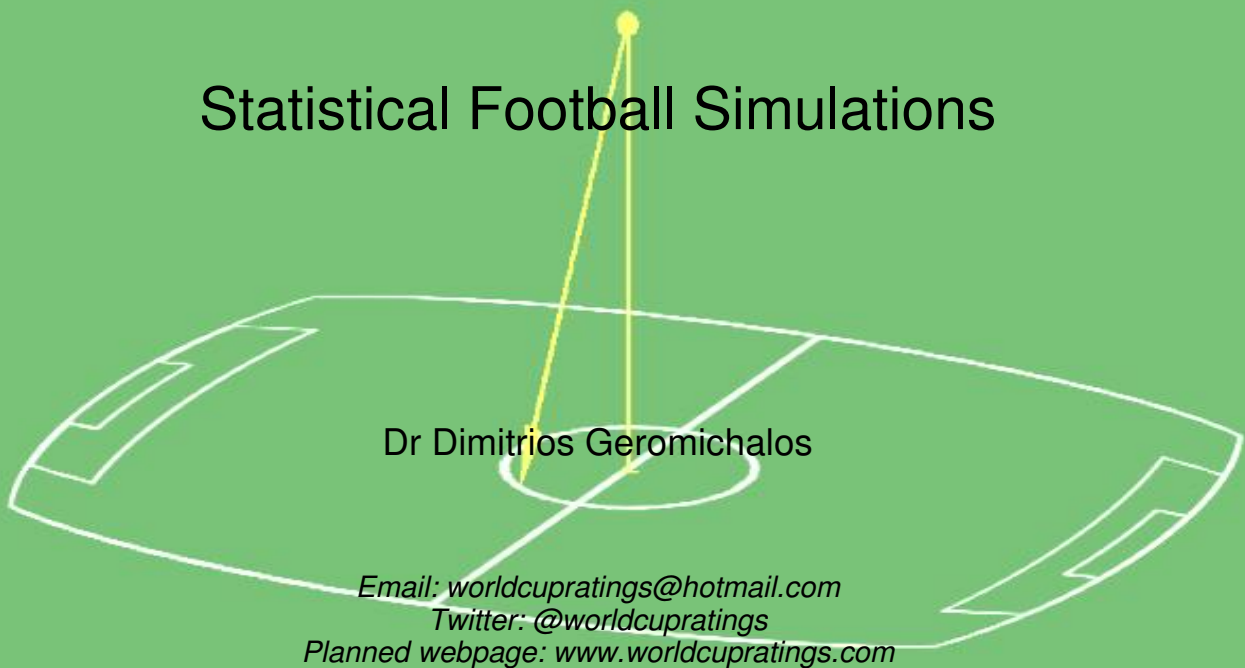


World Cup Ratings

Statistical Football Simulations



Idea

- PC simulation program for every interested user
 - Open Source under 4-clause BSD license
- Calculation of soccer result probabilities
- Consideration of all possible combinations
- Updates after each playing day
- Analysis of fictive scenarios
 - Better judgement of probable or improbable events
 - Unprecedented view on sports results

Features

- **Modules**
 - *World Cups*
 - *European Cups*
 - *National Leagues* (Bundesliga,...)
 - *Auxiliary Functions* (single plays, Elo numbers,...)
- Graphical display of results
- User-friendly interface
- Detailed documentation and help

Methods

- Elo coefficients
- Combinatorics
- Probability calculations
- Monte Carlo simulations
- Football-specific statistical models
- Real results as parameters
 - Statistical analysis of all possible paths

Start Page and Simple Functions

The screenshot displays the 'WorldCupRatings' application with three sub-windows open over a soccer field background.

