Anatomy of an NFL Champion: Cap Space and Draft Capital Usage

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Overview

Building a championship-caliber NFL roster requires a careful balance of financial investment and draft capital allocation. Teams must decide how much cap space to dedicate to key positions while leveraging the NFL Draft to fill roster gaps at a lower cost. This project analyzes how NFL teams that reached the Conference Championships from 2018 to 2023 managed their salary cap and draft resources.

By examining positional cap space distributions and corresponding draft investments, this study aims to uncover patterns that contribute to sustained team success. We evaluate how much teams spent on premium positions such as quarterback, offensive line, and defensive line, while also investigating the level of draft capital used to acquire key contributors..

The findings from this project offer a data-driven perspective on team-building best practices, helping to explain how elite franchises maintain competitive edges through strategic financial planning and efficient player acquisition.

Research Objectives

The primary goal of this research is to determine how conference champion teams allocate their salary cap across various positions and examine the draft resources used to build their rosters.

- **Key Factors and Data Sources**:
    - **OverTheCap Data**: Provides detailed information on cap spending by position for each team.
    - **Sports Reference Data**: Supplies draft capital data to analyze how teams acquired key players, including draft rounds and trades.
    - **Player Performance Metrics**: Utilize performance metrics to correlate spending and player output.

Methodological Approach

This study will use the following structured approach for analysis:

- **Data Preparation**:
    - Gather salary cap data from OverTheCap, positional breakdowns, and draft data from Sports Reference.
    - Clean and organize the data to align cap space and draft capital with corresponding player positions and performance.
- **Analysis Framework**:
    - **Cap Space Allocation**: Break down cap spending by position and compare across conference champions over multiple seasons.

    - **Draft Capital Usage**: Analyze draft pick value used to acquire key players at different positions.
    - **Positional Prioritization**: Identify patterns of high-value spending or drafting on specific positions (e.g., QB, OL, DL).
- **Correlation Between Spending and Performance**:
    - **Positional Impact**: Use performance metrics (e.g., PFF grades, All-Pro selections) to assess how cap allocation relates to player performance and contribution to team success.
    - **Draft Efficiency**: Evaluate the efficiency of draft capital used to acquire players in high-spending positions.

Specifications

- **Tools**: R (for data analysis), OverTheCap API, Sports Reference Draft Data
- **Modeling**: Analyze trends in cap space utilization using statistical methods (e.g., correlation analysis, regression models) to determine relationships between cap space usage, draft capital, and performance.
- **Timeframe**: 2018-19 to 2023-24 seasons

Applications and Sport Impact

The findings from this research can serve as a valuable resource for NFL front offices seeking to optimize their team-building strategies. By analyzing how conference champion teams allocate salary cap space and draft capital across key positional groups, this study provides actionable insights into roster construction practices that correlate with competitive success.

Understanding which positions consistently receive higher financial investment and significant draft resources can help teams refine their spending priorities. For example, if successful teams allocate a larger share of cap space to premium positions such as quarterback, offensive line, and pass rushers, front offices can adjust their budgeting and roster management strategies accordingly.

The insights derived from this analysis can support key decision-making processes, including free-agent targeting, contract negotiations, and draft strategy development. By leveraging these findings, NFL teams can strengthen their competitive positioning and increase their chances of sustained postseason success. This data-driven approach to cap space and draft capital management can ultimately contribute to a sustainable competitive advantage in a highly competitive league.

Step-by-Step Process

Team Selection:

- Identify all NFL teams that qualified for their respective Conference Championship games from the 2018 to 2023 seasons.
- Compile a comprehensive list of these teams as the core focus for salary cap and draft capital analysis.

Salary Cap Data Collection:

- Access OverTheCap.com to gather detailed salary cap data for each identified team, including positional spending breakdowns.
- Record relevant financial data such as total cap hits, positional allocations, and individual player contract details into an Excel spreadsheet for organization and preliminary review.

Data Import into R Studio:

- Transfer the Excel spreadsheet containing salary cap data into R Studio for advanced analysis.
- Ensure proper formatting and data structure compatibility by cleaning and organizing imported data sets.

