

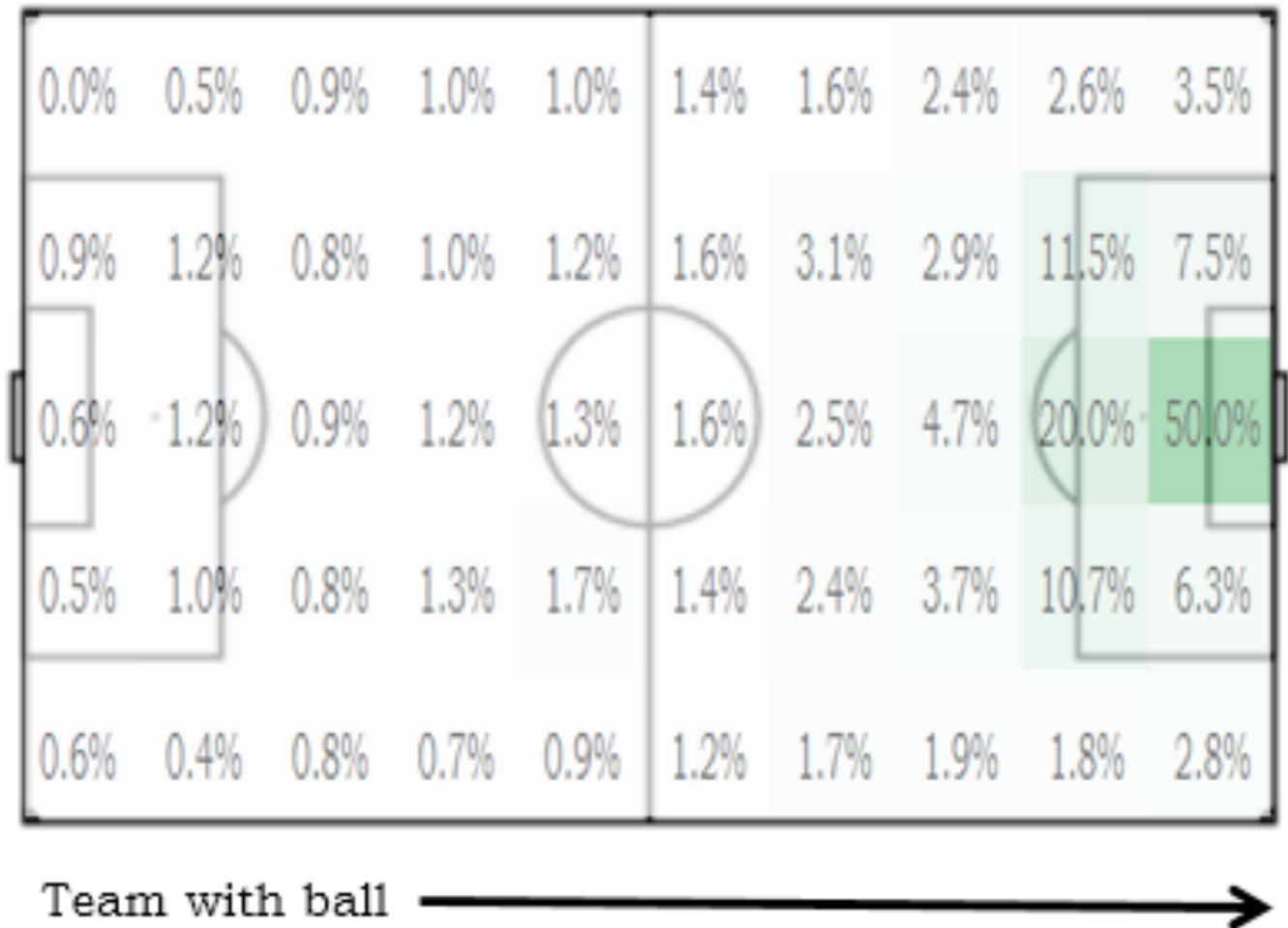
Forget Everything You Know About Goal Kicks

December 9, 2016 By Jared Young ([@jaredeyoung](#))

Long kicks by goalkeepers are a staple in soccer matches and they are a beautiful sight to behold, but that doesn't mean they are a good idea. By the end of this article I hope to convince you of that fact, even if the data isn't entirely perfect.

It's long bothered me that goalkeepers always launch the ball into what seemed to be at best a coin flip proposition. A team has the ball (the most valuable thing on the field) and then they decide to just sling it up in the air to chance. Why does that make sense?

The conventional wisdom is that 1) it's better to get the ball as far up the field as possible and 2) even if the first attempt doesn't work the next possession will still be closer to the goal. These two elements of said conventional wisdom turn out to be true, but it's the coin flip that becomes the glaring issue.

