

**SOCCKER POWER**

**INDEX (SPI)**

**EFFICIENCY IN**

**WORLD CUP WIN**

**PREDICTION**



# INTRODUCTION + MOTIVATION

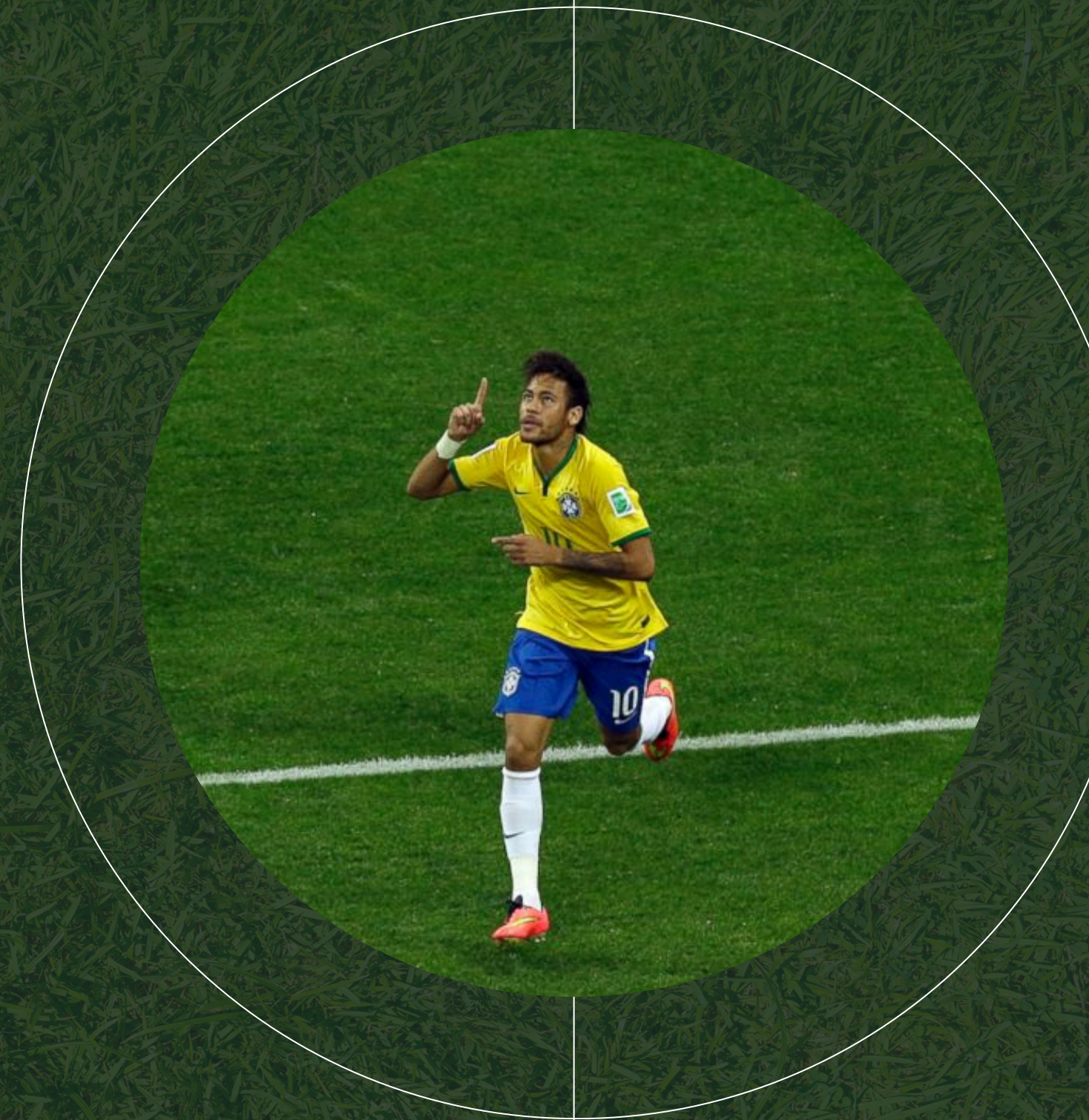
- Interest in sports analytics + soccer
- Growing use of predictive models in forecasting match and tournament outcomes
- 2026 World Cup coming up, curious to understand how reliable these models actually are
  - How well the Soccer Power Index (SPI) can be used to **predict success** in major international soccer tournaments
  - Assess **effectiveness** of the SPI model + how it should be interpreted in sports analytics



