

Fifa World Cup 2026 and the Gini Coefficient

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Abstract

In this paper, we study the Fifa World Cup 2026 matches up to the Final. In the Group Stage, for the decided matches, the probability for a team with lower relative Gini coefficient to win was $28/52$. In the next stages up to final i.e. in the Round of Thirty Two stage, the Round of Sixteen stage etc, the probability for a team with lower relative Gini coefficient to win were $6/15$, $6/8$, $1/4$, $0/2$, $0/1$, $1/1$ respectively. In the Group Stage, the probability to win with lower HDI was $19/52$ i.e. less than half. In the Round of Thirty Two stage, the probability to win with lower HDI was $6/16$. In the Round of Sixteen stage, the probability to win with lower HDI was $1/8$. In the Quarter Final stage, the probability for a team with lower relative HDI to win was $3/4$ i.e. swung to the right. In the Semi Final stage, the probability for a team with lower relative HDI to win was $2/2$. In the Third Place Play-off, the team with higher relative HDI won i.e. the probability swung to the left. In the Final, the team with lower relative Gini coefficient, higher HDI won. The overall probability to win with lower relative Gini coefficient was $42/53$ i.e. 0.506 i.e. more than half. In the previous World Cups 2022, 2018, 2014, the overall probability to win with lower relative Gini coefficient were 0.556 , 0.627 , 0.519 respectively.

I. INTRODUCTION

Fifa World Cup matches 2026,[1], were held in three countries. The countries are Mexico, Canada, USA. Forty eight national teams in a new format played one hundred four matches, in this Cup starting from the eleventh of June at Mexico City. There were seventy two matches in the initial Group Stage. This was followed by sixteen matches in the Round of Thirty Two stage, eight matches in the Round of Sixteen stage, four matches in the Quarter-Final, two matches in the Semi-Final, one match for the third place. The Final match was played in the USA, at New Jersey, East rutherford, MetLife Stadium on 19-th of July.

The participating countries differ from each other in respective Gini Coefficients[2] and HDIs[3]. Gini Coefficient and HDI are important economic indicators for a country. Whether there is any correlation between winning in a match in the tournament and economic indicators of the contending teams, is a natural question which crops up in our discourses. To find, if any, we undertook in [4] a simple-minded analysis of matches of 2014 Fifa World Cup and 2018 Fifa World Cup. We went on studying matches of 2022 Fifa World Cup, [5],[6], held in the Middle East, in the country Qatar.

Corrado Gini, an Italian sociologist and statistician, following work of Max Lorenz and improving on work of Vilfredo Pareto, developed, [7] an index for income inequality for a country. Gini index,[10], measures the extent to which the distribution of income among individuals or, households within an economy deviates from perfectly equal distribution. A Lorenz curve plots the cumulative percentage of total income received against the cumulative number of recipients starting with the poorest individual or, household. The Gini coefficient measures the ratio of the area between the Lorenz curve and a hypothetical line of absolute equality and the area below the hypothetical line of absolute equality. Equivalent mathematical definition, [8], of Gini coefficient is

$$G = \frac{\sum_{i=1}^n \sum_{j=1}^n |x_i - x_j|}{2(n-1) \sum_{j=1}^n x_j},$$

where, n is the number of people of a country and income of j -th person is x_j . Gini coefficient of a country can vary from zero to one. If income of all the people of a country is the same, Gini coefficient is zero. If one person of a country has income, rest other income-less, Gini coefficient of that country is one. In u.k., for example, Gini coefficient is measured by Office

of the National Statistics of u.k.. UN(United Nations) quotes Gini coefficient as one of the important indices for measuring inequality.

