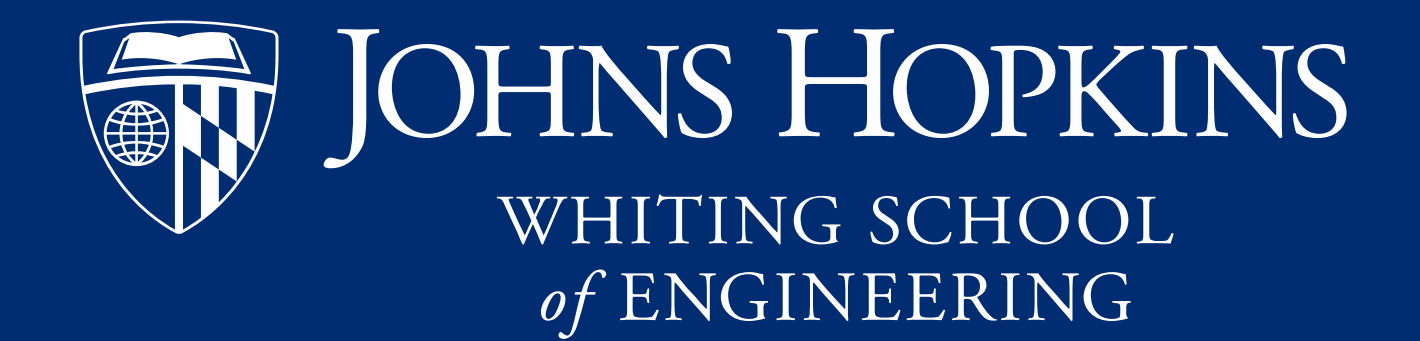


Faceoffs: How Much Do They Matter?

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Introduction

How much do faceoffs actually matter? Many of the seismic developments in hockey analytics recently have been characterized by the importance of puck possession, a key determinant in the latest models such as expected goals and other metrics like Corsi. Yet amid this shift to focusing on possession, there is yet to be consensus or any similarly robust models on the importance of faceoffs, the most frequent and decisive determinant of possession. This project analyzes how faceoffs drive offensive and defensive results and impact teams winning games.

Objectives, Materials, & Methodology

Our core objective is to determine by situation how much faceoffs influence games. This has been accomplished by analyzing the impact of faceoffs on expected goals. Our data is a custom data set crafted by merging play-by-play data from *Evolving Hockey* and shot-level data, including expected goals, from *MoneyPuck*. Statistics like zone entries and exits and possession time are not publicly available, so we devised algorithms to reverse engineer these measures. Moreover, we created numerous statistics centered around who has possession and how this drives post-faceoff outcomes.