Does a country's  
Soccer Power  
Index (SPI) rating  
significantly  
predict its  
projected  
probability of  
winning the 2014  
FIFA World Cup?

# DATA INTRODUCTION

- Generated by **FiveThirtyEight** in June and July 2014 using its Soccer Power Index (SPI) model
  - SPI = **team rating system** based on expected goal differential, offensive, and defensive strength
- Predictions produced and updated throughout tournament
  - Used statistical ratings + simulations based on historical match data and team performance metrics
- **Data Variables:** Organized by Country (32 National Teams)
  - SPI
  - SPI offensive rating
  - SPI defensive rating
  - Chance of winning group stage
  - Chance of advancing to knockout stage
  - Chance of advancing to quarter finals
  - Chance of advancing to semi-finals
  - Chance of making it to final
  - Chance of winning World Cup



# DATA

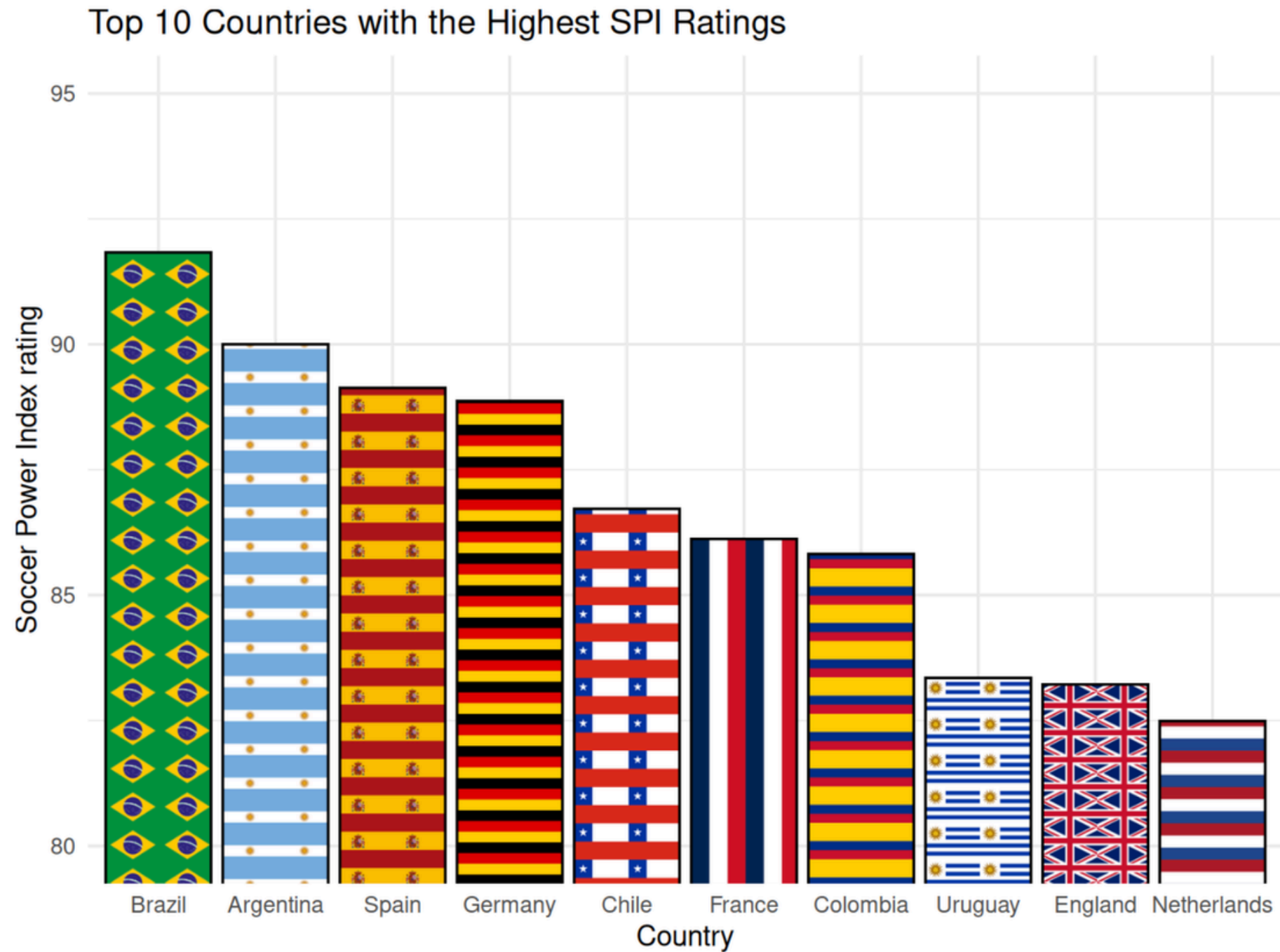


Figure 1: The top 10 teams by Soccer Power Index (SPI) entering the 2014 World Cup, with Brazil, Argentina, Spain, and Germany showing the highest overall team strength.

- Figure 1: **bar chart** of SPI ratings for the top 10 countries
- all have relatively high SPI values (82 to 92)
- **Brazil** has the **highest SPI at (92)**, Argentina (90), Spain (89), Germany (88)

