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Abstract

We examine approximately 1,000 high school quarterbacks that are recruited into collegiate athletics to determine what factors impact the player's decision to transfer to another school, change their position from quarterback, complete their eligibility (and presumably graduate), to be drafted into the National Football League and/or to make a professional roster at any level. Results suggest that minority student-athletes are more than twice as likely to change their position; this is especially sensitive because most college coaches are white. Players that attend universities near their hometown see significant benefits in terms of their collegiate outcomes and likelihood of playing professionally, perhaps because of greater access to their hometown's social network.

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Introduction

Student-athletes face a difficult challenge balancing their academic careers with their potential goal of playing professionally. Kennedy and Dimick (1987) surveyed college basketball and football players and found that 48% expect to play professionally, and yet only 2% successfully transition their college careers to become professional athletes. What determines the path of college athletes? What factors cause student-athletes to transfer schools, change their playing position, complete their eligibility (and presumably graduate), or transition a successful college career to a professional one?

To answer these questions we examine a particular subset of student-athletes: the high school quarterback. Quarterbacks are typically considered the most important player on any team because they're directly involved in every offensive play. Because this position is so

mentally and physically demanding, high school coaches usually assign the most talented athlete on the team to be the quarterback, not necessarily the athlete with the best arm. The characteristics of a successful high school quarterback can be drastically different from the characteristics of a successful college or professional quarterback. We examine a variety of characteristics about the high school quarterback – his socio-economic background as well as characteristics about the college program that he ultimately attends. Arguably, the goal of the student-athlete is to be ultimately drafted into the National Football League (NFL) or otherwise begin a professional career. While the goal of administrators and society may be to see that the players complete their eligibility and presumably graduate.[1]

As may be expected, we find that high school quarterbacks who are highly rated by scouting services are more likely to remain a quarterback throughout their college career, complete their eligibility and be drafted into the NFL. Student-athletes that are recruited for multiple college sports (and are likely better natural athletes) are *more* likely to transfer schools but are *less* likely to change positions and complete their eligibility[2].

Aside from the various physical characteristics of the student-athletes we find an important role for a variety of socio-economic indicators. Shockingly, minority quarterbacks are more than twice as likely, relative to their white counterparts, to change their position from quarterback to another role during their college career. This finding is especially sensitive in college football given that most head coaches are white[3]. When the student's hometown has a greater proportion of individuals with four-year college degrees the student is more likely to complete their eligibility. A 1% increase in the hometown's population with a four-year degree is associated with an 18% increase in the probability that the student-athlete completes his

eligibility. We also find that players who initially attend schools that are farther from their hometown are more likely to transfer schools and less likely to complete their eligibility, to change positions, to be drafted into the NFL or play professionally. An additional 100 miles of distance increases the probability that the player transfers schools by 4.5%, decreases the probability that the player completes their eligibility by 4%, decreases the probability that the player changes positions by 6%, decreases the probability that the player is drafted into the NFL by 6% and decreases the probability of playing at any professional level by 4%. Student-athletes that attend schools closer to home may have more and better access to their network of friends, family and mentors. Our results would suggest that there are large, positive benefits for student-athletes to attend colleges that are closer to home in order to have better access to interpersonal ties.

Literature

The literature on the athletic career of the college athlete and the transition to the post-collegiate working environment is quite varied. Many have examined student-athletes' self-definitions and their expectations of their future careers. The transition from high school student-athlete to college and then to either a professional sports career or non-sports career can be extremely complicated. Freeman (2009) examined the interaction between academic experience, social experience and athletic experience. The author notes the complex adjustments that student-athletes must make when first attending college.

As noted by Pendergrass, Hansen, Neuman, and Nutter (2003) many college football athletes expect to play professionally when they finish their college career. Though Kennedy and

Dimick (1987) found that only 2% of college athletes will transition to professional levels, yet, 48% of surveyed basketball and football student-athletes expect to play professionally.[4] Clearly, as most student-athletes will never progress to professional athletics the academic experience may be vital for future career transition. Maxwell (2011) interviewed college athletes and found that close family connections and support from coaches are instrumental to academic achievement. James (2010) showed that past academic success in high school and on standardized tests is highly predictive of future academic success for a variety of student-athletes. Ridpath (2002) found that gender, ethnicity, and the sport played by the athlete significantly impact the probability of successful graduation.

