

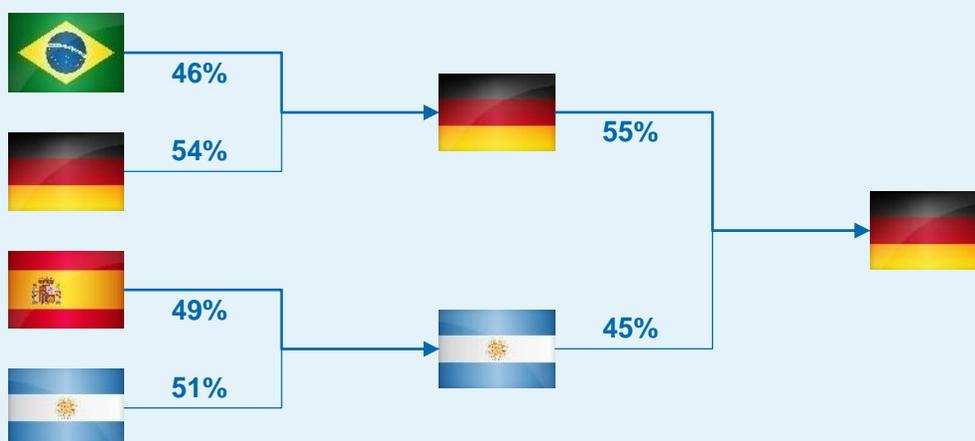
# The World Cup

## Why Brazil won't win and other predictions from our data analytics experts

The World Cup is just around the corner, with 32 teams meeting in Brazil for the world's most watched sporting event. Will the home nation win as expected? Or can one of the big European sides come out on top? Will England lose on penalties (again)? And just how outmatched will the Aussies be?

All these questions will be answered over the coming month, but, for now, KordaMentha's data analytics team have crunched the numbers to give you our predictions and insights for the cup.

### KordaMentha's Prediction: The Likely Semi-Finalists



Our results are bad news for the host nation. Much of the pre-cup buzz has been around Brazil, which has been declared hot favourites by everyone from bookies, pundits, and investment banks.

However, based on our analysis, we predict that Brazil won't make the final. Rather, we expect Germany to have the edge.

We outline our methodology and full prediction of the results later on, along with some key statistics for each team. Before then, we'll look at why we think Germany will win and Brazil won't, delve into Australia's chances and tackle the thorny subject of why England is so bad at penalty shootouts.

### Disclaimer

Whilst we've used our analytics techniques, the predictions are still just that – predictions based on analysis of statistics. As such, we disclaim any responsibility for people trying to rely on it. For example, whilst our model predicts Germany as the most likely winner, the chance of Germany actually winning is about 26%.

### Think you know better?

If you think you know better, then take us on in our [tipping competition](#). We'll be using our unique mathematical model to predict each game. We're offering a \$200 voucher prize for the overall winner. In the event of a tie for the overall winner, each of those who have tied for first place will receive a \$200 voucher.

## Why Germany will win...

Germany qualified at a canter during 2013, scoring 36 goals during qualification – more than any other European team, and sits at number two in FIFA’s World Rankings behind Spain. Germany boasts a squad full of stars such as Ozil, Schweinsteiger and Lahm, with a combined transfer market value of over AUD890 million, second only to Spain (AUD985 million).

We expect them to cruise through their group, which includes an inexperienced United States and minnows Ghana. Their key game will be the likely semi-final against Brazil, before beating Argentina in the final.



## ...and why Brazil won’t

Unlike most other predictions out there, we don’t think Brazil will get the job done. Other predictions have assigned a huge benefit to Brazil based on its home advantage. When doing predictive modelling of this sort, there are inevitably subjective issues which require judgement. In this instance, a key factor is how much of an advantage comes from a home ground and a parochial home crowd.

To determine this, we looked at the data from the previous 19 World Cups. On six out of 19 occasions, the host nation won the cup. However, some of these sides would have been expected to win no matter where the cup was held, as they were widely regarded as the best team (for example Uruguay in 1930).

In addition, when Brazil hosted the cup in 1950, it famously lost in the final to Uruguay in a huge upset. Most fans blamed what they call *oba oba* – over-complacency and too much pressure – for the loss. Furthermore, Brazil qualified for this World Cup automatically as the host nation, so it didn’t participate in the gruelling South American qualifiers. Instead, Brazil cruised through easy, morale-boosting friendlies against Panama, Zambia, and (ahem) Australia.