Results

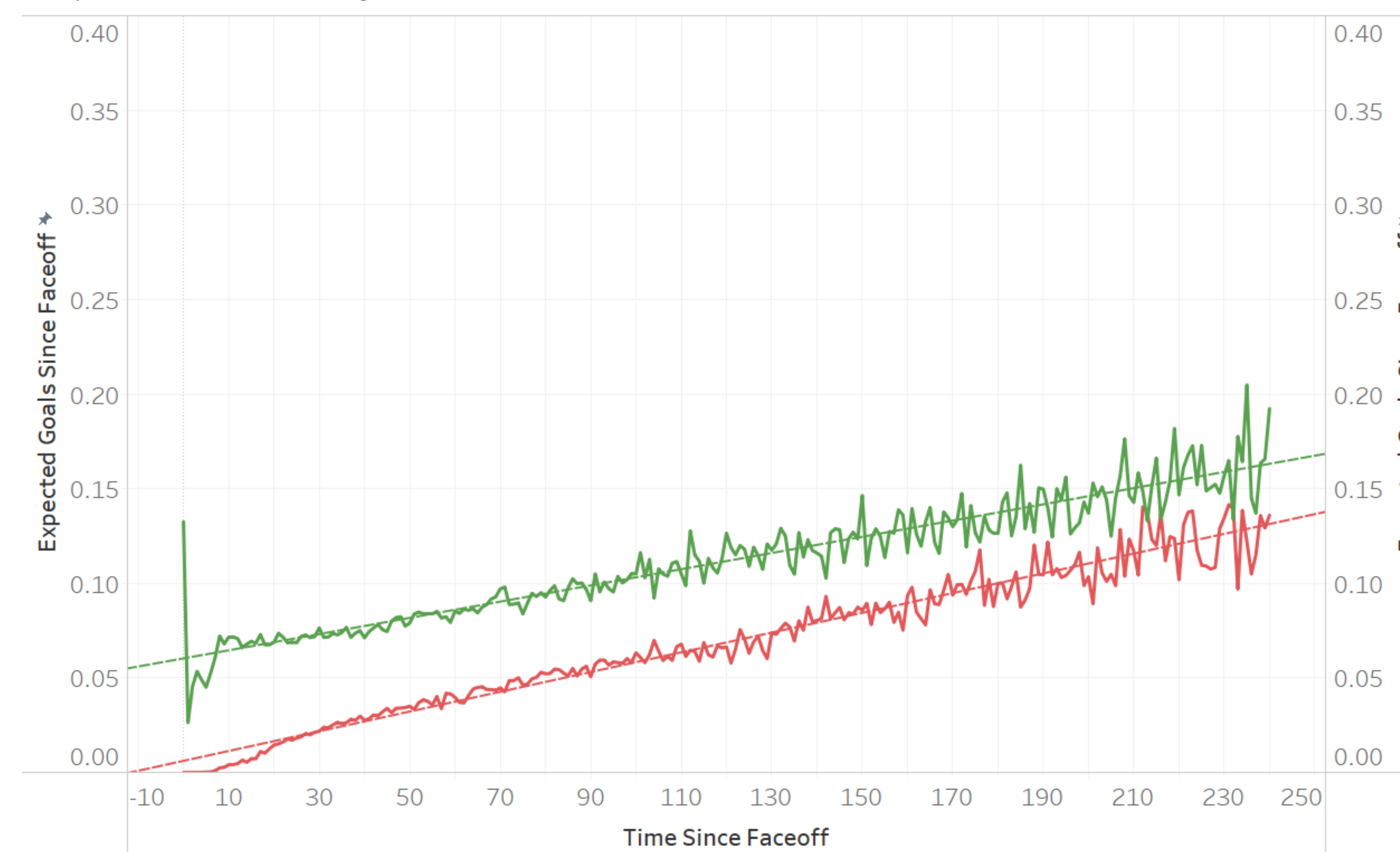
Neutral Zone Faceoffs

Neutral zone faceoffs have negligible effects on expected goals scored. The likelihood of gaining offensive zone time following a neutral zone faceoff is nearly identical for both the team that loses the faceoff and the team that wins the faceoff. Specifically, we found that the team that wins the faceoff enters the offensive zone within 30 seconds of the faceoff about 18.75% of the time while the team that loses the faceoff gains the offensive zone within the first 30 seconds at a comparable rate of 16.96% of the time. More importantly, the teams' rates of average expected goals per ensuing offensive zone entry are similarly comparable at 0.0338 for the team that wins the neutral zone faceoff and just 0.0002 points higher at 0.0340 for the faceoff loser. The difference in these figures wanes even further as the time window increases. At a clip of 60 seconds, these numbers become even closer, with the difference in offensive zone entry percentage dropping to 0.9% and the difference in the expected goals per offensive zone entry lowering to just 0.00025 expected goals.