Beamon and Bell (2002) found evidence that parental behavior and academic probation/suspension impacts a student-athlete's expectations for a professional career. Houle (2011) surveyed college athletes and found that student-athletes with greater optimism about their post-athletic career decision-making are more likely to successfully transition to work after graduation. Cunningham (2003) examined student-athletes and found that African-American students are less likely than their white counterparts to perceive themselves as transitioning to coaching positions, a potential occupation for many athletes transitioning to non-athletic employment. Recently, Gill, and Brajer (2011) found that players who are drafted into the NFL often see their draft position fall if they have a low Wonderlic score; though the draft position of black players falls more than for their white counterparts based on the Wonderlic score.[5]

Lally and Kerr (2005) interviewed student-athletes and found that individuals who invest more in their student development, at the cost of their athletic training, have an easier transition to non-athletic careers. Wylleman, Alfermann, and Lavallee (2004) suggested that institutions

with better life skills programs which emphasize career transition will have more success with post-athletic professional life.

Sandstedt, Cox, Martens, Ward, Webber, and Ivey (2004) developed a survey methodology to examine post-collegiate career beliefs of student-athletes but do not specifically examine how those beliefs impact the transition. While Long and Caudill (1991) found that male, but not female, student-athletes attain a 4% higher salary premium compared to students who don't compete in intercollegiate sports.

While Mirabile (2005), Berry and Simmons (2011) and Gill and Brajer (2011) examined the determinants of draft order we know of only one other study of the determinants of *being drafted.* Mirabile (2004) found that college quarterbacks with higher quality teammates are themselves more likely to be drafted. Though, we can find nothing in the literature where there's a statistical examination of the determinants of transferring schools, changing position or completing eligibility (and presumably graduating with a degree). What characteristics define a student-athlete's amateur career?

Data

The data for this study cover eight years 2000-2007 of high school quarterbacks who were evaluated by either Scout.com, Rivals.com or Prepstar.com as a prospect to play football at the collegiate level. There are 1,213 such prospects in this analysis. When available, we collected data on each athlete's height, weight, time in the 40-yard sprint, race, home town, high school, race, high school grade point average, standardized test scores, and "star" ranking from the athlete's Scouts.com, Rivals.com, and Prepstar.com player profile page. Additionally we

collected data on whether the athlete was a dual-sport prospect from Scouts.com, Rivals.com, and Prepstar.com, and a search of Major League Baseball's drafted prospects. The scouting services each employ regional recruiting specialists who cover the year-round visits, rumors and commitments of the top athletes in the country. We used these three primary sources to fill in information gaps from one another and to build a more robust dataset than could be created from any single source.

As one of the best expected predictors of success in college is how these recruiting services rate players, we will discuss briefly how the "star" rankings are assigned and how they are interpreted[6]. Each prospect is graded based on a study of game film, live game study, and performances at scouting combines and camps. Both Scout.com and Rivals.com cover several hundred live games a year in their evaluation process. Likewise, they utilize the accurate and consistent measurements obtained at combines and camps to determine how prospects matchup against their peers. The game film and live game study form the basis of the evaluation of each prospects skill set, which forms the core of the recruiting service's eventual ranking for the athlete. Points are also added or subtracted based on the prospect's height, weight, and speed. The recruiting services tend to begin evaluating prospects during their junior year, though evaluations can change at any time. For the data used in this paper, we used the final recruit rankings from Scout.com – the same ones used to rank the entire incoming class in the spring. We selected Scout.com instead of Rivals.com because Scout.com had scouted and graded the most quarterback prospects during the time period we analyze. We supplemented missing data on Scout.com prospects with information from Rivals.com and Prepstar.com. As can be seen

from the ranking scales in Table 1, the descriptive evaluations of the prospect quality are similar between both the Scout.com and Rivals.com recruiting services.

[Table 1]

We determined from these three sources to which institution the athlete committed to enroll and subsequently overlaid whether the athlete transferred schools by examining his playing record from the NCAA.com[7]. We also assigned a transferred flag to any junior college (JUCO) players that subsequently enrolled in a Division 1A program, even though the student athlete's NCAA.com statistical record would not reflect a transfer. By examining each athlete's player profile website page created by each NCAA Division 1 program that he attended, we were able to determine such JUCO transfers.

We also collected data on the institution and coach's historical performance from the College Football Data Warehouse. Using the athlete's hometown, we overlaid socio-economic data from the Census Bureau for his community to control for differences in income, home values, and education. Finally, using data collected from GreatSchools.com, we controlled for the type of high school and the educational quality of the athlete's high school as captured by the community score.