Draft Capital Data Collection:

- Retrieve draft data for each conference championship team's draft classes from publicly available sources, such as Sports Reference or Pro Football Reference.
- Include relevant draft metrics such as draft round, pick number, and player position for each selected athlete.

Data Filtering and Integration:

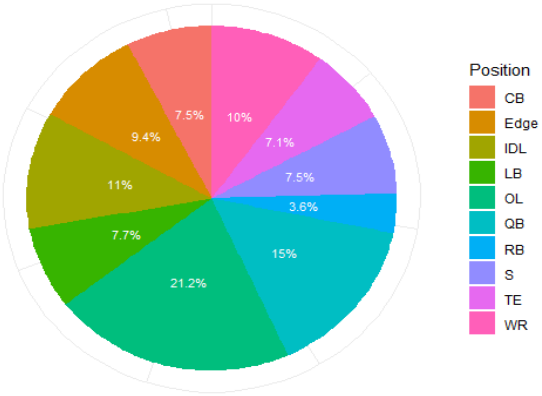
- Filter out players and financial records unrelated to the selected conference championship teams.
- Merge salary cap and draft capital datasets in R Studio to create a unified dataset.
- Ensure data accuracy by cross-referencing financial records with draft histories for consistency.
- Prepare the cleaned and merged dataset for statistical analysis, including cap space allocation comparisons, draft capital efficiency evaluations, and performance metric correlations.

Analysis Findings

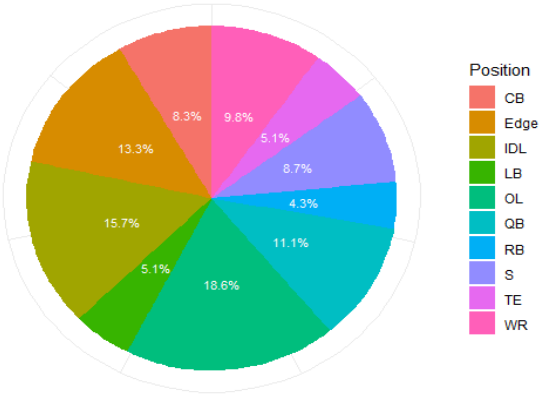
Detailed below is a series of visualizations showcasing key findings from the analytical process. These graphics illustrate how NFL conference champion teams allocate salary cap resources across various positional groups and invest draft capital to acquire talent. The visual summaries highlight spending distributions, positional priorities, and the relationship between financial commitments and on-field performance. By examining these patterns, we provide a clearer understanding of how successful teams balance short-term financial flexibility with long-term roster sustainability.

Spending Distribution of NFC and AFC Championship Teams 2018-2023

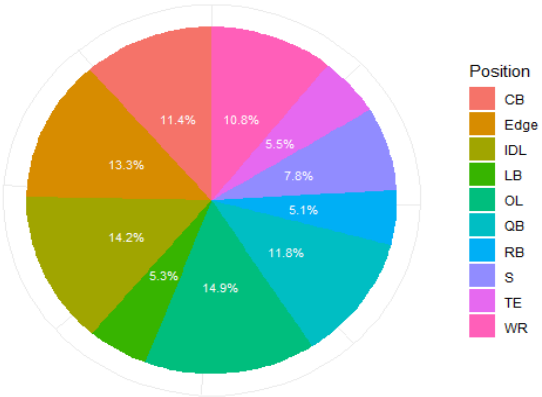
Spending Distribution by Position - 2023



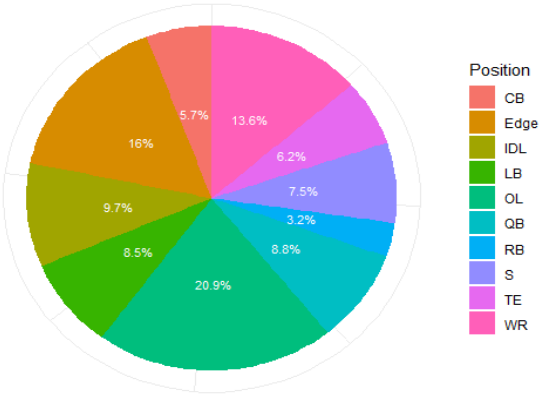
Spending Distribution by Position - 2022