Under the auspices of United Nations General Assembly, was founded on 22-nd November, 1965, UNDP(United Nations Development Programme), United Nations' global development network with headquarter at New York. Since 1990, UNDP has published each year the Human Development Report containing aspects on Human Development and the annual Human Development Index(HDI). In 1990, Mahbub ul Haq, working with a group of leading economists, put forward the first Human Development Report. Pakistani economist, Mahbub ul Haq, had been developing the concept of Human Development Index(HDI) starting from 1970. Compared to the definition in 1990, the mathematical definition of HDI underwent change. From 2010 onwards, the Human Development Index(HDI), is defined [3] mathematically as

$$HDI = (LEI.EI.II)^{1/3},$$

where,

Life Expectancy Index(LEI)= $\frac{LE-20}{85-20}$, Education Index(EI)= $\frac{MYSI+EYSI}{2}$, Mean Years of Schooling index(MYSI)= $\frac{MYS}{15}$, Expected Years of Schooling index(EYSI)= $\frac{EYS}{18}$, with each entry in year and Income index(II)= $\frac{\ln(GNI_{pc})-\ln 100}{\ln(75000)-\ln 100}$ with each entry in dollar. LE is Life expectancy at birth, MYS is mean years of schooling (i.e. years that a person aged twenty five or, older has spent in formal education), EYS is expected years of schooling (i.e. total expected years of schooling for children under eighteen years of age), GNI_{pc} is Gross national income at purchasing power parity per capita.

We organise the paper as follows. In the next section, section II, we study the games of FIFA WORLD CUP 2026. For analysing, we collect the datas from [1], [7], [3], likes of [9]. All the relevant scores, we have gathered from [1], [9], percentage Gini coefficients i.e. Gini coefficients multiplied by hundred from, [10], [11] and if not available from other sources from [7], HDI from [3], [12]. The section IV is bibliography.

match number	teams	goals	percentage Gini	HDI(2023)	Winners
1	Mexico	2	2024 Gini 42.6	0.789	Gini lower
	South Africa	0	2022 Gini 54.1	0.741	HDI higher
2	South Korea	2	2021 Gini 32.9	0.937	Gini higher
	Czech Republic	1	2023 Gini 25.7	0.915	HDI higher
3	Czech Republic	1	2023 Gini 25.7	0.915	
	South Africa	1	2022 Gini 54.1	0.741	
4	Mexico	1	2024 Gini 42.6	0.789	Gini higher
	South Korea	0	2021 Gini 32.9	0.937	HDI lower
5	Czech Republic	0	2023 Gini 25.7	0.915	Gini higher
	Mexico	3	2024 Gini 42.6	0.789	HDI lower
6	South Africa	1	2022 Gini 54.1	0.741	Gini higher
	South Korea	0	2021 Gini 32.9	0.937	HDI lower
7	Canada	1	2022 Gini 31.5	0.939	
	Bosnia-Herzegovina	1	2021 Gini 30.3	0.804	
8	Qatar	1	2017 Gini 35.1	0.886	
	Switzerland	1	2022 Gini 33.8	0.970	
9	Switzerland	4	2022 Gini 33.8	0.970	Gini higher
	Bosnia-Herzegovina	1	2021 Gini 30.3	0.804	HDI higher
10	Canada	6	2022 Gini 31.5	0.939	Gini lower
	Qatar	0	2017 Gini 35.1	0.886	HDI higher
11	Switzerland	2	2022 Gini 33.8	0.970	Gini higher
	Canada	1	2022 Gini 31.5	0.939	HDI higher
12	Bosnia-Herzegovina	3	2021 Gini 30.3	0.804	Gini lower
	Qatar	1	2017 Gini 35.1	0.886	HDI lower
13	Brazil	1	2024 Gini 50.3	0.786	
	Morocco	1	2013 Gini 39.5	0.710	
14	Haiti	0	2012 Gini 41.1	0.554	Gini lower
	Scotland	1	2024 Gini 33	0.933	HDI higher
15	Scotland	0	2024 Gini 33	0.933	Gini higher
	Morocco	1	2013 Gini 39.5	0.710	HDI lower
16	Brazil	3	2024 Gini 50.3	0.786	Gini higher
	Haiti	0	2012 Gini 41.1	0.554	HDI higher
17	Scotland	0	2024 Gini 33	0.933	Gini higher
	Brazil	3	2024 Gini 50.3	0.786	HDI lower