Another important determinant, as shown in the results, is the distance between a player's hometown and college that he attends. Maxwell (2011) reported the large positive effects of having a strong personal network; conceivably, student-athletes that attend a university near their hometown will have more access to their network of family, friends and mentors in their hometown. Figure 1 reports the county-by-county location of the hometown of the quarterback recruits. Note, that the distribution is not necessarily determined by population density. While

population density is high in the northeastern United States there's a relative paucity of quarterback recruits from this area. Indeed, a great number of quarterback recruits are found in rural counties in the southeastern United States.

[Figure 1]

The purpose of this paper is not to evaluate how well or poorly recruiting services perform, but rather to take their prospect projections as one input in a series of models examining player outcomes. The evaluation of talent is a subjective process and frequently professionals in different recruiting services disagree on how prospects are ranked. Even more frequently, college football coaches who also regularly evaluate high school talent to recruit athletes that are good fits for their programs, disagree with these recruiting services. Ultimately, the college coaches who work with the players, developing or squandering their players' talents, have as much to do with many of the outcomes we examine as do the players themselves.

Descriptive statistics for the outcomes and potential determinants are given in Table 2. As shown, only 68.2% of these prospects complete their eligibility in college, 33.6% end up transferring schools, 22.9% elect to change positions to see playing time, only 9.7% are ultimately drafted into the National Football League and 19.0% play at some professional level (the NFL, Canadian Football League or Arena Football League)[8]. For the top ranked prospects, the opportunity to play in the National Football League is significantly more likely. Of the 50 5-star prospects in our dataset, 56% were drafted. Contrast this figure with just 16% of the 179 4-star prospects, 10% of the 283 3-star prospects, and 5% of the 706 2-star or 1-star prospects[9].

[Table 2]

Minority (non-white) prospects comprise about 30% of the prospects in the data. Of the 121 starting quarterbacks in the Football Bowl Subdivision (formerly Division 1A), 30% of starters were minorities. In the 2011 NFL season, there were four minority starting quarterbacks of the 32 teams, a rate of just 12.5%. The same reassignment of positions that occurs early in many high school quarterbacks' college careers (most frequently to the wide receiver or defensive back position) also occurs frequently in the transition to the NFL. Many quarterbacks whose exceptional speed and agility afforded them success in college are not given the opportunity to transition to a professional career as a quarterback. The same rationale that forced many high school quarterbacks to change positions in high school will also force many collegiate quarterbacks to change positions if they want an opportunity to play professionally. Simply put, as the level of competition increases, athletes with exceptional speed and agility but marginal passing skills are reallocated to where their particular skill set is best utilized. Frequently, highly mobile college quarterbacks are transitioned to wide receivers or special teams return men, where their abilities can best be exploited[10].

In addition, we have included information about the player's physical characteristics such as height and speed (as measured by the 40-yard dash time of the player). We also know whether the student-athlete was offered collegiate scholarships in multiple sports, which may indicate that the player is a better natural athlete and may have competing athletics career paths from which to choose. Information about the player's high school and their hometown include the GreatSchool's community ranking of the quality of the player's high school and whether or not the high school is private or public. We also know the percentage of people in the player's hometown with a college degree, the hometown's median income, the hometown's median home

price and the hometown's distance from the college that the player ultimately attends after high school. There is also information about the college football program that the player attends, including the head coach's years of experience, the short-term (1 year) and medium-term (5 year) winning percentage of the team, and the percentage of the team's offensive plays that are passing plays[11].

Results

We examine the statistical probability of five separate outcomes. One, does the player transfer to another school? Two, does the player change positions from quarterback? Three, does the player complete their eligibility? Four, does the player get drafted in the NFL? Five, does the player end up on a professional roster in the NFL, Canadian Football League, or Arena Football League? Arguably, only the fourth or fifth outcome may be viewed as the ideal outcome by student-athlete. As annually many players leave college with remaining eligibility and without completing their degrees to become eligible for the NFL draft. Though, the third outcome, which is more likely to be associated with finishing school, would be considered a successful outcome by school administrators and society.

To find the determinants of these outcomes we make use of a marginal effects logistic regression using the variables listed in Table 1. *Because we are using a marginal effects logistic regression a coefficient equal to 1 denotes no statistical effect while significant deviations from 1 are important determinants; coefficients less than 1 suggest a negative effect and coefficients more than 1 imply a positive effect.* We make use of this model so that we can not only

determine what factors are statistically significant but also to learn the size of the factor's marginal effect.

