The Case for Offensive NFL Head Coaches

For years, I have often observed anecdotally that NFL head coaches with offensive backgrounds (OHCs) seem to have more NFL success as head coaches than their defensive counterparts (DHCs). This paper aims to investigate whether that is true statistically.

To do so, through a meticulous manual process to ensure accuracy, this paper categorizes NFL coaches based on their offensive or defensive focus and considers relevant factors such as previous NFL quarterback experience and the presence of Hall of Fame quarterbacks. It then uses statistical correlation analysis, more fully described below, to evaluate career metrics such as playoff wins, Super Bowl victories, and coordinator retention. The analysis will attempt to validate or challenge the notion that hiring an OHC offers a greater likelihood of success in the NFL.

Ultimately, this paper concludes that my initial anecdotal observation is right: NFL head coaches with offensive backgrounds have, in fact, had more success as head coaches than their defensive counterparts.

Methodology

The analysis begins by dividing the dataset into two distinct groups: offensive head coaches (OHCs) and defensive head coaches (DHCs). It focuses only on those individuals who had served as head coaches and categorizes them based on their primary area of expertise: offense or defense. To ensure accuracy and detail, all research regarding whether these coaches had played as NFL quarterbacks, whether their offensive or defensive coordinators left after a Super Bowl victory, and whether they coached a Hall of Fame quarterback was conducted manually.

Instead of summarizing all the data together, averages were calculated for each coach — much like a logarithmic approach — to avoid skewing the results due to outliers like Bill Belichick. Additionally, the methodology includes several important but relatively straightforward adjustments relating to current and recent NFL quarterbacks. For example, it projects Patrick Mahomes, Aaron Rodgers, and Ben Roethlisberger as future Hall of Fame quarterbacks to properly categorize their head coaches.

Data

With head coaches properly sorted as OHCs or DHCs, I first looked at how the average OHC compared to the average DHC in four key categories: (1) average seasons coached; (2) average playoff wins per season; (3) average Super Bowl wins per season; and (4) average winning percentage:

Metric	Offensive Head Coaches	Defensive Head Coaches
Average Seasons Coached	6.46	6.68
Average Playoff Wins per Season	0.24	0.17
Average Super Bowls per Season	0.021	0.012
Average Win Percentage	44%	42%

We can immediately start to see a discrepancy. While the average DHC coaches a touch longer, all of the "success" based categories show clear outperformance by the average OHC. OHCs average 0.07 more wins per season, .009 more Super Bowl wins per season, and a 2% higher winning percentage per season.

I also analyzed both the first and third quartile data of those metrics:

1st Quartile Data:

Metric	Offensive Head Coaches	Defensive Head Coaches
1st Quartile Seasons Coached	3	3
1st Quartile Playoff Wins/Season	0	0
1st Quartile Win Percentage	38%	32%

3rd Quartile Data:

Metric	Offensive Head Coaches	Defensive Head Coaches
3rd Quartile Seasons Coached	9	8.75
3rd Quartile Playoff Wins/Season	0.40	0.25
3rd Quartile Win Percentage	54%	51%

While the first quartile doesn't matter much (first quartile coaches are only lasting 1-3 years and aren't winning much at all), the third quartile does, and it is showing clear differences between OHCs and DHCs. This is particularly true in playoff wins per season. While no coach in either quartile has won a Super Bowl, OHCs have won 60% more playoff games than their DHC counterparts.

Second, I considered how the coaches performed compared to some key benchmarks:

Metric	Offensive Head Coaches	Defensive Head Coaches
Coaches with Above 50% Win Percentage	40%	27%
Coaches with Above 0.5 Playoff Wins/Season	16%	12%
Coaches with Above 0.1 Super Bowls/Season	8%	5%

OHCs also outperform DHCs on the key benchmark tests. They are considerably more likely to be above average (13% delta). They also win playoff games more often and are more likely to win a Super Bowl.