II. GROUP STAGE

In the Group Stage, we notice from the table, TableI, for the decided matches probability [13] for a team with lower relative Gini coefficient to win is $\frac{28}{52}$, probability for a team with lower relative HDI to win is $\frac{19}{52}$.

match number	teams	goals	percentage Gini	HDI(2023)	Winners
18	Morocco	4	2013 Gini 39.5	0.710	Gini lower
	Haiti	2	2012 Gini 41.1	0.554	HDI higher
19	USA	4	2024 Gini 41.8	0.938	Gini lower
	Paraguay	1	2024 Gini 44.2	0.756	HDI higher
20	Australia	2	2020 Gini 33.8	0.958	Gini lower
	Turkey	0	2023 Gini 43.7	0.853	HDI higher
21	USA	2	2024 Gini 41.8	0.938	Gini higher
	Australia	0	2020 Gini 33.8	0.958	HDI lower
22	Turkey	0	2023 Gini 43.7	0.853	Gini higher
	Paraguay	1	2024 Gini 44.2	0.756	HDI lower
23	Turkey	3	2023 Gini 43.7	0.853	Gini higher
	USA	2	2024 Gini 41.8	0.938	HDI lower
24	Paraguay	0	2024 Gini 44.2	0.756	
	Australia	0	2020 Gini 33.8	0.958	
25	Germany	7	2022 Gini 33.7	0.959	Gini lower
	Curacao	1	2023 Gini 46.0	0.801	HDI higher
26	Ivory Coast	1	2021 Gini 35.3	0.582	Gini lower
	Ecuador	0	2025 Gini 45.9	0.777	HDI lower
27	Germany	2	2022 Gini 33.7	0.959	Gini lower
	Ivory Coast	1	2021 Gini 35.3	0.582	HDI higher
28	Ecuador	0	2019 Gini 34.3	0.777	
	Curacao	0	2023 Gini 46.0	0.801	
29	Curacao	0	2023 Gini 46.0	0.801	Gini lower
	Ivory Coast	2	2021 Gini 35.3	0.582	HDI lower
30	Ecuador	2	2016 Gini 45.9	0.777	Gini higher
	Germany	1	2022 Gini 33.7	0.959	HDI lower
31	Netherlands	2	2021 Gini 25.7	0.955	
	Japan	2	2020 Gini 32.3	0.925	
32	Sweden	5	2023 Gini 29.3	0.959	Gini lower
	Tunisia	1	2021 Gini 33.7	0.746	HDI higher
33	Netherlands	5	2021 Gini 25.7	0.955	Gini lower
	Sweden	1	2023 Gini 29.3	0.959	HDI lower
34	Tunisia	0	2021 Gini 33.7	0.746	Gini lower
	Japan	4	2020 Gini 32.3	0.925	HDI higher
35	Japan	1	2020 Gini 32.3	0.925	
	Sweden	1	2023 Gini 29.3	0.959	
36	Tunisia	1	2021 Gini 33.7	0.746	Gini lower
	Netherlands	3	2021 Gini 25.7	0.955	HDI higher
37	Belgium	1	2023 Gini 26.8	0.951	
	Egypt	1	2021 Gini 28.5	0.754	
38	Iran	2	2023 Gini 35.9	0.799	
	NewZealand	2	2022 Gini 30.0	0.938	

