sources:

Data sources include press products, portals, books and brochures containing sports results:
- Süddeutsche Zeitung as well as special editions and special issues, https://www.sz.de
- kicker sports magazine, kicker almanach and kicker special issues, https://www.kicker.de
- Frankfurter Allgemeine Zeitung as well as special editions and special issues, https://www.faz.net
- ARD and ZDF, e.g. https://www.ndr.de/sport/ergebnisse
- Books by Hardy Grüne, Dietrich Schulze- Marmeling , Uwe Nuttelmann , Karl Adolf Scherer, Heinz Schöbel, Dirk Schübbe and many other authors

Hardy Grüne's books are particularly impressive, both in terms of their broad scope and the wealth of detailed information they contain.
- Books and brochures from the series of the German Sports Club for Football Statistics (DSFS)

Many websites offer a great range of information. Here are a few examples:
https://www.kicker.de
http://www.bundesligainfo.de
https://www.hockeydb.com
https://www.hockey-db.de
https://www.rsssf.com
https://www.sport-record.de
https://www.olimpbase.org
https://www.fussball-lux.lu/
and of course Wikipedia, although the German-language part only serves as an introduction to the other language parts of the encyclopedia.
https://de.wikipedia.org

Some sports federations have complete documentation on the leagues and competitions they organize, while others have gaps.
The data sources used are listed in the Excel files on the 'Remarks' worksheet.

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Database (4)

Platform:

Microsoft Excel	
	The data is documented in an Excel file, organized by topic.
	This means the following for the documentation of leagues:
	- The data for the 2022/2023 season of the 1st Bundesliga is documented in a file on various tables.
	- The data for the Bundesliga football league for the seasons from 1963/1964 onwards are summarized in one file on various spreadsheets.
	This means the following for the documentation of tournaments/competitions:
	- The data for the same tournaments/competitions of a sport (e.g. Football World Cups/UEFA Champions League) are documented in an Excel file.
	- The data for each tournament is documented on a single spreadsheet.
	- The individual overviews, balance sheets and statistics are each documented on a separate spreadsheet.

Visual Basic for Applications (VBA)	
	Typically, the data is entered into Excel and processed using Excel's functionality or VBA.
	The data is then quality-checked and subsequently transformed into the desired structure using VBA.
	The documentation, including the layout, as well as the creation of lists, tables, balance sheets and statistics, is done via VBA.
	A library of documentation files is set up in such a way that the corresponding VBA macros are called and controlled via the name of the respective Excel file.

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Database (5)

A notice:

- The data used is freely accessible and is used to build a uniform, consistently structured database.
- to present overviews, balance sheets and statistics on https://ifosta.de/ .
- Both the compiled database and overviews, balance sheets and statistics are freely accessible at https://ifosta.de/ .

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Thank you for your attention!

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