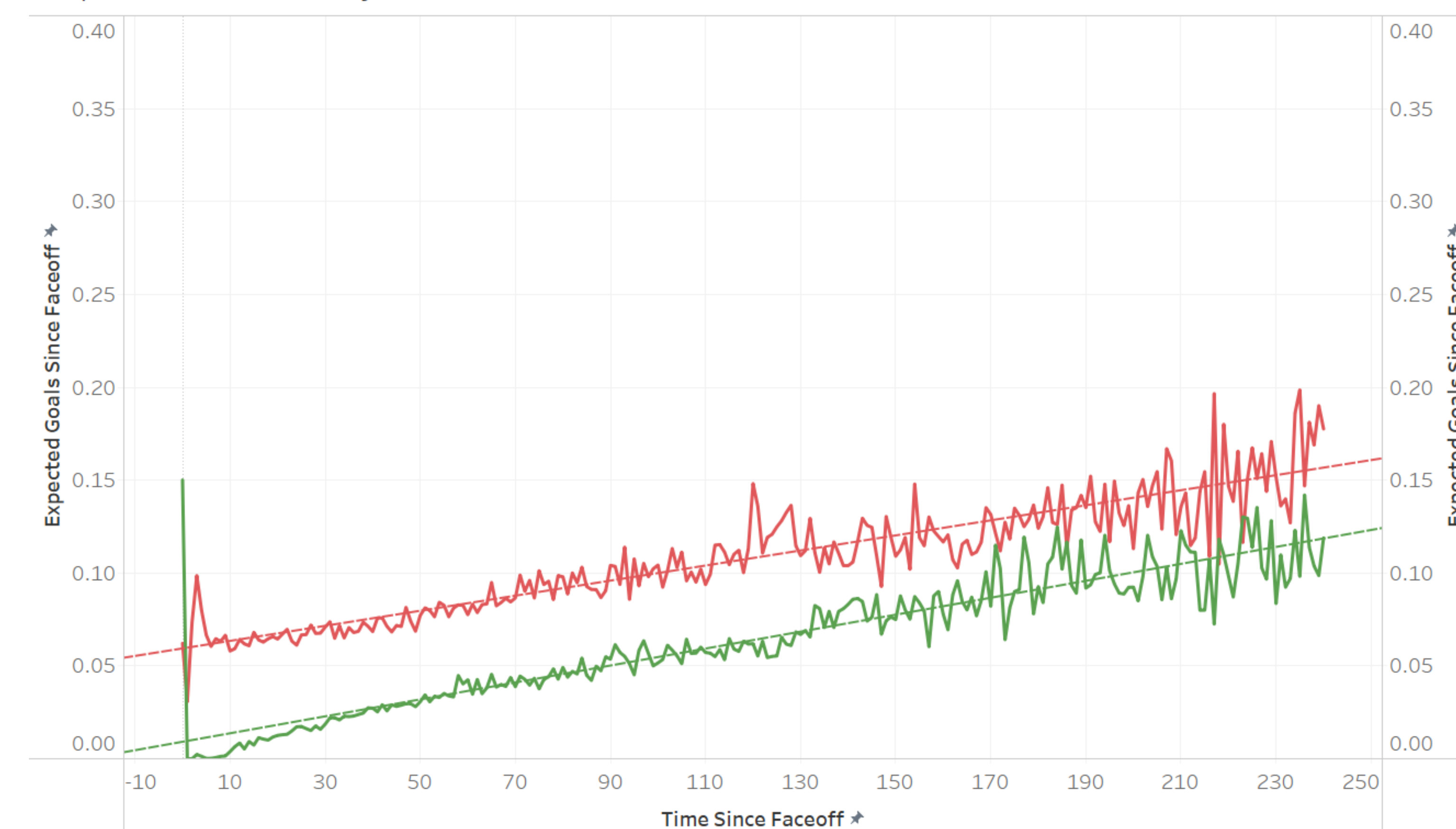
Offensive and Defensive Zone Faceoffs

Figures 1 & 2—Cumulative Team Expected Goals by Situation

Expected Goals by Team: Offensive Zone, Offensive Team Faceoff Win



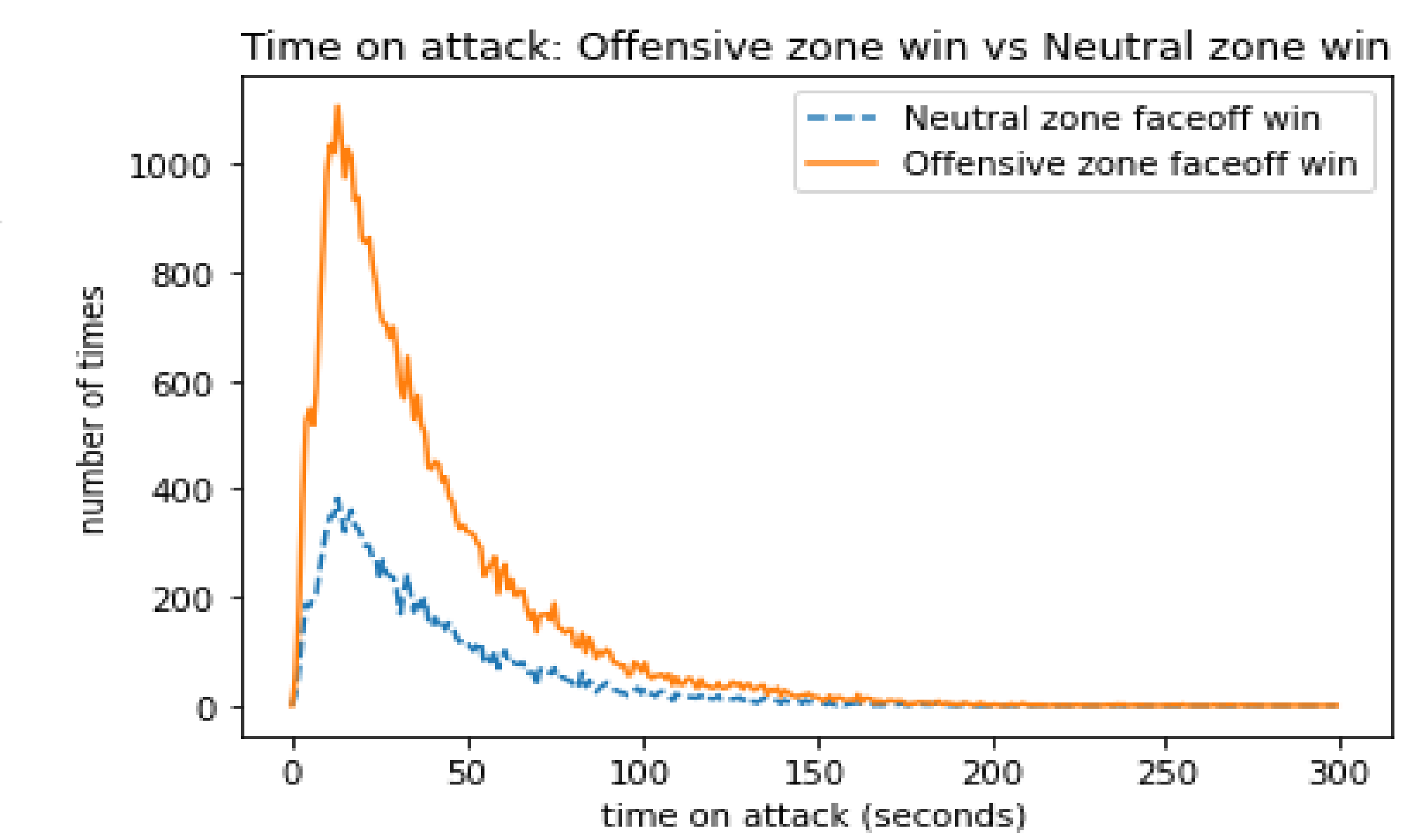
Expected Goals by Team: Defensive Zone, Defensive Team Win



Faceoffs influence the expected goals a team typically achieves on the subsequent shifts. In both graphs, the green line indicates the ensuing performance of the team that won the faceoff whereas the red line indicates that of the team that lost the faceoff. Location of faceoff proves to be a more powerful determinant of subsequent generation of expected goals than whether a faceoff is won or lost.

Results

Figure 3—Faceoffs and Possession Time



Teams average 9.7 seconds more in time on attack immediately after an offensive zone faceoff win than after a neutral zone faceoff win. This is primarily influenced by the fact that winning a neutral zone faceoff only immediately translates to time on attack 55.9% of the time.

Conclusion

Faceoff wins and losses matter but not as much as the starting situation of a given faceoff. In the case of offensive zone or defensive zone faceoffs, the team with the more favorable offensive state at the location of the faceoff will still be expected to achieve more expected goals than the other team regardless of which team wins the faceoff. The logical end point at which non-faceoff, in-game events take precedence over game play rather than the preceding faceoff is worthy of debate. However, using time of a zone change as a logical starting point and noting that on average 22.5 seconds elapse before the first zone change after a faceoff, we can estimate that a faceoff win in the offensive zone by the offensively positioned team is worth about **0.052 expected goals** and a faceoff win in the defensive zone by the defensively positioned team is worth about **0.049 expected goals**. On a more general note spanning all situations, a faceoff win is worth an average of **0.015 expected goals**. This may seem tiny but becomes quite notable when considered in the context of the average NHL game featuring 59.3 faceoffs. This suggests there are nearly 0.89 expected goals per game up for grabs at the faceoff dot. Accounting for both the gain of winning a faceoff for your team and forfeited gain of stealing a faceoff win from the other team, winning just six more faceoffs a game would be the equivalent of adding 0.18 additional expected goals in offense each game. That translates to 15 additional expected goals over the course of a full season or roughly the equivalent of adding an additional middle-six forward that could easily cost \$4 million annually against the salary cap for the likely lower cost of personnel that can win six more faceoffs. That surplus value represents nearly five percent of the salary cap, which is invaluable to any team with Stanley Cup aspirations. Our research suggests that faceoffs represent a market inefficiency and ripe opportunity for NHL teams to cost-effectively win more games. **Faceoffs matter.**