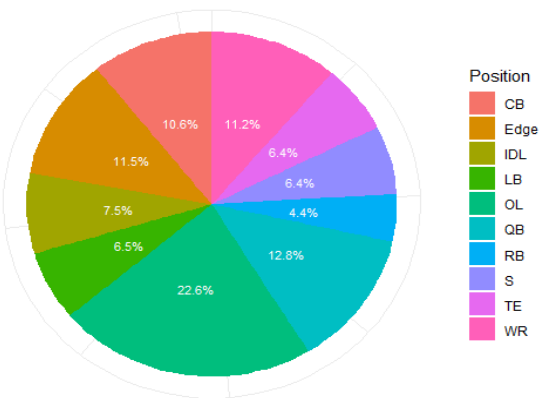
Spending Distribution by Position - 2021



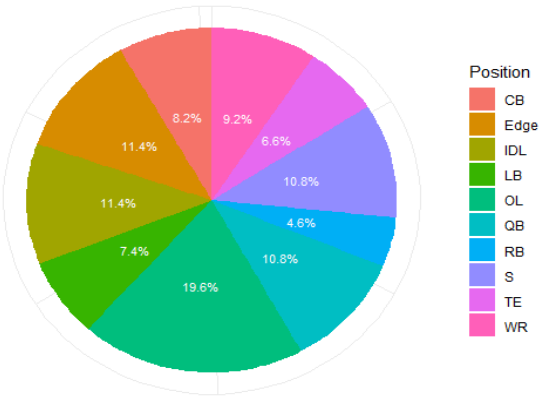
Spending Distribution by Position - 2020



Spending Distribution by Position - 2019



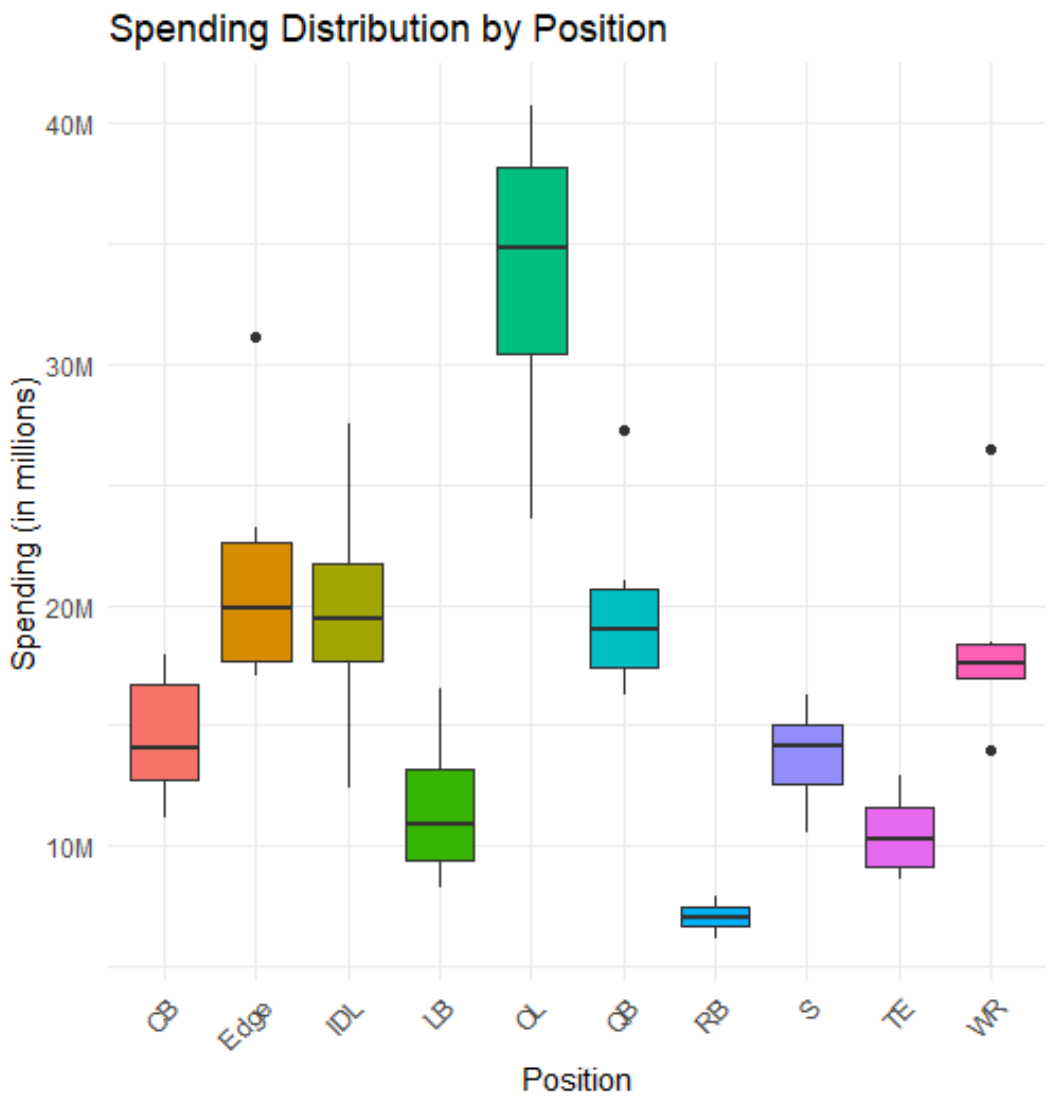
Spending Distribution by Position - 2018