Logistic regressions of the first three outcomes are given in Table 3: transferring, changing positions and completing eligibility. In the first column we examine the determinants of the player transferring; which according to Table 2 is 33.6%. As can be seen in the table, many of the potential determinants are statistically insignificant and the pseudo R-squared is quite low; in fact, only 4% of the variation in transferring can be predicted. Because we can predict only a very small percentage of the transferring outcome, it is highly likely that individual preferences and concerns, which we can't statistically control for, are a major part of the transferring outcome. Also, in preliminary analysis we included each player's high school grade point average (GPA) and standardized test scores on the scholastic aptitude test (SAT). However, both the high school GPA and SAT score were statistically insignificant in all regression formulations, and as we had GPA data for roughly only half (and SAT scores for even less) of the players, the inclusion of these two variables dramatically reduced the number of observations that we have to study.

However, there are a few statistically significant determinants of the transferring outcome. Two-sport athletes and non-minority athletes are more likely to transfer to a different school. Two-sport athletes are almost twice as likely as their counterparts to transfer schools. The high transfer rate of two-sport athletes may result from the player's desire to find a better mix of playing time at another institution in their various sports. Perhaps most interesting is the increased transfer rate for players who initially attend schools farther from their hometown. Each 100 miles of distance increases the player's probability of transferring by 4.5%. There are

two potential reasons why distance from the player's hometown may be important. One, players who lack close, convenient access to their home network of family and friends may not succeed according to their expectations and choose to transfer to another institution. Two, players who have chosen to attend a distant institution may simply be more willing to make great life changes in which case transferring later may merely be further evidence of the individual's willingness to make important life changes.

[Table 3]

In the second column of Table 3 we analyze whether the player changes position. It should be noted that many high school quarterbacks also played on defense in high school. If the quarterback is one of best athletes on the field, it is not uncommon for such quarterbacks to play both sides of the ball. Through such situations may limit his development as a traditional quarterback, it also may extend his post-high school playing career, allowing him to compete at another position. The collegiate quarterback typically has one of the more difficult jobs on the field. In addition to being a physically demanding job, many important game-changing decisions must be made by the quarterback. Not surprisingly, more highly rated players by the scouting services are less likely to change positions. One additional star in ranking decreases the probability of changing positions by 41%. Faster players, those with lower 40-yard dash times, are significantly more likely to change positions. Conversely, two-sport players are about 60% less likely to change positions. Surprisingly, minority quarterbacks are more than twice as likely to change positions as their counterparts, a finding which aligns with the result in Cunningham (2003) that minority players exhibit different expectations; our results suggest different outcomes

also. The school's distance from the player's hometown is also important. An additional 100 miles of distance reduces the likelihood that the player changes position by roughly 6%.

In the third column of Table 3 we examine what makes student-athletes more likely to complete their eligibility. It's likely, but not entirely co-determined, that players that don't complete their eligibility also haven't earned a degree at their university. A one star increase in the player's ranking increases the probability of completing eligibility by roughly 58%. Not surprisingly, two-sport athletes are 68% less likely to complete their eligibility perhaps because they pursue other professional careers like baseball which has many routes to professional athletics. Students who attend a school farther away from their hometown are less likely to complete their eligibility as each 100 miles decreases the probability by 4%. The marginal effect for the educational attainment of the player's hometown is also quite large; a 1% increase in the rate of college completion in the player's hometown increases the player's probability of completing their eligibility by 18%.

The position change and completing eligibility models also reveal a statistically significant positive relationship between the percent of team's offensive plays from passing and these outcomes. We could theorize that with offenses where the quarterback's passing abilities represents a larger portion of the team's offense, that prospects with more marginal passing skill sets would more easily be able to forecast their chances of playing as a quarterback or at another position and then react accordingly. We could also theorize that as the percent of team's offensive plays from passing increases, the prestige of remaining a quarterback at that program also increases and the athlete should be less likely to leave the program.In Table 4 we examine the determinants of being drafted into the NFL. In the first regression specification we construct

a model using only the same determinants used for the other three outcomes. In the second model specification, we include the prior three outcomes as explanatory variables. We follow the same methodology when examining whether the student athlete can be found on a professional roster (either the NFL, Canadian Football League or Arena Football League). Because there is a great deal of player specific characteristics and personality which may impact whether the player transfers schools, changes position or finishes their eligibility, we can use these three outcomes to control for the relevant player specific characteristics that would otherwise be lost in the analysis. For this reason, we focus our discussion on the results of the second, more complete specification.