We believe that these effects will neutralise Brazil’s ‘home ground advantage’ and we’ve factored this in to our model. Brazil is a top side and rightly regarded as one of the favourites, but should it falter against the likes of Spain, Argentina, or Germany, remember where you heard it first.



*“Coming from a football family, and growing up in the warm glow of England’s last (admittedly only) victory in 1966, I remain as always unrealistically optimistic. Thankfully, penalty shootouts didn’t exist back then, and neither did data analytics. According to our analysis, neither invention has enhanced my chances of finally having something to cheer about.”*

John Temple-Cole | Partner  
KordaMentha Forensic

## Australia's chances

**Prediction: Australia to be knocked out in the group stages.**

KordaMentha agrees with most pundits in predicting that the Socceroos will struggle to make it out of their 'group of death'. We're hoping that new coach Ange Postecoglou has enough time to stamp his mark on the squad, and some gutsy performances from Tommy Oar, Marco Bresciano and Tim Cahill will help us shock the tournament's big guns.



Unfortunately, our analysis suggests otherwise, with the Socceroos conceding 17 goals in six games, including successive 6-0 losses to Brazil and France. Their world ranking of 62 makes Australia the lowest-ranked side of any team in Brazil. Combine this with a tough group, and our resulting analysis isn't pretty.

The statistics also show that if the Aussies do manage to score some goals, they're likely to come from Tim Cahill. Players in the final 23-man squad have scored a combined 59 goals for the Socceroos; 32 of those were scored by Cahill.<sup>1</sup>

Key stats for the Aussies:

**11%** chance of making it out of our group

**27%** chance we can pinch a win against one of our group opponents Chile, the Netherlands, or Spain



## Why is England so bad at penalty shootouts?

Our modelling focused on predicting the results of each match. However there is some interesting data available on penalty shootouts, particularly England's likely performance.

If England manages to progress from its difficult group, it will have an:

**86%** chance of losing, should the game go into a penalty shootout.

This is based on England's disastrous history at previous World Cups and European Championships, where it has managed to score in only 66% of their individual penalty kick attempts (compared with the 76% of penalties converted by the average team). England also concedes more goals than average, with 81% of their opponent's kicks being successful (compared with the average of 76% conceded).<sup>2</sup>

England has lost its last four shootouts in major tournaments, losing to Italy (Euro 2012), Portugal (in both the 2006 World Cup and Euro 2004), and Argentina (1998 World Cup). One explanation may be the effect of England's infamous press, which seems to pile on the pressure and set high expectations for their team before each tournament. The data from previous World Cups suggests that psychological pressure can play an enormous role in the outcome of a penalty. For example, a BBC analysis<sup>3</sup> shows that in World Cup penalties where the match was on the line and it has come down to the final kick:

**93%** of penalty kicks were successful, when scoring meant that the side won the shootout; but only

**41%** of penalty kicks were successful when missing meant that the side lost.



# KordaMentha's predictions

## From the group stage to the final

Group stages (Figures are the expected group points after multiple simulations by our model)

Group A		Group B		Group C		Group D	
Brazil	6.53	Spain	6.77	Colombia	5.76	Uruguay	5.39
Croatia	4.44	Chile	4.93	Greece	5.43	Italy	4.28
Mexico	4.16	Netherlands	4.07	Ivory Coast	3.65	England	4.11
Cameroon	1.54	Australia	1.07	Japan	1.73	Costa Rica	2.51

Group E		Group F		Group G		Group H	
Switzerland	5.33	Argentina	6.51	Germany	5.55	Belgium	6.00
France	4.26	Bosnia-Herzegovina	4.60	Portugal	4.98	Russia	4.34
Ecuador	3.55	Iran	2.77	USA	4.10	Algeria	4.31
Honduras	3.06	Nigeria	2.64	Ghana	1.82	South Korea	1.83

## Knockout stages

A1 – Brazil	61%	C1 – Colombia	57%	E1 – Switzerland	49%	G1 – Germany	68%
vs		vs		vs		vs	
B2 – Chile	39%	D2 – Italy	43%	F2 – Bosnia-Herzegovina	51%	H2 – Russia	32%