The pie charts above contain data from overthecap.com that shows how the AFC/NFC championship teams allocated their cap space each year. The spending of all 4 teams per position was averaged and then put in a pie chart to show the percentage of the total cap that position took up. The NFL league salary cap tends to increase yearly with rare exceptions such as in 2021 due to the COVID-19 pandemic. Pie charts with percentages based on the total league cap account for the yearly changes and are better than representing its actual values. Just seeing the actual values can be misleading because paying a certain position 10 million in 2018 could be worth a lot more in 2024 because teams are allowed to spend more.

Throughout each season, the distribution of spending stays relatively consistent, which is to be expected because it implies that the best teams are building in similar ways. The position group with the most cap allocated is the OL with an average of 19.6 percent of the team's cap space. Spending on OL seems to be a priority for top teams, but it can be a little misleading because there are 5 starting on each team, while other positions don't have as many starters. The position with the least spending is running backs with an average cap percentage of 4.2. Analytics and the talent pool out of college are making the running back position less valuable as years go by. Analytics have shown that running backs tend to pass their prime at age 27, making teams reluctant to pay them outside their rookie contracts. The strategy in the NFL now seems to be to draft a running back and then take another one 4 years later. The Chiefs are a good example of this, winning a superbowl with 7th round draft pick Isiah Pachecho. The 2023 Chiefs had a total cap allocation of 5.9 million dollars at the running back position or about 3.04% of their total cap spending. Teams are thinking, if you can find a quality back in the 7th with paying them almost nothing, then what is the point of extending them at all? A lot of people have noticed that good teams don't value the running back position and the numbers back that up.

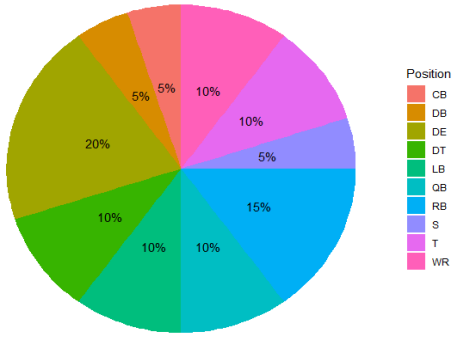
The rest of the position groups are somewhere in between the two extremes but there are still differences between them. Safeties and tight ends were also close to the running back range, but not quite as low. The Edge and IDL positions were always 2nd or 3rd most expensive positions. Good teams seem to think football is won in the trenches at the end of the day. Quarterback, wideouts, and corners are in the middle of all of it and their ordering in terms of spending can change yearly. But the notable thing here is that none of them take up much cap space. This might indicate that too much cap space spent outside the trenches can lead to a bad overall football team. We will dive deeper into this when looking at the draft data but teams have an easier time winning when their best players (especially quarterbacks) are on rookie deals.