- Quota Calculator:** A small window with two input fields: 'Win Probability [%]' (28) and 'Odd Quota' (2.6). It includes buttons for 'Calc. Quota', 'Calc. Prob.', 'Usage', and 'Quit'.
- Single Play Result:** A window for entering match details. It has fields for 'Team 1' (Argentina, Elo 1984) and 'Team 2' (Brazil, Elo 2016). It also includes a 'KO Round' checkbox and a 'Home Advantage' checkbox. Below these are fields for 'Win Probability Team 1 [%]' (27.24), 'Remis Probability [%]' (36.33), and 'Win Probability Team 2 [%]' (36.43). A vertical color scale bar is on the right.
- Elo Coefficient Calculator:** A window for calculating Elo ratings. It has a 'Type of Match' dropdown (World Cup / continental qualifier or major tournament), a 'Result' dropdown (Win Team 2), and a 'Goal Difference' field (1). It also has fields for 'Initial Elo Number' and 'Home Advantage' for both teams, and a 'New Elo Number' field. Buttons for 'Calculate', 'Usage', and 'Quit' are at the bottom.

World Cup: Inputs

The 'World Cup: Inputs' window is a complex form for entering tournament data. It features a 'Settings' tab and a 'Results' tab. The 'Results' tab is active, showing a table of teams and their ratings, and a section for entering match results.

Group	Team	Elo	Home	Prelim. Rank
A	1 South Africa	1662	<input checked="" type="checkbox"/>	n/a
	2 Mexico	1840	<input type="checkbox"/>	n/a
	3 Uruguay	1895	<input type="checkbox"/>	n/a
	4 France	1752	<input type="checkbox"/>	n/a
B	1 Argentina	1999	<input type="checkbox"/>	n/a
	2 Nigeria	1658	<input type="checkbox"/>	n/a
	3 South Korea	1728	<input type="checkbox"/>	n/a
	4 Greece	1703	<input type="checkbox"/>	n/a
C	1 England	1890	<input type="checkbox"/>	n/a
	2 USA	1749	<input type="checkbox"/>	n/a
	3 Algeria	1544	<input type="checkbox"/>	n/a
	4 Slovenia	1684	<input type="checkbox"/>	n/a
D	1 Germany	2044	<input type="checkbox"/>	n/a
	2 Australia	1767	<input type="checkbox"/>	n/a
	3 Serbia	1781	<input type="checkbox"/>	n/a
	4 Ghana	1747	<input type="checkbox"/>	n/a
E	1 Netherlands	2085	<input type="checkbox"/>	n/a
	2 Denmark	1728	<input type="checkbox"/>	n/a
	3 Japan	1744	<input type="checkbox"/>	n/a
	4 Cameroon	1654	<input type="checkbox"/>	n/a
F	1 Italy	1824	<input type="checkbox"/>	n/a
	2 Paraguay	1771	<input type="checkbox"/>	n/a
	3 New Zealand	1546	<input type="checkbox"/>	n/a
	4 Slovakia	1635	<input type="checkbox"/>	n/a
G	1 Brazil	2082	<input type="checkbox"/>	n/a
	2 North Korea	1523	<input type="checkbox"/>	n/a
	3 Ivory Coast	1758	<input type="checkbox"/>	n/a
	4 Portugal	1874	<input type="checkbox"/>	n/a
H	1 Spain	2085	<input type="checkbox"/>	n/a
	2 Switzerland	1757	<input type="checkbox"/>	n/a
	3 Honduras	1679	<input type="checkbox"/>	n/a
	4 Chile	1883	<input type="checkbox"/>	n/a

Preliminaries Results

Match	Result
A1 vs A2	Not played
A1 vs A3	Not played
A1 vs A4	Not played
A2 vs A3	Not played
A2 vs A4	Not played
A3 vs A4	Not played
B1 vs B2	Not played
B1 vs B3	Not played
B1 vs B4	Not played
B2 vs B3	Not played
B2 vs B4	Not played
B3 vs B4	Not played
C1 vs C2	Not played
C1 vs C3	Not played
C1 vs C4	Not played
C2 vs C3	Not played
C2 vs C4	Not played
C3 vs C4	Not played
D1 vs D2	Not played
D1 vs D3	Not played
D1 vs D4	Not played
D2 vs D3	Not played
D2 vs D4	Not played
D3 vs D4	Not played
E1 vs E2	Not played
E1 vs E3	Not played
E1 vs E4	Not played
E2 vs E3	Not played
E2 vs E4	Not played
E3 vs E4	Not played
F1 vs F2	Not played
F1 vs F3	Not played
F1 vs F4	Not played
F2 vs F3	Not played
F2 vs F4	Not played
F3 vs F4	Not played
G1 vs G2	Not played
G1 vs G3	Not played
G1 vs G4	Not played
G2 vs G3	Not played
G2 vs G4	Not played
G3 vs G4	Not played
H1 vs H2	Not played
H1 vs H3	Not played
H1 vs H4	Not played
H2 vs H3	Not played
H2 vs H4	Not played
H3 vs H4	Not played