Brazil	53%
vs	
Colombia	47%

Bosnia-Herzegovina	38%
vs	
Germany	62%

Brazil	46%
vs	
Germany	54%

<b>Germany</b>	<b>55%</b>
vs	
Argentina	45%

Spain	49%
vs	
Argentina	51%

Spain	61%
vs	
Uruguay	39%

Argentina	56%
vs	
Portugal	44%

A2 – Croatia	34%
vs	
B1 – Spain	66%

C2 – Greece	44%
vs	
D1 – Uruguay	56%

E2 – France	34%
vs	
F1 – Argentina	66%

G2 – Portugal	55%
vs	
H1 – Belgium	45%



# What we did and who we are

## What we did

We applied the Elo rating system<sup>4</sup> as the basis of our predictive model. The Elo rating system was developed in the 1960's and named after its creator Arpad Elo, a Hungarian-born American physics professor and chess player. It was originally used for calculating the relative skill levels of players in chess. The difference in the ratings between two players serves as a predictor of the outcome of the match. The ratings system has since been modified and adapted to team sports such as NBA, Major League Baseball and NFL.

In order to estimate the outcome of each match, our data analytics experts assigned a rating to each team using the FIFA World Rankings as a starting point. A series of adjustments were made to take into account factors not reflected in the World Rankings. These included:

- Form in matches since the most recent world rankings data was released;
- The impact of home crowd advantage and favourable weather conditions for South American teams (and the opposite for teams from Europe);
- Head-to-head results between the two sides competing in each match; and
- Average squad age, and movements in FIFA World Rankings in the last two years, to reflect the state of each current playing group. For example, points were subtracted from younger sides with recent declines in World Rankings (such as Australia) which were considered a 'team in transition'. Points were added to teams in their prime such as Germany, who have a mix of youth and experience and whose FIFA World Rankings recently increased. Points were subtracted from aging sides such as Uruguay, whose core squads may be beginning to decline.

Using each team's ratings, we simulated the probable outcome of each match. For the group stages, we calculated the average points for each team to determine which two would progress. In the knockout stages, we applied the same methodology, updating each team's rating as the simulation of matches progressed.

Our model predicts that Germany will face Argentina in the final. These two teams had very similar ratings, suggesting a close match, but the balance was tipped by the recent head-to-head results between these sides. In both the 2010 and 2006 World Cups, Germany defeated Argentina in the knockout stages, and we expect this trend to continue in 2014.

## Who we are

KordaMentha is an advisory and investment firm that provides Restructuring, Turnaround, Real Estate and Forensic support for companies and their stakeholders.

**Our team of data analytics specialists use a wide range of data analysis tools to transform your organisation's data into valued information for informed decision making.**

The KordaMentha Forensic data analytics team comprises seasoned data analytics professionals, with backgrounds in accounting, finance, actuarial services and investigations. We have extensive experience across (amongst others) the retail, mining, infrastructure, transport and financial services industries in Australia and overseas.

The team has extensive experience in the application of data analytics to:

- Extract hidden insights from customer behaviour
- Identify revenue improvement and cost reduction opportunities
- Detect and quantify fraud
- Identify financial leakage and quantify loss
- Test systems and controls
- Resolve business process and database issues.

Our recent projects include:

- A tunnel operator was looking to gain a better understanding of their operations. We analysed two years of traffic and penalty data to profile customer behaviour. Whilst maintaining profits, our analysis found that the operator had been losing frequent users due to a price hike 12 months prior. As a result, we identified \$5 million of revenue opportunities through targeting these high value customers with a range of incentives through the use of a hybrid pricing model.
- An infrastructure company holds bi-annual reviews of their internal controls. To assist their review, we analysed two years of accounts payable and payroll data using KordaMentha Interrogate™, a proprietary analytics suite to identify potential fraudulent activities, financial leakages and process or control weaknesses. Fraudulent payments and revenue leakage amounting to more than \$500,000 were identified.
- A major transport company had conducted pallet count and identified a shortfall of approximately 60,000 pallets. The rental cost of the pallets was approximately \$60,000 a month with an associated contingent liability of \$1.7 million. Two years of data from three disparate data sources was analysed to assist the company in identifying the location of the 'lost' pallets for recovery. The company was able to recover 70% of the 'lost' pallets from 10 recipient customers.

