

Retention and Roster Size: Finding the “Sweet Spot” for Football

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In 2022, an ROA Research Brief examined the relationship between roster size and retention across all NAIA championship sports. That research found sports with smaller roster sizes (e.g., swimming & diving, tennis, and lacrosse) tended to have higher retention rates than sports with larger roster sizes (e.g., baseball and football). However, the overall conclusion suggested by that research brief was the lack of a significant relationship between roster size and retention. Given this inconclusive finding, questions remained regarding roster sizes that tend to produce higher retention rates. The current research brief attempts to clarify this issue by examining a larger dataset to isolate the “sweet spot” for roster sizes that tend to provide higher retention rates for the largest roster sport in the NAIA: football.

Practical Considerations:

- ▼ How does your athletics department balance the trade-offs between football roster size, retention, and net return? What aspects of retention and net return do you prioritize when considering roster size of your football program?
- ▼ Are you an institution with a roster size below 120 or above 150 athletes and still produce an above average retention rate among your team? If so, what other factors do you feel contribute to this outcome
- ▼ How can you utilize a JV football team to enhance retention within your football program?

Football presents unique opportunities and challenges for NAIA institutions. It is the largest roster sport, averaging 125 athletes across the 94 NAIA schools that sponsored football in the 2023-2024 academic year. Due to these large roster sizes, football is a main driver of net return from athletics. During the most recent academic year, football programs produced an average net return of \$2.04 million, which equates to about 46% of the total average net return across NAIA institutions and over two-thirds of average net return contributed by men’s sport programs.

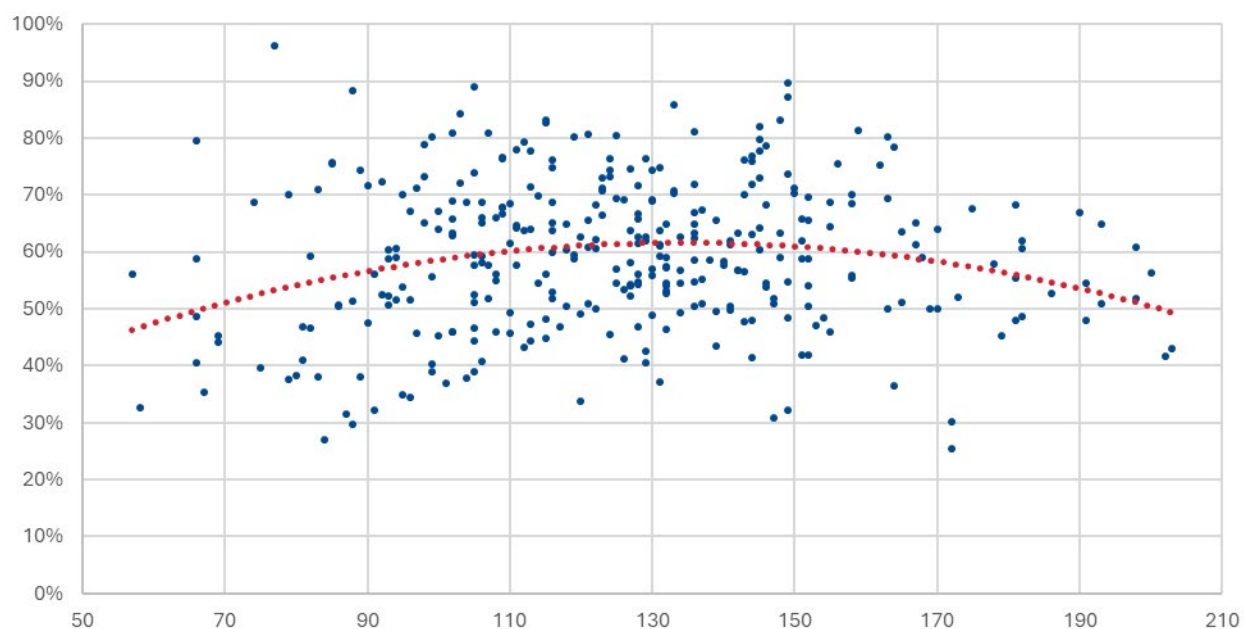
Yet, there are also challenges presented by football programs. Football rosters ranged from a minimum of 69 athletes to a maximum of 203 athletes (excluding outliers) during the 2023-2024 academic year, which is a much larger roster size variance than any other sport program. Furthermore, football continues to present institutions with retention challenges. In 2023-2024,



football displayed a retention rate of 60%, tying men's basketball for the lowest retention rate among all NAIA championship sport programs.