Quarter-Finals (set?, Team 1, Team 2)

Match	Team 1	Team 2
1	n/a	n/a
2	n/a	n/a
3	n/a	n/a
4	n/a	n/a

Semi-Finals (set?, Team 1, Team 2)

Match	Team 1	Team 2
1	n/a	n/a
2	n/a	n/a

Final (set?, Team 1, Team 2)

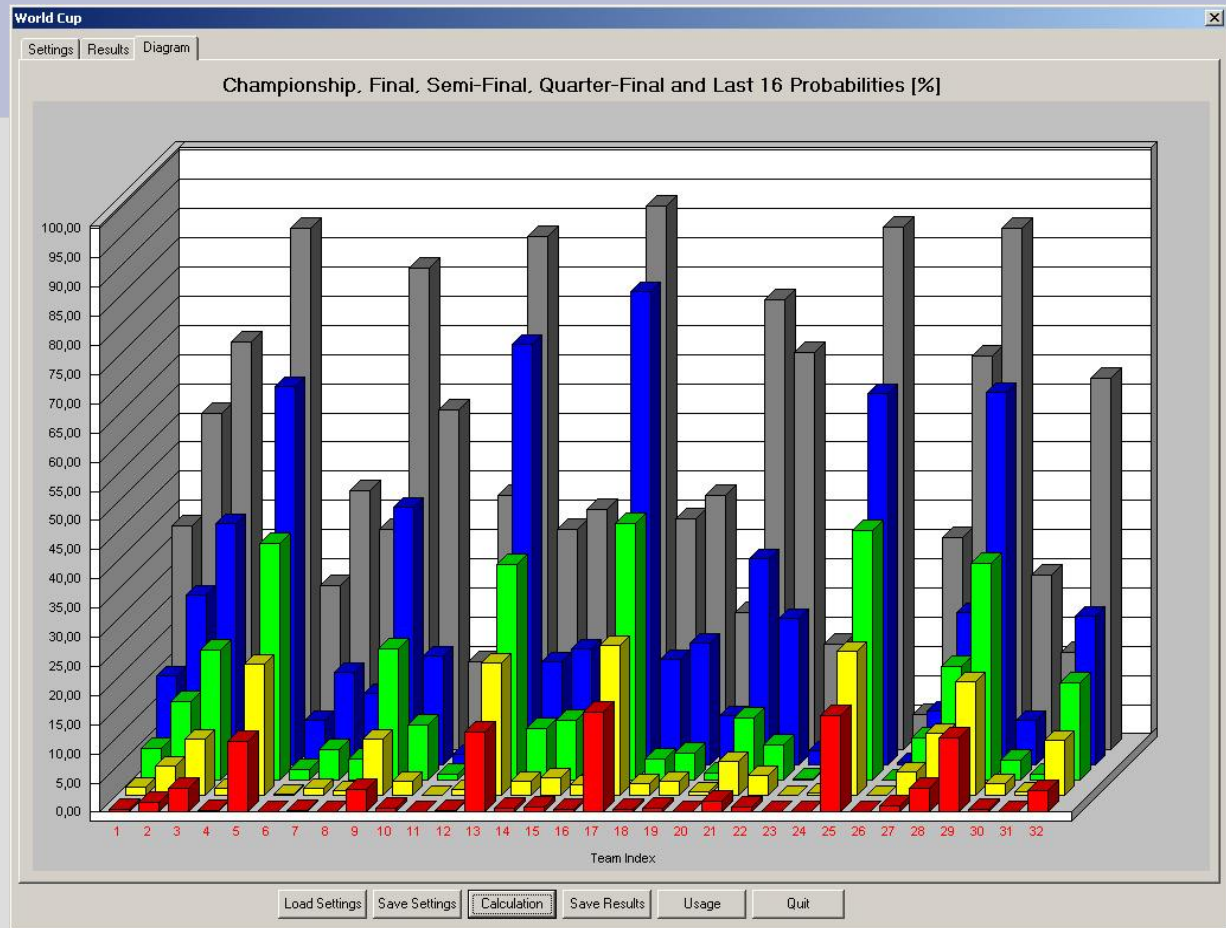
Match	Team 1	Team 2
1	n/a	n/a

3rd Place (set?, Team 1, Team 2)

Match	Team 1	Team 2
1	n/a	n/a

Buttons at the bottom: Load Settings, Save Settings, Calculation, Save Results, Usage, Quit.