## About the authors



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*"As a long time Argentina fan, I'm glad they are not in the 'Group of Death'. Vamos, vamos, Argentina!"*



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*"I am out of the office in Brazil from 12 June to 14 July and will respond to your message when I return."*



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*"Being English, I think it's highly unfair to highlight penalty shootout stats."*



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*"Australia has an 11% chance of making it out of our group? At least there's a chance!"*

#### Endnotes:

- 1: As per analysis from Fox Sports Stats (on Twitter at @foxsportsstats) – a fact retweeted by Tim Cahill himself on Wednesday 5 June 2014! ([https://twitter.com/tim\\_cahill/status/474368151405486080](https://twitter.com/tim_cahill/status/474368151405486080))
- 2: Data collated and calculated from the numbers in an infographic at The Guardian's website, – <http://www.theguardian.com/news/datablog/interactive/2012/jun/25/euro2012-uefa> (accessed on 5 June 2014), which is based on data from the Rec Sports Soccer Statistics Foundation (<http://www.rssf.com>).
- 3: BBC's analysis on penalty shootouts – <http://www.bbc.co.uk/guides/zgg334#zck99j6> (accessed on 5 June 2014).
- 4: [https://www.princeton.edu/~achaney/tmve/wiki100k/docs/Elo\\_rating\\_system.html](https://www.princeton.edu/~achaney/tmve/wiki100k/docs/Elo_rating_system.html)
- 5: Sources for team summary and key stats:  
 Previous world rankings, results, continent etc. – Wikipedia  
 Average squad age has been compiled from the infographic at [http://matchstory.co.uk/portfolio/wc\\_squads/](http://matchstory.co.uk/portfolio/wc_squads/) (accessed 10 June 2014)  
 Market values have been collated from <http://www.transfermarkt.co.uk/> (accessed 10 June 2014). Note that assigning transfer market values requires a level of subjective analysis, which KordaMentha has not undertaken.



# Team summary and key stats<sup>5</sup>

Team	FIFA World Ranking	Previous World Cups	Best Result	Home Continent Advantage	Transfer Market Value of Squad (AUD)	Average Squad Age	Difficulty of Group Draw	Our Prediction
Algeria	22	3	Group stage		91 million	26.6		
Argentina	5	15	2 World Cup wins		620 million	28.9		
Australia	62	3	Round of 16		34 million	26.4		
Belgium	11	11	4th		551 million	26.0		
Bosnia-Herzegovina	21	0	n/a		182 million	27.1		
Brazil	3	19	5 World Cup wins		741 million	28.4		
Cameroon	56	6	Quarter Finals		188 million	26.9		
Chile	14	8	3rd		221 million	28.0		
Colombia	8	4	Round of 16		301 million	27.9		
Costa Rica	28	3	Round of 16		47 million	27.5		
Croatia	18	3	3rd		306 million	27.2		
Ecuador	26	2	Round of 16		100 million	27.8		
England	10	13	1 World Cup win		529 million	26.6		
France	17	13	1 World Cup win		652 million	27.1		
Germany	2	17	3 World Cup wins		890 million	26.3		
Ghana	37	2	Quarter Finals		153 million	25.4		
Greece	12	2	Group stage		127 million	28.5		
Honduras	33	2	Group stage		33 million	28.5		
Iran	43	3	Group stage		38 million	28.1		
Italy	9	17	4 World Cup wins		512 million	27.9		
Ivory Coast	=23	2	Group stage		193 million	27.8		
Japan	46	4	Round of 16		155 million	27.2		
Mexico	20	14	Quarter Finals		153 million	27.3		
Netherlands	15	9	Runner-up		329 million	26.5		
Nigeria	44	4	Round of 16		138 million	25.8		
Portugal	4	5	3rd		471 million	28.5		
Russia	19	9	4th		271 million	28.0		
South Korea	57	8	4th		82 million	26.0		
Spain	1	13	1 World Cup win		985 million	28.3		
Switzerland	6	9	Quarter Finals		282 million	26.1		
Uruguay	7	11	2 World Cup wins		345 million	28.5		
USA	13	9	3rd		92 million	27.8		