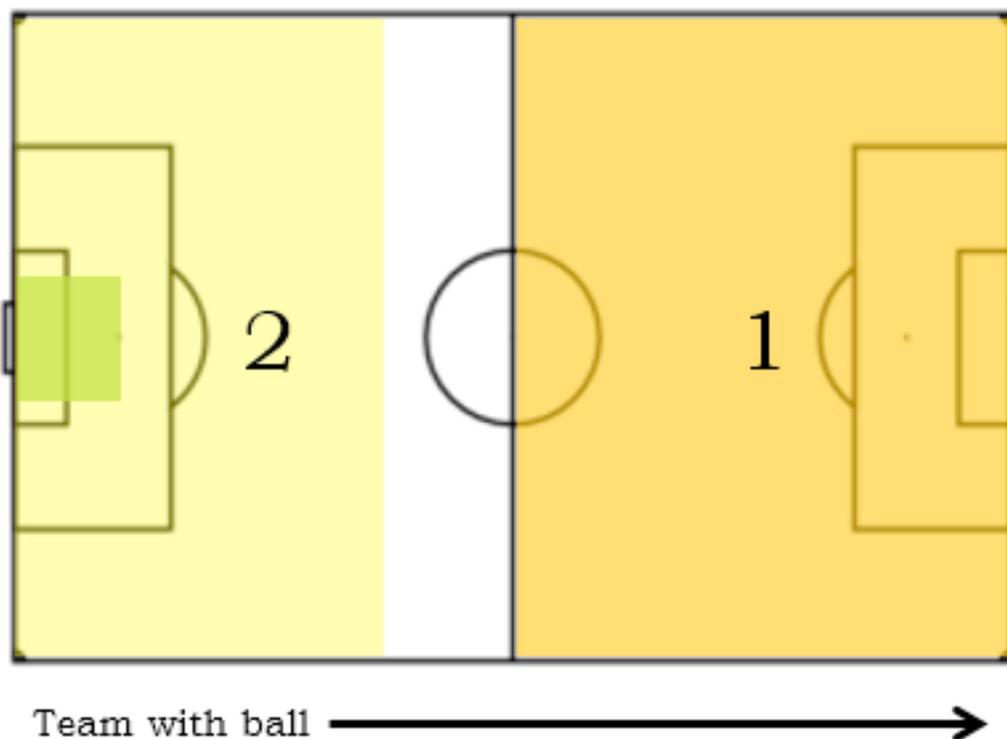


The chart above is a result of examining every possession in the 2016 MLS season as measured by having at least one pass or shot attempted. The number represents the percent of time a goal was scored on a possession that started in that part of the field. The field is broken into 50 zones that are created by breaking the field into five equal sections vertically and ten equal sections horizontally.

The probability of scoring on any possession this season was 1.2% and clearly the probability of scoring increases as the team gets possession closer to the goal. Focusing on the horizontal impact here is a chart that also includes the distribution of possessions that started in each tenth of the field.

For this analysis I've chosen just the possessions that start with a pass by the goalkeeper from inside the 6-yard box. My assumption is that it is either a goal kick, or comfortably in possession so you can 'play out from the back' if you chose to.

Next I segmented the resulting pass from the goal into two areas of the field. They are highlighted.



There were over 3,200 kicks from the green zone-to-zone one by a goalkeeper to begin a possession in MLS last season. There were over 1,600 kicks from the green zone to zone two. Goalies completed just 33.5% of the zone one passes. That pass is actually significantly worse than a coin flip, probably because the offense is typically outnumbered in that zone. Goalies complete over 95% of passes within zone two.

If the goalie happens to complete a pass into zone one then the offense scores on that possession 1.4% of the time, which is an above average rate. Conversely, if the defense gets possession, which it will 66.5% of the time, they have just a 0.9% chance of scoring.

If you multiply the scoring odds by the probability of getting possession, the numbers come out in favor of the opponent 0.6% to 0.5%. Perhaps not a big deal. But remember the offense was hoping to create value on that second and potentially third possession as well. Here's a chart showing that the second possession for the offense is indeed further up the field than the "normal state" (where the average possession starts), but just barely.

Here is where things get a little crazy. When we look at the second possession following a goal kick, on average the offense gets the second possession in a better than state, but they actually score far less goals.

The probability of scoring a goal is just 0.7%. However the second possession by the defending team is strong at 1.5%. Essentially, on second possessions after a long goal kick, the kicking team is far more likely to concede a goal than it is to score a goal.

To summarize, when the goalie begins a possession with a pass beyond the midfield line, his team has 1.2% chance of scoring on the next two possessions and the opponent has a 2.1% chance.

Time for the same analysis for the zone two passes (short passes from the keeper). The first possession of the offensive team results in a goal 0.9% of the time. This is understandable given the team is beginning their possession further away from goal. Once the defense gets their first possession they have an average chance of scoring at 1.2%.

But again it's the second possession where things get interesting. The offensive team scores 1.4% of the time and the opposition's second possession results in a goal just 1.0% of the time. ***The results have flipped compared to the longer pass.*** Including the probability of completing the first pass then, a shorter pass from the goalkeeper results in a goal 2.3% of the time over the next two possessions and the opposition scores 2.2% of the time.

My hypothesis for why this shift occurs is due to the positioning of the opponent. The long pass allows the defense to get set deeper and shifts the possession odds in their favor. Meanwhile a shorter pass draws the defense forward and over the course of the two possessions increases the team's chance of scoring. But let's not forget nearly tripling the chances of keeping the first possession.

Below is a cheat sheet for the analysis.

Probability of Scoring

Possession	GK Pass	GK Team	Opponent
1	> 50	0.5%	0.6%
2	> 50	0.7%	1.5%
Total		1.2%	2.1%
1	< 40	0.9%	1.2%
2	< 40	1.4%	1.0%
Total		2.3%	2.2%

If an average team decided to only have the goalie make passes into zone (passing it short) two and these results held, the team would improve their goal differential on average by 1.6 goals per season, which is significant when you consider it's a minor adjustment.