World Cup: Results



Bundesliga: Inputs

National League

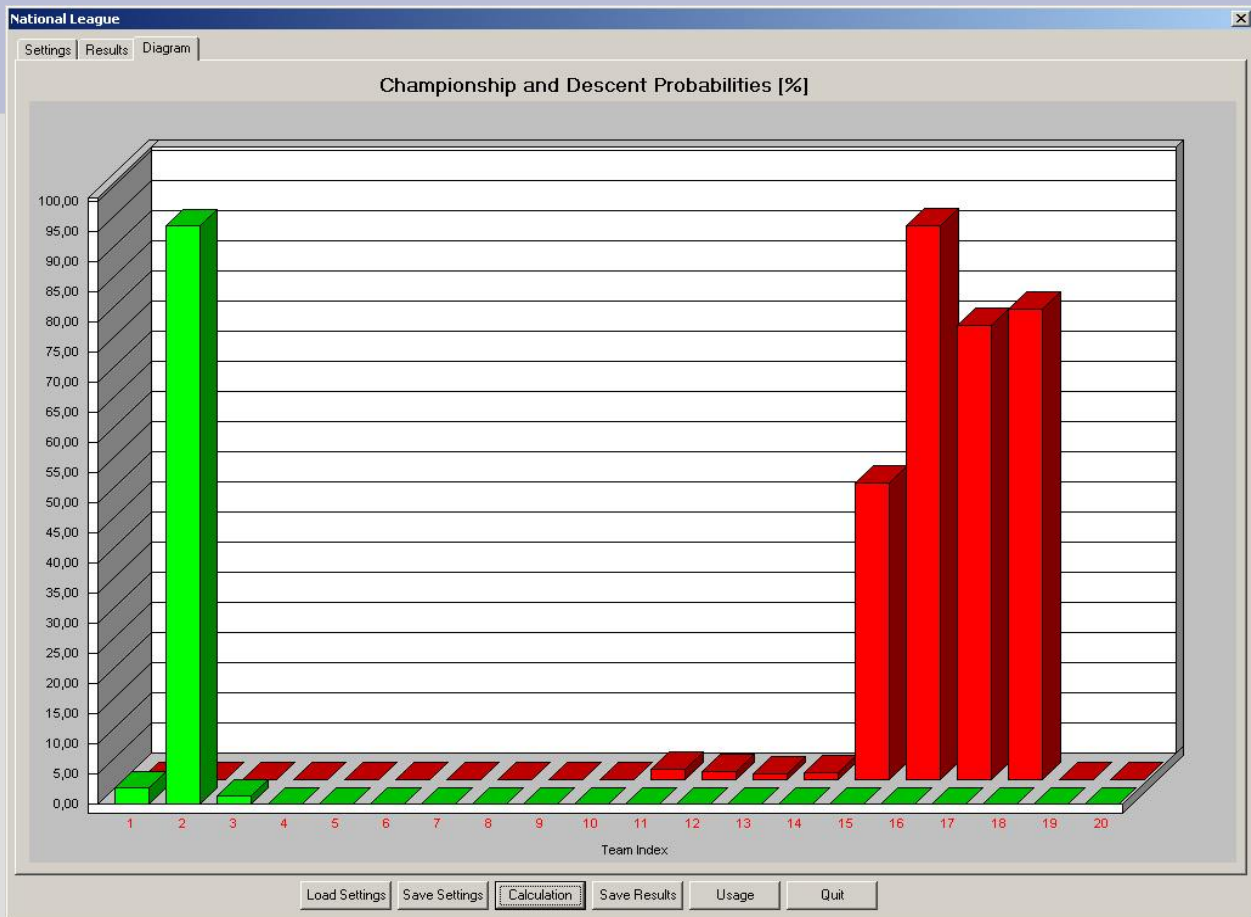
Settings | Results | Diagram

League
Bundesliga

Team	Elo Number	Already Played (Row: Home Play)																				Current Points
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
FC Bayern Muenchen	1493																					29
Borussia Dortmund	1474																					43
Bayer 04 Leverkusen	1420																					33
TSG 1899 Hoffenheim	1348																					25
FC Schalke 04	1343																					22
Eintracht Frankfurt	1319																					26
FSV Mainz 05	1286																					33
Hannover 96	1261																					31
Hamburger SV	1256																					24
SC Freiburg	1236																					28
Werder Bremen	1229																					19
VfL Wolfsburg	1228																					19
1. FC Kaiserslautern	1197																					21
1. FC Nuernberg	1181																					22
VfB Stuttgart	1179																					12
Borussia Moenchengladb	1116																					10
1. FC Koeln	1074																					15
FC St. Pauli	1020																					17
n/a	n/a																					n/a
n/a	n/a																					n/a

Load Settings | Save Settings | Calculation | Save Results | Usage | Quit

Bundesliga: Results



Help Screens

Introduction

Of course no one can pre-Noneetheless, the overwh This answer is well-found Mathematically a team's s determine the expected r

However, when it comes significant role. Teams th teams in easier groups mi consideration.

A similar problem arises fo

Exactly this is the main so

The program consists of s In the World Cup module, results. The results one g final and get the World C The European Cup modu In the League module, pr probabilities are calculate Some minor modules perf

Each module can be call "Usage" button exists for

It should be mention th the latter may be difficult t the German Bundesliga. Feel free to support the id

World Cup

Preliminary Round

General Points

In a World Cup each one of the ones reach the round of the last

A1 - B2	and	A2 - B1
C1 - D2	and	C2 - D1
E1 - F2	and	E2 - F1
G1 - H2	and	G2 - H1

Group Leaders

As a next step, the probability of Preliminary_First(G,a,b)).

World Cup Ratings considers all In this, only victory/defeat is tak All in all, there are 12 probability

