# Statistical Modeling, Causal Inference, and Social Science

## Update 4 – World Cup Qatar 2022 predictions (semifinals and winning probabilities)

Posted on December 13, 2022 12:45 PM by Leonardo Egidi

Time for our last update! Qatar 2022 World Cup is progressing fast, and only four teams – Argentina, France, Croatia and Morocco – are still in contention for the final victory. *Who will be the winner on December 18th?* Is our model better than the Paul the Octopus, an almost perfect oracle during World Cup 2010?
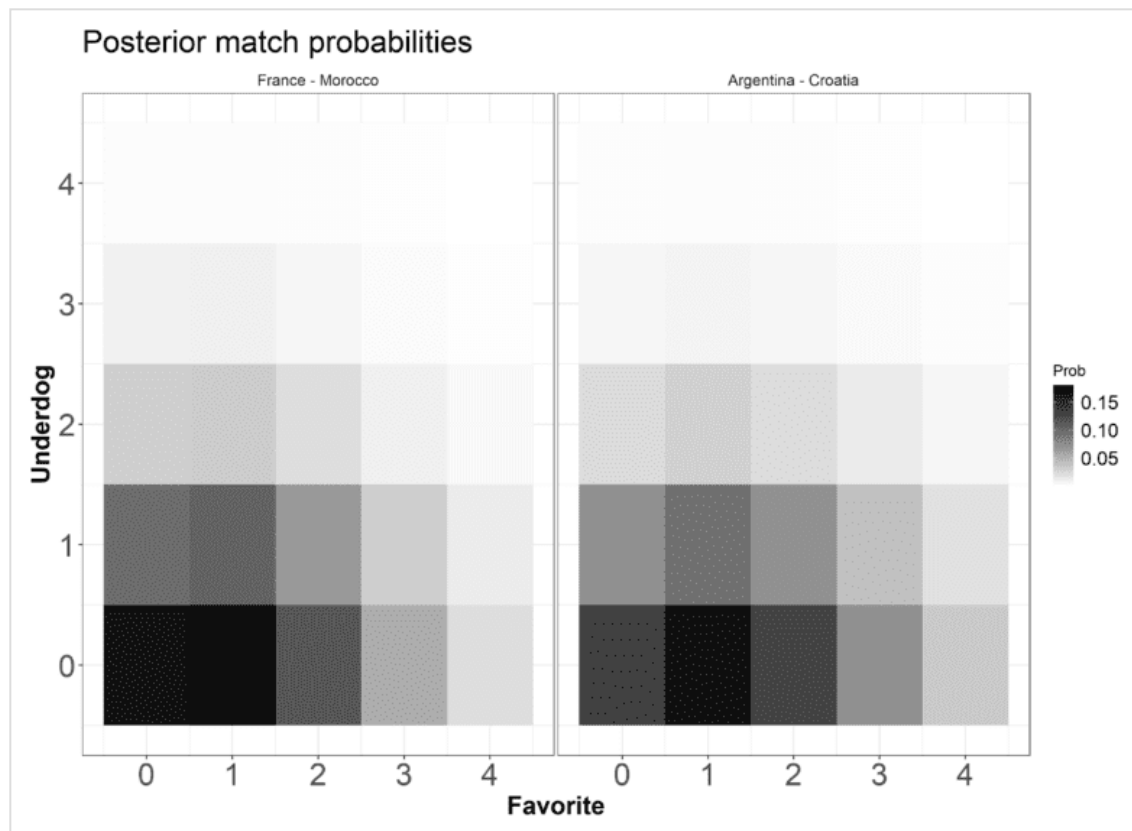


### Semifinals predictions

We report in the table below the posterior predictive match probabilities from our DIBP model – get a look also here and here for other updates – for the two semifinals planned for Tuesday, December 13 and Wednesday, December 14, Argentina-Croatia and France-Morocco, respectively. We also report the usual ppd 'chessboard plots' for the exact outcomes in gray-scale color.