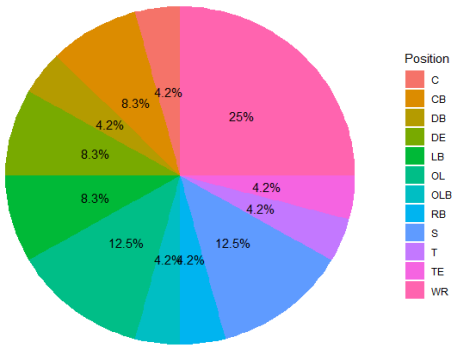
This box plot represents the spending of each position from 2017-2023 of the AFC and NFC championship teams. This visual validates the previous observations made earlier and summarizes the data nicely. You can see OL at the top by a large margin and then running backs way below the other positions. It's also interesting how there are very few outliers in the data set, which shows that all these teams follow the same formula. I think it's also notable how little range there is for running backs and wide receivers. It looks like good teams have a specific number that they don't want to go over. A good example of this is Tyreek Hill. Many criticized the move at the time, but the Chiefs realized it would be hard to build a team with Patrick Mahomes and Hill both on big deals. So, Hill was then traded to the Miami Dolphins for 5 draft picks. This plan ended up working with new stars Trent Mcduffie, Isaiah Pachecho, and Rashee Rice helping get the team a championship. Letting go of stars is tough for many fans, but often getting good compensation for another team to give them the money they want is the way to go.