# DATA

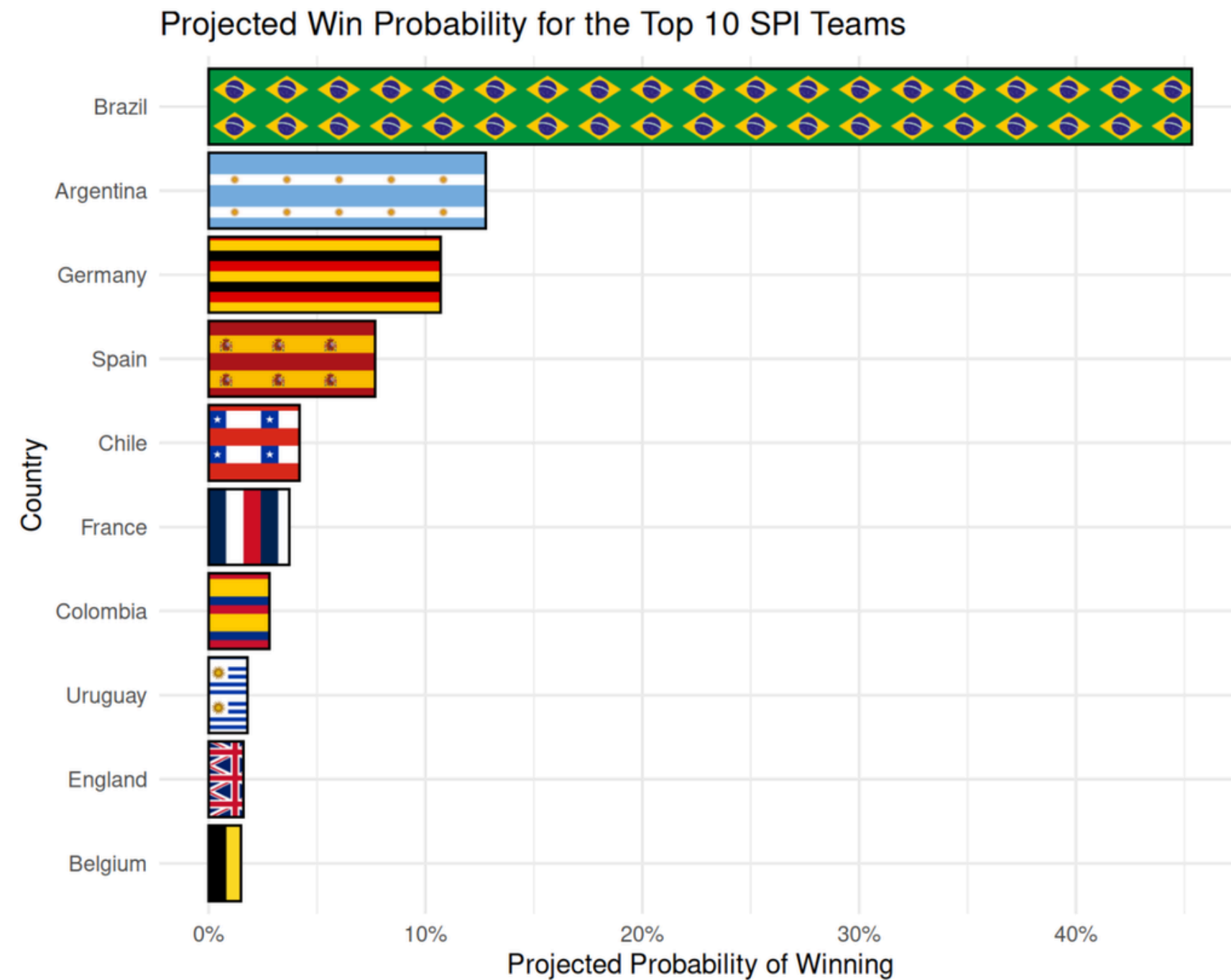


Figure 2: Projected probabilities of winning the 2014 FIFA World Cup for the top 10 teams ranked by SPI. Brazil has a substantially higher predicted chance of winning compared to all other teams, while most remaining teams have relatively low probabilities, indicating a steep drop-off among even the highest-ranked teams.

- large spread **Brazil** having a **very high win probability** (45%)
- all other teams are much lower (below 15%)
- win probability is **not evenly distributed**, even among teams with similar SPI ratings