[Table 4]

Players who transfer schools are about 80% less likely to be drafted into the NFL. As shown in Table 3 much of the variation in transferring schools was driven by unobserved individual characteristics of the student-athlete. Those same characteristics may make the player much less likely to be drafted into the NFL. Or it could be that players that transfer to another school are unable to get solid playing time in their original school because of competition from teammates; if so then players who transfer schools may be inadvertently signaling lower quality abilities.[12] However, a player who has little chance of starting his senior year may find his chances of playing professionally are best served by transferring schools and starting in a lower tier level of competition. Additionally, players who complete their eligibility are more than twice as likely to be drafted into the NFL, as the additional years of training in college football may be highly valued by professional teams.[13] A player who completes their eligibility may have had a great deal of playing time and are thus, better prospects.

Taller players are more likely to be drafted. Again, because taller players may be more able to see over linemen the taller players may be more highly sought after by NFL teams. Not surprisingly, players with more stars in their recruit ranking are also more likely to secure transition into the NFL. Controlling for all other differences, five-star prospects are more than 6 times more likely to be drafted into the NFL relative to 1-star and 2-star prospects. Lastly, we find that student-athletes that attend schools that are farther away from their hometown are less likely to be drafted. An additional 100 miles of distance from the player's hometown decreases their probability of being drafted by approximately 6%. While Maxwell (2011) finds that close family connections improve the student-athletes academic success, it may also be true that closer access to family connections also improves a player's probability to transition to the NFL. Additionally, if the player joins a winning team after high school then they are more likely to be drafted; an increase in the winning percentage by 8% (roughly one more win in a year) increases the player's probability of being drafted by 18%.

Interestingly, results for the professional roster outcome are very similar to those of the NFL draft outcome. However, many of the statistically significant marginal effects are smaller. Player height, whether the player transfers to a new school, the college's distance from the players hometown and the winning percentage of the team are all important determinants but the size of their effect is muted relative to the NFL draft outcome. Conversely, the scouts star rating is a slightly larger determinant of making a professional roster compared to being drafted in the NFL. Considered together, these findings should provide some hope for athletes seeking professional football careers whose physical limitations may have kept them from the NFL.

Completing eligibility is a hugely important to being on a professional roster; student-athletes that complete their eligibility are 307% more likely relative to their peers to have the opportunity to play professionally.

Conclusion

Both physical characteristics and socio-economic factors impact the collegiate and professional path of high school quarterbacks. Faster athletes and minority athletes are much more likely to change their position from quarterback to something else. Athletes whose hometown has a more educated population are themselves more likely to complete their eligibility and presumably graduate. Players who attend colleges farther from their hometown are more likely to transfer and less likely to finish their eligibility or to be drafted into the NFL. Given that completing eligibility and playing professionally may be considered goals of both administrators and players, we're confident in suggesting that high school athletes try to stay closer to home when choosing a college, though we recognize that the decision of where to attend college for many student athletes is heavily impacted by where the student-athlete is offered a scholarship.

We can only predict 4% of the variation in the decision to transfer schools, 16% of the changing position outcome, 7% of the completed eligibility outcome and 22% of the NFL draft outcome. While we add a caveat to our analysis, these prediction rates are impressive given that they contain no information about how the student-athlete fared in college. Clearly, unobserved individual characteristics play an enormous role in the career path of student-athletes and there will always be exceptions to the general results that we report.

[1] For a student-athlete to complete their eligibility as we have defined it, he would have been a member of the football team (or teams if he transferred) for at least four years. Though, players often use more than four years to complete their eligibility if they are "redshirted" or are granted a medical waiver for being injured. "Redshirted" players attend classes and may practice with their team but are not allowed to compete in games.

[2] Student-athletes that play multiple sports may be able to transition to professional sports in basketball or baseball instead of football. Major League Baseball, unlike the NFL and the National Basketball Association, regularly drafts players directly out of high school to play professionally.

[3] For details on the racial background of college football coaches please see http://espn.go.com/college-football/story/_/id/7238507/progress-made-hiring-diverse-coaches-football-study-finds

[4] Generally, high school quarterbacks are typically the best athletes on any high school team and not surprisingly we find that 10% of the quarterbacks that we study are drafted into the NFL. It should be noted that our sample of quarterbacks is not a random sample of all high school quarterbacks, but rather a subset of those most likely to transition successfully to collegiate level (and likely the professional level).

[5] The Wonderlic test is commonly used to assess learning and problem-solving ability for a wide range of occupations.

[6] For more on how recruiting services impact expectations please see http://bleacherreport.com/articles/117345-recruiting-for-beginners-part-i-how-are-players-ranked Accessed December 2011

[7] This was our best effort to track transfers, though it would not include athletes who transferred and never played at their new school or transferred to a non-NCAA institution. Student-athletes often change positions or transfer schools in order to acquire more playing time.