match number	teams	goals	percentage Gini	HDI	Winners
39	Belgium	0	2023 Gini 26.8	0.951	
	Iran	0	2023 Gini 35.9	0.799	
40	NewZealand	1	2022 Gini 30.0	0.938	Gini lower
	Egypt	3	2021 Gini 28.5	0.754	HDI lower
41	Egypt	1	2021 Gini 28.5	0.754	
	Iran	1	2023 Gini 35.9	0.799	
42	NewZealand	1	2022 Gini 30.0	0.938	Gini lower
	Belgium	5	2023 Gini 26.8	0.951	HDI higher
43	Spain	0	2023 Gini 33.4	0.918	
	Cape Verde	0	2015 Gini 42.4	0.668	
44	Saudi Arabia	1	2020 Gini 45.9	0.900	
	Uruguay	1	2024 Gini 40.0	0.862	
45	Spain	4	2023 Gini 33.4	0.918	Gini lower
	SaudiArabia	0	2020 Gini 45.9	0.900	HDI higher
46	Uruguay	2	2024 Gini 40.0	0.862	
	Cape Verde	2	2015 Gini 42.4	0.668	
47	Cape Verde	0	2015 Gini 42.4	0.668	
	Saudi Arabia	0	2020 Gini 45.9	0.900	
48	Uruguay	0	2024 Gini 40.0	0.862	Gini lower
	Spain	1	2023 Gini 33.4	0.918	HDI higher
49	France	3	2023 Gini 31.8	0.920	Gini lower
	Senegal	1	2021 Gini 36.2	0.530	HDI higher
50	Iraq	1	2023 Gini 29.8	0.695	Gini lower
	Norway	4	2023 Gini 26.5	0.970	HDI higher
51	France	3	2023 Gini 31.8	0.920	Gini higher
	Iraq	0	2023 Gini 29.8	0.695	HDI higher
52	Norway	3	2023 Gini 26.5	0.970	Gini lower
	Senegal	2	2021 Gini 36.2	0.530	HDI higher
53	Norway	1	2023 Gini 26.5	0.970	Gini higher
	France	4	2023 Gini 31.8	0.920	HDI lower
54	Senegal	5	2021 Gini 36.2	0.530	Gini higher
	Iraq	0	2023 Gini 29.8	0.695	HDI lower
55	Argentina	3	2024 Gini 42.4	0.865	Gini higher
	Algeria	0	2011 Gini 27.6	0.763	HDI higher
56	Austria	3	2023 Gini 31.2	0.930	Gini lower
	Jordan	1	2010 Gini 33.7	0.754	HDI higher
57	Argentina	2	2024 Gini 42.4	0.865	Gini higher
	austria	0	2023 Gini 31.2	0.930	HDI lower
58	Jordan	1	2010 Gini 33.7	0.754	Gini lower
	Algeria	2	2011 Gini 27.6	0.763	HDI higher

match number	teams	goals	percentage Gini	HDI	Winners
59	Algeria	3	2011 Gini 27.6	0.763	
	Austria	3	2023 Gini 31.2	0.930	
60	Jordan	1	2010 Gini 33.7	0.754	Gini higher
	Argentina	3	2024 Gini 42.4	0.865	HDI higher
61	Portugal	1	2023 Gini 33.9	0.890	
	Congo DR	1	2020 Gini 44.7	0.522	
62	Uzbekistan	1	2025 Gini 32.7	0.740	Gini higher
	Colombia	3	2024 Gini 54.4	0.788	HDI higher
63	Portugal	5	2023 Gini 33.9	0.890	Gini higher
	Uzbekistan	0	2025 Gini 32.7	0.740	HDI higher
64	Colombia	1	2024 Gini 54.4	0.788	Gini higher
	Congo DR	0	2020 Gini 44.7	0.522	HDI higher
65	Colombia	0	2024 Gini 54.4	0.788	
	Portugal	0	2023 Gini 33.9	0.890	
66	Congo DR	3	2020 Gini 44.7	0.522	Gini higher
	Uzbekistan	1	2025 Gini 32.7	0.740	HDI lower
67	England	4	2021 Gini 32.4	0.946	Gini higher
	Croatia	2	2023 Gini 30.1	0.889	HDI higher
68	Ghana	1	2016 Gini 43.5	0.628	Gini lower
	Panama	0	2024 Gini 49.7	0.839	HDI lower
69	England	0	2021 Gini 32.4	0.946	
	Ghana	0	2016 Gini 43.5	0.628	
70	Panama	0	2024 Gini 49.7	0.839	Gini lower
	Croatia	1	2023 Gini 30.1	0.889	HDI higher
71	Panama	0	2024 Gini 49.7	0.839	Gini lower
	England	2	2021 Gini 32.4	0.946	HDI higher
72	Croatia	2	2023 Gini 30.1	0.889	Gini lower
	Ghana	1	2016 Gini 43.5	0.628	HDI higher