# DATA

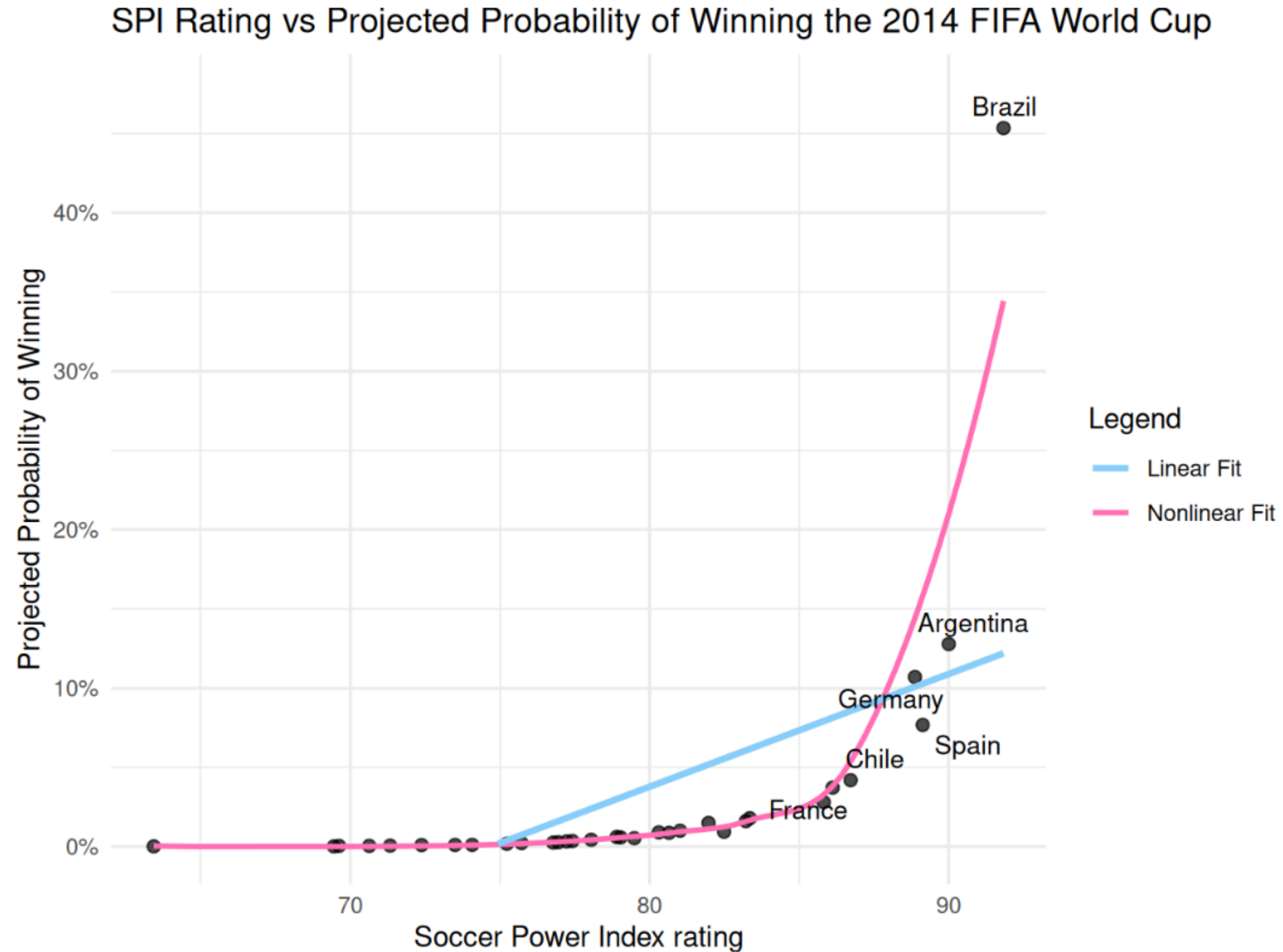


Figure 3: Higher SPI ratings are associated with greater projected probabilities of winning the 2014 World Cup. While most teams have near-zero probabilities, a small group of high-SPI teams, including Brazil and Argentina, show substantially higher chances of winning, indicating a nonlinear relationship.

- positive weak relationship
- $r^2$  value is 0.33: only 33% of the variation in win probability is explained by SPI and 67% is influenced by other factors not included in this model
- Linear fit shows the values in Figure 4

Linear regression results for SPI predicting World Cup win probability

$R^2$	Intercept	Slope
0.332	-0.532	0.007

# ANALYSIS

- SPI rating does help predict the probability of winning, but only to a **limited extent** for the 2014 World Cup
- The relationship is **positive but weak**, and SPI alone does not fully explain why some teams such as Brazil have much higher projected chances of winning
- RQ Connection: SPI is a **partial but not strong predictor** of winning probability for the 2014 projected World Cup



# DISCUSSION AND CONCLUSION

- Limitation: influence of **confounding variables**: familiarity with the physical playing field, psychological stressors, team morale, which players are present for a given game, player injuries
- Actual **2014 World Cup Results**: Germany won
- Models using SPI and predicted win were not exactly predictive of the overall wins in **reality**



# SOURCES

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FiveThirtyEight World Cup Project:

<https://fivethirtyeight.com/interactives/world-cup/>

Public GitHub Repo:

<https://github.com/fivethirtyeight/data/tree/master/world-cup-predictions>



THANK  
YOU