[8] The graduation rate of these players is rather respectable relative to other students. For more on graduation rates please see http://www.forbes.com/2009/08/07/college-graduation-rate-opinions-colleges-09-aei.html Accessed December 2011.

[9] Because there are so few 1-star prospects in our sample, we group all 1-star prospects with 2-star prospects. One-star prospects were sampled very sparingly because of the rarity of their collegiate careers being traceable through

the NCAA website. Like their 2-star peers, many end up abandoning unfulfilling careers in high level collegiate athletics in exchange for playing time against lower-tier competition.

[10] Kordell Stewart, a minority quarterback from the University of Colorado, spent two years at the Pittsburgh Steelers playing wide receiver, running back, punter and kick returner before being named the starting quarterback. With Stewart as the starting quarterback the Steelers won over 60% of their games, and Stewart was the AFC Offensive player of the year in 2001.

[11] NFL quarterbacks are usually expected to be excellent at passing the ball so it's possible that the team's offensive strategy may impact how they are viewed by NFL teams.

[12] This is undoubtedly not always true as evidenced by the excellent performances of Cam Newton and Russell Wilson, both of which transferred during their amateur athletic career.

[13] Collegiate athletes are eligible for the NFL draft after being out of high school for three years, which equates to completing their junior or redshirt sophomore seasons.

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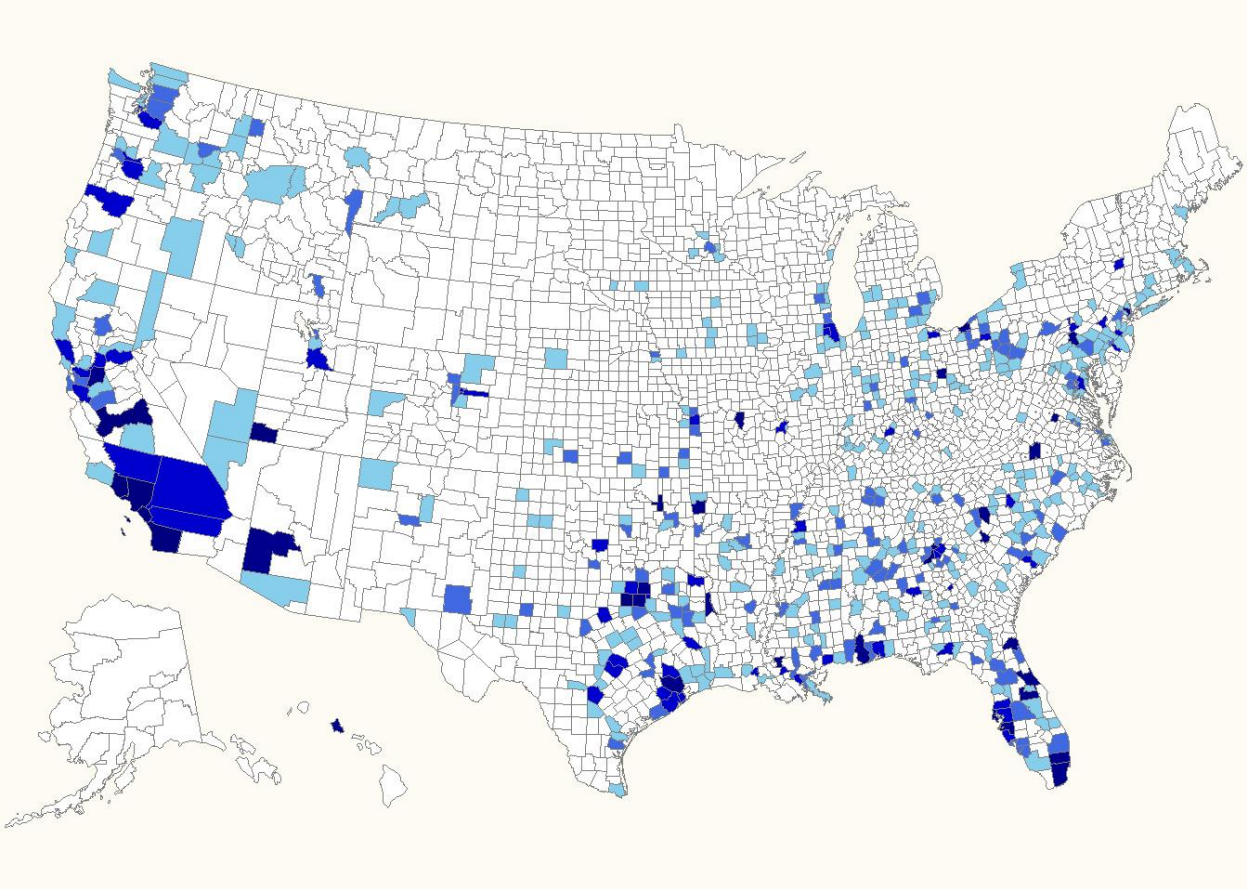
Figure 1
Quarterback Recruits by County



Note: Darker shades denote more quarterback recruits while counties in white have no quarterback recruits in this data set.