Third, analyzing the provided data, I looked at what I consider to be some of the most important correlations of that data vs. playoff wins per season:

Correlation Metrics

Data:

Metric	Offensive Head Coaches	Defensive Head Coaches
College/Other Pro Head Coach vs. Playoff Wins/Season	-0.057	0.042
College/Other Exp (thru 2023) vs. Playoff Wins/Season	-0.081	-0.098
# Seasons as NFL Coordinator vs. Playoff Wins/Season	-0.114	-0.188
NFL Playing Exp vs. Playoff Wins/Season	0.159	0.036
Was an NFL QB vs. Playoff Wins/Season	0.112	-

As we can see here, none of this data is particularly strong. College coaching background has practically no effect, nor does length of coordinator experience. Only playing experience initially appeared to be slightly relevant. As I thought may be the case, that number was inflated by former QBs. It does appear that former QBs perform better as HCs.

Finally, I looked at correlations for only those coaches that have won a SB. What I found that was almost every DHC had a Hall of Fame level QB. For OHCs there was certainly still that same correlation, but not to nearly the same effect.

Metric	Offensive Head Coaches	Defensive Head Coaches
Super Bowl Wins vs. Having a Hall of Fame QB	0.457	0.924

Lastly, I decided to gather the data for and consider one more interesting question—are OHCs or DHCs more susceptible to losing their coordinators? The answer is interesting:

Metric	Offensive Head Coaches	Defensive Head Coaches
Super Bowl Wins vs. OC Left Immediately After SBs	0.527	0.628
Super Bowl Wins vs. DC Left Immediately After SBs	-0.140	0.691

As the data makes clear, while OHCs often lose their offensive coordinators, they rarely lose their defensive coordinators. DHCs, however, regularly lose both offensive and defensive coordinators. The data is alarmingly clear and has obvious implications for teams in both the initial hiring and replacement phases. There is a cyclical issue here for DHCs. If the OHC loses his OC, he is still able to control the offense. What is important is that OHCs don't typically lose their DC. On the other hand, **DHCs lose their OC and then have no one to run the offense.** They lose their DC, but that shouldn't be an issue, similar to an OHC losing his OC. In these situations, the only significant loss on either side is DHCs losing the OC.

Summary of Data

The data analysis reveals a significant discrepancy between offensive head coaches (OHCs) and defensive head coaches (DHCs) in terms of their career achievements. On average, OHCs tend to have more playoff wins per season, a higher win percentage, and more Super Bowl victories per year compared to DHCs. This trend persists across different quartiles, with the third quartile showing a 60% increase in average playoff wins per season for OHCs. Further analysis of key benchmarks indicates that OHCs are more likely to perform above average, win playoff games, and secure Super Bowl titles. While coaching experience appears to have little effect, former NFL quarterbacks show a slight advantage as head coaches. DHCs are slightly more likely to lose their offensive coordinators, and significantly more likely to lose their defensive coordinators, compared to OHCs, who show no correlation with losing their defensive coordinators. Outliers, such as Bill Belichick, who has a history of retaining coordinators like McDaniels (failed former HC) and Patricia (failed former HC) after Super Bowl victories, and Bill Parcells, whose offensive coordinator had prior head coaching experience, skew some of the results.

In the NFL, every tiny statistical edge can make a difference. In my eyes, the operational goal of a team is to win on the margins. Hiring an OHC does not guarantee success – far from it. **But, hiring an OHC, preferably a former QB, raises the probability of a successful hire and coaching staff longevity.**

I also just finished an NHL ML modeling project, if you have any interest in taking a look (https://uchicagoedu-my.sharepoint.com/:w:/g/personal/jcardonick_uchicago_edu/ET1YAdbqpg5GnXiBJvuZxj0BD9q-Rk_IIZH0oqzaS5Lssw?e=NVdVz4). I am starting an NFL WR modeling project now!