

# Does Home Field Advantage *Actually* Matter? *THIS* NFL Team Stadium's Wind Turns *Losses* Into **Wins**...

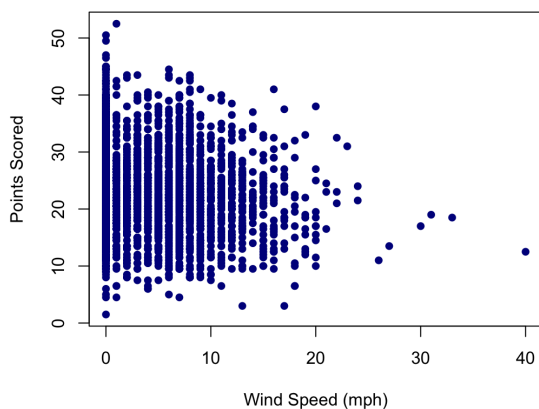
Away Teams Beware! This NFL Stadium Has a Secret Weapon—and It's **Not** a Player...it Will “*BLOW*” You Away!

Samuel Yarkoni - Data 101 - Dr. Imielinski - 2/10/2026

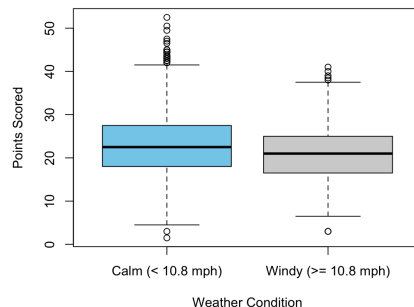
In the NFL, various factors have decided game outcomes, often beyond the *direct control* of the players. What are some of these factors you may ask? Well, for starters, humidity, temperature, and wind can all have monumental effects on how an NFL game is played. However, wind seems to stick out as an outlier: not only does it limit a quarterback's ability to throw far to complete splash plays, but it also thwarts kickers from maintaining their accuracy, especially at long distances. Both of these factors collude to wreak havoc on modern NFL offenses in the 4,363 games played since 2010.

Out of Your Control: You Can't Stop *THIS* Weather Condition From Affecting Your Favorite NFL Team's Performance

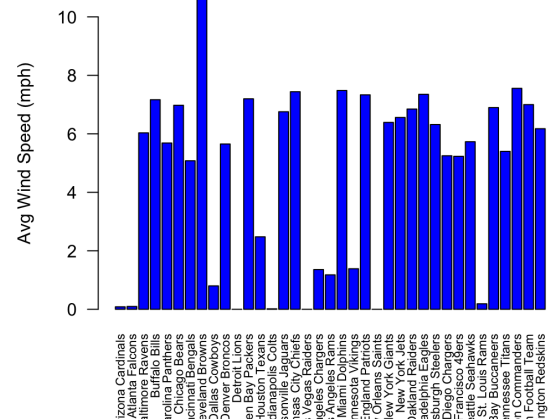
The Death of Offense: How Wind Kills Scoring



Modern NFL Scoring Distribution, Calm vs Windy



Home Stadium vs Average Wind Speed (mph)



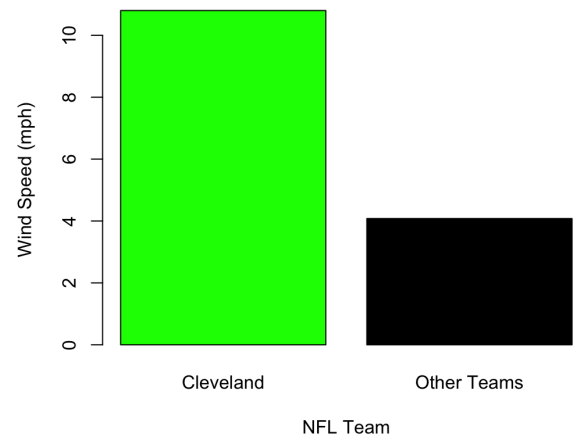
I analyzed NFL data from the past 15 years, and the effects that wind has on offensive output was *staggering*. When considering wind speed effects on the average points an NFL team scored on the left, you can see a *clear* negative correlation. In this scatterplot above, the title “The Death of Offense: How Wind Kills Scoring”, is not exaggerating the results, we can see that wind has a direct impact on limiting offensive output, specifically in the higher range, ~10.8 mph, considering the 2-3 outliers at the ~15-20 mph mark. Is this a coincidence? I think not. In the bar plot to the right, it is clear as day that one team has a far greater average wind speed when comparing NFL home teams to wind speed (mph). This team actually has ~3.5 mph average wind speed more than the second highest team! Not only that, but as you can see in the central box plot, the median NFL game score is far

lower when you compare windy ( $\geq 10.8$  mph) to calm conditions—again not a coincidence that  $\geq 10.8$  mph is windy! In fact, the median score goes from 22.5 in calm conditions all the way to 21 in non-windy conditions. This may seem like a small difference, but 1.5 points over 4363 games equates to a 6545 point difference in windy vs non-windy games since 2010! In the NFL, 1 point is often the difference between winning and losing.

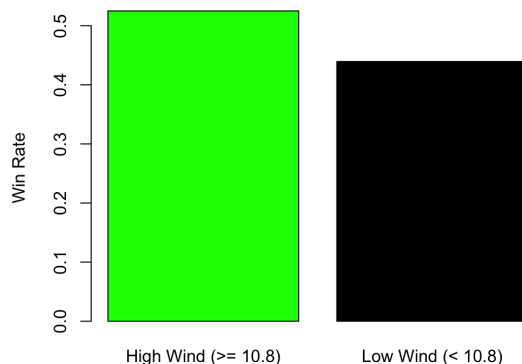
## “The Windy City”: *THIS Advantage* Is Getting “Blown” Out of Proportion

Let me make it ultra clear for you, I know you may not have your glasses! In this *crazy* home stadium, the Cleveland Browns host NFL games in a city that might as well be called the windy city! After taking out Cleveland home field data for the “Other Teams” category, the bar plot to the right shows that when Cleveland hosts NFL games, their average wind speed is a staggering 10.8 mph, compared to the league average of only 4.8 mph. This results in a whopping 6 mph average difference between Cleveland and the rest of the NFL. Even further, Cleveland’s average wind is right at the point where the negative correlation begins to appear most heavily on the scatter plot graph—this is not a coincidence. You might be wondering, “why does this even matter if the wind destroys *all* offenses?”

Modern NFL Average Wind Speed Comparison



Cleveland Win Rate: Windy vs Non-Windy Games



While this intuition might seem true on paper, *the data does not lie*. Instead of hurting the Cleveland Browns, their experience playing at home in a consistently windy environment has allowed them to adapt. When measuring “windy games” above their average wind speed of 10.8 mph, the Browns have won games at a far higher rate from low wind win rate of  $\sim 0.44$ , to 0.525, (44% to 52.5% win percent). This increased their win rate by a whopping 0.08 (or win percent by 8%). The magnitude of this change is incomprehensible—playing in the wind has been the difference from being a losing team to a winning team (win

rate over 0.500)! Not only that, but when comparing this home field wind advantage to the rest of the NFL, the data is clear—the wind blows unanimously in the Cleveland Browns favor. The home field wind advantage is minimal for the rest of the league, as the windy win rate increase for teams other than Cleveland is a mere 0.019 or 1.9% increase in win percentage.

Win Rate Improvement in Windy Games ( $\geq 10.8$  mph)

