## A New FIFA ranking?

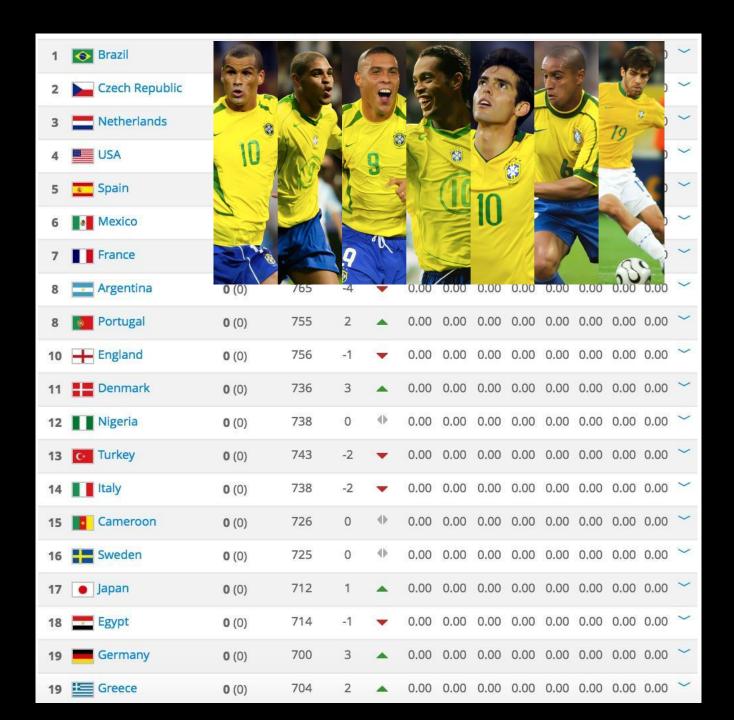
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# Background

Current ranking system is flawed; points stack infinitely

18	Hungary
19	Romania
20	Bosnia-Herzegovina
21	France
22	Ukraine
23	Croatia





## RESEARCH QUESTION:

 Can we create a "better" ranking system than FIFA's

 What makes one ranking system "better" than another?

### 3 Models

1. FIFA rankings

$$P = M \times I \times T \times C$$

2. Normal Bradley-Terry model

$$\hat{\beta}_{\lambda} = \arg\min\left\{||\mathbf{y} - \mathbf{X}\boldsymbol{\beta}||^2 + \lambda||\boldsymbol{\beta}||^2\right\} = (\mathbf{X}^T\mathbf{X} + \lambda\mathbf{I})^{-1}\mathbf{X}^T\mathbf{y}$$

3. OUR custom model

#### How it works -

Scrape data for 10,000 most recently played matches

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Train on first 9,000 matches; hold out last 1,000 to test on

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Predict the results of the last 1,000 matches based on the **rankings** from the first 9,000

#### Our model

1 point to winning team, -1 point to losing team

$$2 - e^{-\log_{10}(x+1)}$$

If winning team had fewer points, >1 point gained and lost

If winning team had more points, <1 point gained and lost

Also factored in: confederation strength, margin of victory

### **FIFA**

**Team** 

Rank

## B-T

**Team** 

Rank

# Our model

Germany

Netherlands

**United States** 

Spain

Brazil

Russia

England

Portugal

Sweden

Ivory Coast

Ukraine

**Australia** 

Croatia

Greece

--- Honduras

Costa Rica

France

Bosnia and Herzegovina

Italy

Iran

Team

			ly.
1	Argentina	1	Brazil
2	Belgium	2	- Argentina
3	Chile	3	■ Mexico
4	Colombia	4	Spain
5	Germany	5	Germany
6	Spain	6	United States
7	♦ Brazil	7	England
8	Portugal	8	Portugal
9	Uruguay	9	Colombia
10	England	10	France
11	Austria	11	Honduras
12	Ecuador	12	Uruguay
13	C Turkey	13	Italy
14	Switzerland	14	Costa Rica
15	<b>■</b> Italy	15	Paraguay
16	■ Mexico	16	Ecuador
17	Netherlands	17	Chile
18	Hungary	18	Australia
19	Romania	19	- Iran
20	Bosnia and Herzegovina	20	Czech Repub

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Rank
1
2
3
4
5
6
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10
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15
16
17
18
19

20

### BT results

- ~41% using betas
- ~52% using rankings

### FIFA results

~53% using predictions

# Custom model results

~49%





### Limitations

Home/Away

Data set did not have match types

Method of determining predicted draw was arbitrary

Predicting match results are not a great metric

### Conclusion

- Were we able to create a "better" ranking system than FIFA was able to?
- No, but...