Draft Results by Position of 2017-2023 NFC/AFC Championship Teams

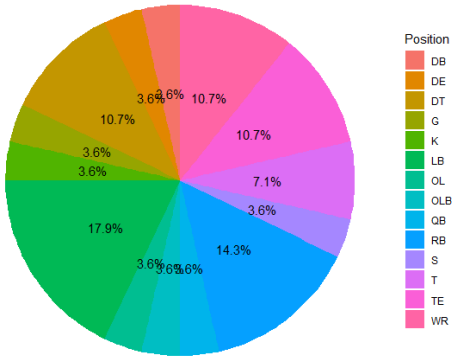
Position Distribution - Round 1



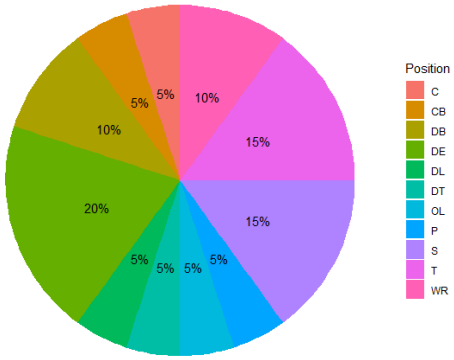
Position Distribution - Round 2



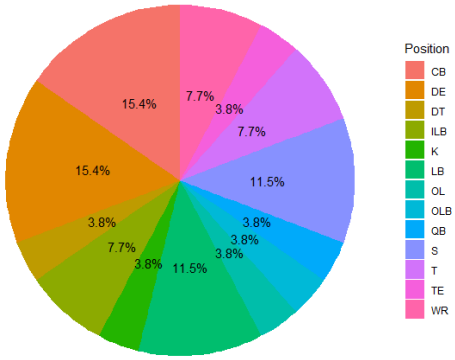
Position Distribution - Round 3



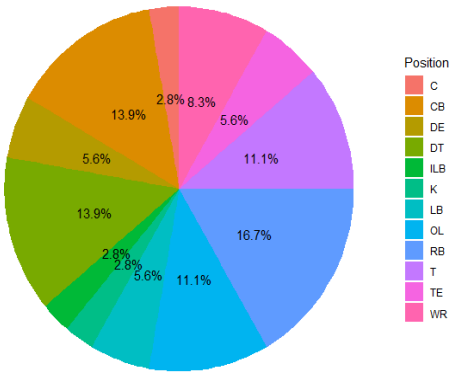
Position Distribution - Round 4



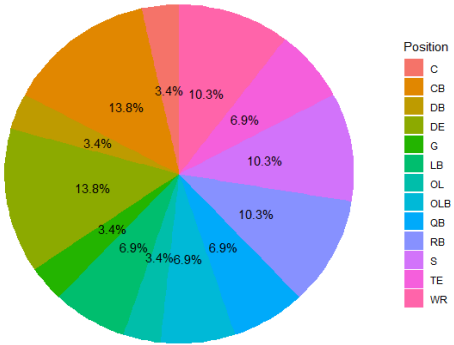
Position Distribution - Round 5



Position Distribution - Round 6



Position Distribution - Round 7



Draft Capital Summary

Success in the NFL often hinges on effective drafting, as building through the draft remains the most sustainable way to construct a competitive roster. Most teams in this dataset developed key players into stars, though rare exceptions like the 2021 LA Rams, who heavily relied on trades, still featured homegrown talent such as Aaron Donald and Cooper Kupp.

One surprising takeaway from the first-round data is that running backs were the second most frequently selected position. This raises questions about why teams invest high draft picks in running backs yet rarely offer them long-term contract extensions. This strategy might reflect good teams' tendency to draft the best available player due to having fewer positional needs. The Kansas City Chiefs' selection of Clyde Edwards-Helaire in 2020, later overshadowed by seventh-round standout Isiah Pacheco, exemplifies this approach. Defensive linemen were the most commonly selected first-round players, consistent with salary cap data showing teams' willingness to extend them after rookie deals. Meanwhile, quarterbacks made up 10% of first-round picks—a significant figure given how few are typically drafted. Teams that succeed in drafting a franchise quarterback are unlikely to revisit the position in the first round, which explains the relatively modest number of quarterbacks selected.

Wide receivers dominated second-round selections, accounting for a quarter of all picks by conference championship teams. This suggests teams prefer using second-round picks to secure offensive weapons while reserving first-round selections for premium positions like defensive line. Offensive linemen and safeties also saw substantial representation at 12.5%.

By the third round, offensive linemen led the way at 17% of selections, reinforcing the importance of investing in the offensive front with early-round picks. Running backs also saw a resurgence, while tight ends and defensive backs became more frequent picks as teams sought depth and versatility. Quarterbacks, however, nearly disappeared from consideration after the first round, reflecting the belief that signal-callers are worth drafting only if they project as long-term starters.

Defensive linemen remained popular fourth-round selections, possibly influenced by earlier investments in offensive linemen. Defensive backs also saw steady selection rates from the fourth to seventh rounds, with cornerbacks never dipping below 13% in this range. Linebackers became more frequent mid-round picks but were eventually eclipsed by running backs in the sixth round. By the late rounds, quarterbacks were almost entirely absent, and kickers even emerged as comparable selections.

This distribution underscores how championship-level teams strategically allocate draft capital, balancing immediate needs with long-term development while prioritizing premium positions early in the draft.

Assumptions and Issues

Some Assumptions and Issues that arose during this process were the fact that we were assuming that each team had the same amount of players on the active roster for each position. While this largely

wouldn’t affect the total amount of the position group's salary, it would have an impact on the average per player, something that we did not look at. Another issue could be the fact that we were not looking at the highest payrolls each season, something that we could add later showing what not to do. Injuries of teams were not taken into account such as the 2020 San Francisco 49ers; a team that made it to 3 conference championships both before and after and the 2023 Cincinnati Bengals; a team that had made it to 2 conference championships the previous 2 seasons. We also aren't aware of each team’s strategy during free agency and the draft. We can assume that they try a combination of best fit, best overall or position needs during both periods, however, we are unaware of what teams plans are. Lastly, the draft data pulled from Pro Football Reference has positions that aren’t true positions such as Defensive Backs and Offensive Linemen that changes the graphs. Instead of positions such as Safety, Cornerback, and Tackle having a higher percentage of the draft graphs, the graphs instead have positions of players that lower each total. This is because on draft night, these players were listed as Defensive Back instead of the usual Cornerback or Safety.