To conduct this analysis, we utilized data on football roster sizes and retention rates for all institutions from 2020-21 to 2023-24. After removing outliers (observations where roster size or retention were more than three standard deviations above or below the average), there were 332 team-season observations remaining for analysis.

We hypothesized a relationship where relatively small and relatively large roster sizes produced suboptimal retention rates, and roster sizes in the middle of this range tended to produce higher retention rates. The chart below shows the outcome of this analysis.



In the above chart, each dot represents a unique football team-season observation. Roster sizes ranged from a low of 57 to a high of 203 athletes (average roster size = 125) and retention rates ranged from a low of 25% to a high of 96% (average retention rate = 59%). The dotted trend line on the chart represents the predicted relationship between roster size and retention based on the data analyzed. As noted, retention rates tend to decline as roster sizes approach the lower and higher ends of roster size distribution. Conversely, retention rates tend to strengthen for football roster sizes in the range of 120-150 athletes, with the trend line peak occurring at a roster size of 135 football players.

Additionally, we broke down average football retention and net return among institutions into three categories: programs with an ideal roster size range of 120-150 athletes; programs with roster sizes below the ideal range (57-119 athletes); and programs with roster sizes above the ideal range (151-203 athletes). The results of this analysis are summarized in the table below:



Football			
	Low	Ideal	High
Roster Size	57-119	120-150	151-203
Average Retention	58.39%	61.06%	57.16%
Average Net Return	\$1,166,322	\$2,040,777	\$2,705,162

As displayed in the above table, football rosters that contain between 120-150 athletes produce average retention rates of just over 61%, which is 3-4% higher than retention rates witnessed from football programs above or below the ideal range.

However, there is a trade-off to seeking an ideal roster size with respect to retention within football. Programs in the “ideal” roster size range produce, on average, a net return of \$2.04 million. However, football programs with roster sizes above 150 produce an average net return of \$2.71 million, which is about 33% higher than the average net return from those programs in the ideal roster size range.

This analysis demonstrates the complicated relationship between roster size and retention for football, which is the largest roster sport among NAIA championship sport programs. Smaller roster sizes, which could be due to program start-up challenges or coaching transition, might contribute to suboptimal retention, while also limiting net return opportunity.

Larger roster sizes might contribute to suboptimal retention due to a lack of playing time or opportunity to participate for those at the end of those rosters. However, large football rosters do provide the benefit of delivering higher net returns, on average, to those institutions.

As with most things related to the business of intercollegiate athletics, there is no single “right” answer to the conundrum of optimizing retention with respect to roster size. Roster size is a significant consideration, but there are certainly examples of institutions with smaller and larger football rosters that consistently produce above average retention, likely highlighting unique aspects of their culture, coaching, or institutional values that overcome these roster conditions. Furthermore, a focus on optimizing football retention based on roster size may come at the cost of reducing the net return produced by an institution’s football program.



Key Takeaways:

- ▼ Football is the largest roster sport among NAIA championship sport programs and has the largest variance in roster sizes, ranging between 57 and 203 athletes over the past four academic years
- ▼ Football is continuously at the lower end of retention rates among sport programs, hovering around 60% between 2020-2021 and 2023-2024
- ▼ There is a significant non-linear relationship between roster size and retention for football programs, with the “sweet spot” for football retention occurring between 120-150 athletes
- ▼ A football roster size of 120-150 athletes tends to produce retention rates that are 3-4% higher than football programs with rosters below 120 or above 150 athletes
- ▼ There is a trade-off when seeking to optimize football retention with respect to roster size. Football programs with rosters between 120-150 athletes average a net return of \$2.04 million per year, which is about 33% less than football programs with roster sizes above 150 athletes