TABLE I. Matches of the Group Stages : scores, percentage Gini, HDI, winner's Gini and HDI relative to the other team

match number	teams	goals	percentage Gini	HDI(2023)	Winners
1	Germany	1(3)	2022 Gini 33.7	0.959	Gini higher
	Paraguay	1(4)	2024 Gini 44.2	0.756	HDI lower
2	France	3	2023 Gini 31.8	0.920	Gini higher
	Sweden	0	2023 Gini 29.3	0.959	HDI lower
3	South Africa	0	2022 Gini 54.1	0.741	Gini lower
	Canada	1	2022 Gini 31.5	0.939	HDI higher
4	Netherlands	1(2)	2021 Gini 25.7	0.955	Gini higher
	Morocco	1(3)	2013 Gini 39.5	0.710	HDI lower
5	Portugal	2	2023 Gini 33.9	0.890	Gini higher
	Croatia	1	2023 Gini 30.1	0.889	HDI higher
6	Spain	3	2023 Gini 33.4	0.918	Gini higher
	Austria	0	2023 Gini 31.2	0.930	HDI lower
7	USA	2	2024 Gini 41.8	0.938	Gini higher
	Bosnia-Herzegovina	0	2021 Gini 30.3	0.804	HDI higher
8	Belgium	3	2023 Gini 26.8	0.951	Gini lower
	Senegal	2	2021 Gini 36.2	0.530	HDI higher
9	Brazil	2	2024 Gini 50.3	0.786	Gini higher
	Japan	1	2020 Gini 32.3	0.925	HDI lower
10	Ivory Coast	1	2021 Gini 35.3	0.582	Gini lower
	Norway	2	2023 Gini 26.5	0.970	HDI higher
11	Mexico	2	2024 Gini 42.6	0.789	Gini lower
	Ecuador	0	2025 Gini 45.9	0.777	HDI higher
12	England	2	2021 Gini 32.4	0.946	Gini lower
	Congo DR	1	2020 Gini 40.7	0.522	HDI higher
13	Argentina	3	2024 Gini 42.4	0.865	
	Cape Verde	2	2015 Gini 42.4	0.668	HDI higher
14	Australia	1(2)	2020 Gini 33.8	0.958	Gini lower
	Egypt	1(4)	2021 Gini 28.5	0.754	HDI lower
15	Switzerland	2	2022 Gini 33.8	0.970	Gini higher
	Algeria	0	2011 Gini 27.6	0.763	HDI higher
16	Colombia	1	2024 Gini 54.4	0.788	Gini higher
	Ghana	0	2016 Gini 43.5	0.628	HDI higher

TABLE II. Matches of the Round of ThirtyTwo : scores, percentage Gini, HDI, winner's Gini and HDI relative to the other team

A. Round of ThirtyTwo

In the Round of Thirty Two stage we notice from the table, TableIII, probability for a team with lower relative Gini coefficient to win is $\frac{6}{15}$, probability for a team with lower relative HDI to win is $\frac{6}{16}$ i.e. $\frac{3}{8}$.