**Notes**: '*mlo*' in the table denotes the '*most likely result*' , *whereas darker regions in the plots correspond to more likely results. The first team listed in each sub-title is the 'favorite' (x-axis), whereas the second team is the 'underdog' (y-axis). The 2-way grid displays the 2 held-out matches in such a way that the closest match appears in the left*

*panel of the grid, whereas the most unbalanced match ('blowout') appears in the right panel.*

| favorite | underdog | favorite win | draw | underdog win | mlo |
|----------|----------|--------------|------|--------------|-----|
| Argentina | Croatia | 0.580 | 0.263 | 0.157 | 1-0 (0.17) |
| France | Morocco | 0.503 | 0.302 | 0.195 | 1-0 (0.18) |



France and Argentina seem clearly ahead against Croatia and Morocco, respectively. Anyway, underdogs  such as Morocco have a non-negligible chance – approximately 35% – to beat France and advance to the final: consider that  Morocco got two *'clean-sheets'* in the round of 16 and quarter of finals matches, against Spain and Portugal, respectively!   Croatia already achieved the final four years ago, so maybe it should not be considered as a pure underdog...and Luka Modric, the Croatia's captain, is still one of the best players in the world.

**Note:** *keep in mind that the above predictions refer to the 'regular' times, not to the extra times! Anyway, to get an approximated probability to advance to the final, say for the favorite team, one could compute: favorite probability + 0.5\*draw probability.*

*The same could be done for the underdog team. In such a way, with no further assumptions we assume that the draw probability within the regular times is equally split between the two teams in the eventual extra-times.*

## World Cup winning probabilities

We also provide some World Cup winning probabilities for the four teams, based on some forward simulations of the tournament.

| Team | Win prob. |
|---|---|
| Argentina | 45% |
| France | 35% |
| Croatia | 12% |
| Morocco | 8% |

The results are somehow surprising! Unlike for what happens for the majority of the bookies, *Argentina has the highest chances to win the World Cup*. France comes at the second place, whereas Morocco is the underdog, with only the 8% probability to become the World Cup winner.

## Full code and details

You find the complete results, R code and analysis here. Some preliminary notes and model limitations can be found here. And use the footBayes package!

## Final considerations

We had a lot of fun with these World Cup predictions, we guess this has been a good and challenging statistical application. To summarize, the average of the *correct probabilities, i.e. the average of the model probabilities for the actually observed outcomes*, is 0.41, whereas the pseudo R-squared is 0.36 (up to the quarter of finals matches).

This entry was posted in Bayesian Statistics, Multilevel Modeling, Sports, Stan, Statistical computing by Leonardo Egidi. Bookmark the permalink [https://statmodeling.stat.columbia.edu/2022/12/13/update-4-world-cup-qatar-2022-predictions-semifinals-and-winning-probbailities/] .

4 THOUGHTS ON "UPDATE 4 – WORLD CUP QATAR 2022 PREDICTIONS (SEMIFINALS AND WINNING PROBABILITIES)"

Amin
on **December 13, 2022 6:49 PM at 6:49 pm** said:

Very interesting. Can you refit the model during the match, taking into account the match score up to that point?

> **Leonardo Egidi** on **December 17, 2022 5:54 PM at 5:54 pm** said:
>
> That would be very interesting, unfortunately these models do not capture (yet) online trends during the match itself. Moreover, this model takes some minutes (if not hours) to fit.

jd
on **December 15, 2022 3:38 PM at 3:38 pm** said:

>The results are somehow surprising! Unlike for what happens for the majority of the bookies, Argentina has the highest chances to win the World Cup.

What are most bookies saying? Any update to the model for the final and 3rd place games?

> **Leonardo Egidi** on **December 17, 2022 5:51 PM at 5:51 pm** said:
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> For some bookies odds look here:
>
> https://sports.bwin.com/en/news/football/argentina-vs-france-prediction/
>
> For last model update about the finals take a look here at my personal web-page:
>
> https://www.leonardoegidi.com/world-cup-2022