Table 1
Player rating guide

Scout.com

Grading	Star Rating	Prospect Quality	Description
90-100	5 star	Rare prospect	Player can create mismatches and can have a major impact on the game as a true freshman.
80-89	4 star	Outstanding prospect	Player may be able to create some mismatches against most opponents and could potentially contribute as a true freshman.
70-79	3 star	Good prospect	Player doesn't dominate in every game, especially against quality competition. Could eventually become a starter.
60-69	2 star	Average prospect	This player is over-matched against the better players in the nation. Weaknesses will be exposed against tougher competition. Could develop into a solid contributor on the FBS level.
50-59	1 star	Prospect	Player has some redeeming qualities but is not projected to contribute at the FBS level.

Rivals.com

Grading	Star Rating	Prospect Quality	Description
6.1+	5 star	Franchise Player	Considered one of the elite prospects in the country, generally among the nation's top 25 players overall; deemed to have excellent pro potential; high-major prospect
5.8 – 6.0	4 star	All-American Candidate	Considered one of the nation's top 300 prospects; deemed to have pro potential and ability to make an impact on college team
5.5-5.7	3 star	All-Region Selection	Considered among the region's top prospects and among the top 750 or so prospects in the country; high-to-mid-major prospect; deemed to have pro potential and ability to make an impact on college team
5.0-5.4	2 star	Division I prospect	Considered a mid-major prospect; deemed to have limited pro potential but definite Division I prospect; may be more of a role player
4.9	1 star	Sleeper	No Rivals.com expert knew much, if anything, about this player; a prospect that only a college coach really knew about

Table 2
Descriptive Statistics

	Obs.	Mean	Std. Dev.	Min.	Max.
Drafted in NFL	1212	0.097	0.297	0	1
Professional Roster	1213	0.190	0.393	0	1
Changed position from quarterback	1114	0.229	0.420	0	1
Transferred to another school	1213	0.336	0.472	0	1
Completed Eligibility	1166	0.682	0.466	0	1
Scouts Star Rating	1213	2.647	0.875	2	5
Player height	1213	74.566	1.666	69	79
Forty yard dash time	1182	4.691	0.146	4.29	5.28
Two (or more) sport athlete	1213	0.111	0.315	0	1
Player is a minority	1213	0.304	0.460	0	1
GreatSchools community rating of high school	1133	3.845	0.652	1	5
Player's high school is private	1213	0.154	0.361	0	1
Percent of population with college degree in player's hometown	1211	0.247	0.112	0.0475	0.8486
School's distance from players hometown (in hundreds of miles)	1051	4.435	5.539	0	49.28
Mean income in player's hometown	1211	45833	16079	20261	200001
Median home value in player's hometown	1211	141768	92625	36800	1000001
Number of years experience of head coach	1059	8.371	7.622	0	40
Team's winning percentage in previous year	978	0.547	0.218	0	1
Team's winning percentage in last five years	1058	0.524	0.163	0.115	0.908
Percent of team's offensive plays from passing	894	0.442	0.085	0.126	0.739