match number	teams	goals	percentage Gini	HDI	Winners
1	Paraguay	0	2024 Gini 44.2	0.756	Gini lower
	France	1	2023 Gini 31.8	0.920	HDI higher
2	Canada	0	2022 Gini 31.5	0.939	Gini higher
	Morocco	3	2013 Gini 39.5	0.710	HDI lower
3	Portugal	0	2023 Gini 33.9	0.890	Gini lower
	Spain	1	2023 Gini 33.4	0.918	HDI higher
4	USA	1	2024 Gini 41.8	0.938	Gini lower
	Belgium	4	2023 Gini 26.8	0.951	HDI higher
5	Brazil	1	2024 Gini 50.3	0.786	Gini lower
	Norway	2	2023 Gini 26.5	0.970	HDI higher
6	Mexico	2	2024 Gini 42.6	0.789	Gini lower
	England	3	2021 Gini 32.4	0.946	HDI higher
7	Argentina	3	2024 Gini 42.4	0.865	Gini higher
	Egypt	2	2021 Gini 28.5	0.754	HDI higher
8	Switzerland	0(4)	2022 Gini 33.8	0.970	Gini lower
	Colombia	0(3)	2024 Gini 54.4	0.788	HDI higher

TABLE III. Matches of the Round of Sixteen : scores, percentage Gini, HDI, winner's Gini and HDI relative to the other team

B. Round of sixteen

In the Round of Sixteen stage we notice from the table, TableIII, probability for a team with lower relative Gini coefficient to win is $\frac{6}{8}$ or, $\frac{3}{4}$, probability for a team with lower relative HDI to win is $\frac{1}{8}$.

C. Quarter-Final

match number	teams	goals	percentage Gini	HDI	Winners
1	France	2	2023 Gini 31.8	0.920	Gini lower
	Morocco	0	2013 Gini 39.5	0.710	HDI higher
2	Spain	2	2023 Gini 33.4	0.918	Gini higher
	Belgium	1	2023 Gini 26.8	0.951	HDI lower
3	Norway	1	2023 Gini 26.5	0.970	Gini higher
	England	2	2021 Gini 32.4	0.946	HDI lower
4	Argentina	3	2024 Gini 42.4	0.865	Gini higher
	Switzerland	1	2022 Gini 33.8	0.970	HDI lower

In the Quarter Final stage, probability for a team with lower relative Gini coefficient to win is $\frac{1}{4}$, probability for a team with lower relative HDI to win is $\frac{3}{4}$ i.e. $\frac{1}{2}+$.

D. Semi-Final

match number	teams	goals	percentage Gini	HDI	Winners
1	France	0	2023 Gini 31.8	0.920	Gini higher
	Spain	2	2023 Gini 33.4	0.918	HDI lower
2	England	1	2021 Gini 32.4	0.946	Gini higher
	Argentina	2	2024 Gini 42.4	0.865	HDI lower

In the Semi Final stage, probability for a team with lower relative Gini coefficient to win is $\frac{0}{2}$, probability for a team with lower relative HDI to win is $\frac{2}{2}$.

E. Third Place

teams	goals	percentage Gini	HDI	Winners
France	4	2023 Gini 31.8	0.920	Gini higher
England	6	2021 Gini 32.4	0.946	HDI higher

In the Third Place Play-off, the team with higher relative Gini coefficient, higher HDI won.

F. Final

teams	goals	percentage Gini	HDI	Winners
Spain	1	2023 Gini 33.4	0.918	Gini lower
Argentina	0	2024 Gini 42.4	0.865	HDI higher

In the Final, the team with lower relative Gini coefficient, higher HDI won.

The overall probability for a team with lower relative Gini coefficient to win in this World Cup was $\frac{28+6+6+1+0+0+1}{52+15+8+4+2+1+1}$ i.e. $\frac{42}{83}$ i.e. 0.506 i.e. more than half.

III. N.B

In this paper, we have used the word probability in loose sense. The word probability in this paper refers to number of outcomes(say, number of times a team with lower relative Gini coefficient won) divided by number of trials(number of decided matches). Strictly, the word probability refers to number of outcomes divided by number of trials, when number of trials is very very large.

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