Last Sixteen Combinations

The probability of a last sixteen

Last_sixteen_Combination(A1 - l = Preliminary_First(A, a, b) * Prel

There are 144 scenarios each f

Group Scenarios

In many cases the only thing th other ones. In this case, "equal this, all possible 297 combinatio Group scenarios are also create

KO Round

The Quarter-Final

In the 4 quarter finals the winner

W(A1 - B2) - W(C1 - D2)
W(E1 - F2) - W(G1 - H2)
W(A2 - B1) - W(C2 - D1)

National League

In comparison to a World Cup or European Cup, at the first glance a national league championship is relatively simple: There are no complicated preliminary rules or "tournament trees" and the next play opponents are known. On the other hand, the high number of possible play results (up to 3^380) makes an analytical calculation of each possibility - at least for a PC of the year 2010 - impossible. Hence, a Monte Carlo simulation approach was chosen: In a single scenario, random numbers between 0 and 1 are assigned to each still open play. According to the Elo probability, points are assigned as follows:

3 points, if the random number is smaller than the Elo win probability
1 point, if the random number is bigger than the Elo win, but smaller than the sum of the win and the remis probability
0 points else


In order to reach stable results, 200000 scenarios are calculated and the mean probabilities are chosen. That's why the calculation may last some seconds at the current level of technology...

Currently, the League module of World Cup Ratings calculates the probabilities for the Championship, the reach of a place in the Champions League and the Europe League (UEFA Cup) as well as the descent probabilities. The following leagues with the following characteristics are considered at the moment:

English Premier League: 20 teams, 4 Champions League places, 4 UEFA Cup places
German Bundesliga: 18 teams, 4 Champions League places, 4 UEFA Cup places
Italian Serie A: 20 teams, 4 Champions League places, 3 UEFA Cup places
Spanish Primera Division: 20 teams, 4 Champions League places, 4 UEFA Cup places

Unfortunately, reliable Elo coefficients only for the German Bundesliga are available.

About World Cup Ratings



World Cup Ratings
Version 2.0

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