Table 3
Collegiate Career Determinants

	Transferred to another school	Changed position from quarterback	Completed Eligibility
Scouts Star Rating	1.091 *(0.102)*	0.589** *(0.076)*	1.579** *(0.185)*
Player height	0.982 *(0.054)*	1.104 *(0.076)*	1.063 *(0.066)*
Forty yard dash time	1.534 *(0.962)*	0.004** *(0.004)*	1.061 *(0.768)*
Two (or more) sport athlete	1.950** *(0.469)*	0.400** *(0.147)*	0.324** *(0.091)*
Player is a minority	0.616** *(0.119)*	2.250** *(0.493)*	0.866 *(0.182)*
GreatSchools community rating of high school	1.108 *(0.140)*	1.028 *(0.159)*	1.062 *(0.150)*
Player's high school is private	0.681* *(0.150)*	0.665 *(0.194)*	1.098 *(0.281)*
Percent of population with college degree in player's hometown	0.387 *(0.446)*	0.646 *(0.973)*	18.593** *(26.277)*
School's distance from players hometown (in hundreds of miles)	1.045** *(0.016)*	0.937** *(0.023)*	0.960** *(0.020)*
Mean income in player's hometown (thousands)	0.996 *(0.008)*	1.008 *(0.011)*	1.007 *(0.011)*
Median home value in player's hometown (thousands)	1.002* *(0.001)*	0.998 *(0.002)*	0.999 *(0.002)*
Number of years experience of head coach	0.993 *(0.011)*	1.011 *(0.013)*	0.997 *(0.012)*
Team's winning percentage in previous year	0.466 *(0.215)*	1.976 *(1.125)*	0.535 *(0.280)*
Team's winning percentage in last five years	2.323 *(1.429)*	0.320 *(0.248)*	1.033 *(0.727)*
Percent of team's offensive plays from passing	1.146 *(1.137)*	35.781** *(45.384)*	7.899* *(9.267)*
Pseudo R-squared	0.0393	0.1633	0.0712
Observations	767	732	741

Note: Marginal effects logistic regressions with standard errors of the log odds in parenthesis. Coefficients equal to one have no marginal effect. Marginal effects are determined from the mean of each dependent variable. Because these are marginal effects logit regressions significance is not simply determined by dividing a coefficient by its standard error. Instead we have denoted significant marginal effects at the 10% and 5% level by * and ** respectively.

Table 4
Professional Career Outcomes

	Drafted in NFL	Drafted in NFL	Professional Roster	Professional Roster
Transferred to another school		0.199** *(0.070)*		0.350** *(0.080)*
Changed position from quarterback		0.752 *(0.263)*		0.710 *(0.181)*
Completed Eligibility		2.440** *(0.982)*		4.077** *(1.296)*
Scouts Star Rating	2.045** *(0.285)*	1.886** *(0.279)*	2.102** *(0.228)*	1.970** *(0.230)*
Player height	1.386** *(0.131)*	1.397** *(0.138)*	1.224** *(0.084)*	1.230** *(0.090)*
Forty yard dash time	1.736 *(1.738)*	1.451 *(1.618)*	0.373 *(0.287)*	0.241 *(0.209)*
Two (or more) sport athlete	1.125 *(0.419)*	1.608 *(0.667)*	0.704 *(0.219)*	1.102 *(0.395)*
Player is a minority	1.187 *(0.380)*	1.122 *(0.392)*	1.167 *(0.270)*	1.156 *(0.292)*
GreatSchools community rating of high school	1.322 *(0.269)*	1.325 *(0.289)*	1.018 *(0.156)*	0.992 *(0.165)*
Player's high school is private	1.070 *(0.386)*	0.958 *(0.358)*	0.827 *(0.232)*	0.715 *(0.209)*
Percent of population with college degree in player's hometown	0.057 *(0.113)*	0.031 *(0.063)*	0.242 *(0.348)*	0.105 *(0.156)*
School's distance from players hometown (in hundreds of miles)	0.921** *(0.030)*	0.937** *(0.028)*	0.964* *(0.021)*	0.961* *(0.021)*
Mean income in player's hometown (thousands)	1.025 *(0.014)*	1.022 *(0.015)*	1.015* *(0.010)*	1.015 *(0.010)*
Median home value in player's hometown (thousands)	0.998* *(0.002)*	0.999 *(0.002)*	1.000 *(0.002)*	1.000 *(0.002)*
Number of years experience of head coach	0.992 *(0.017)*	0.985 *(0.017)*	1.004 *(0.013)*	1.000 *(0.013)*
Team's winning percentage in previous year	3.554* *(2.716)*	3.257* *(2.628)*	2.664* *(1.505)*	2.909* *(1.722)*
Team's winning percentage in last five years	2.044 *(2.090)*	3.452 *(3.738)*	1.123 *(0.838)*	1.545 *(1.220)*
Percent of team's offensive plays from passing	0.653 *(1.136)*	0.587 *(1.096)*	2.486 *(3.116)*	2.362 *(3.248)*
Pseudo R-squared	0.1588	0.2210	0.1277	0.1865
Observations	766	705	767	706

Note: Marginal effects logistic regressions with standard errors of the log odds in parenthesis. Coefficients equal to one have no marginal effect. Marginal effects are determined from the mean of each dependent variable. Because these are marginal effects logit regressions significance is not simply determined by dividing a coefficient by its standard error. Instead we have denoted significant marginal effects at the 10% and 5% level by * and ** respectively.