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Beyond the Friday night lights: Social networks, migration, and individual success in college football

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Abstract

This study examines the potential benefits of social networks through the development of high school football players into big-time collegiate football stars. Many of these young men have spent 17 or 18 years surrounded and supported by family members, friends, and religious and civic organizations. That social network is, in a very short time frame, suddenly separated from them when they enter a new educational setting, which, in many instances, is located hundreds of miles from home. In some cases, however, high school football stars are fortunate enough to have high school teammates join the same far-away college football program, resulting in a natural experiment of the role of social networks. Results presented here indicate that the social network effect appears to be important in explaining individual success of college football players. That is, having one's high school football teammates sign scholarships with the same far-away institution significantly increases player i's probability of succeeding at the college level (and vice-versa) as a student-athlete.

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1. Introduction

Historians have found social networks to be an important determinant of the survival success of individual prisoners in prisoner-of-war (POW) camps. For example, Costa and Kahn (2007) show, using Civil War data collected from U.S. military records, that survival rates of captured Union soldiers held inside the Confederate prison in Andersonville who could claim having 10 or more "friends" inside the camp were higher than for those who could not make such a claim. More specifically, as the number of friends rose from zero to five, the probability of death in Andersonville fell from 0.31 to 0.28. Five additional friends further lowered that probability to 0.26, suggesting that a move from zero to 10 friends reduced the probability of death in Andersonville by 16.1 percent. Of course, not all social networks assist in preventing dire consequences (i.e., death in POW camps) such as those that are the focus of the Costa and Kahn (2007) study. Nevertheless, the benefits of social networks in other settings can be significant (Moretti, 1999; Bertrand, Luttmer and Mullainathan, 2000; Duflo and Saez, 2003; Munshi, 2003; Aizer and Currie, 2004; Ioannides and Loury, 2004; Costa and Kahn, 2006; Karlan, Mobius, Rosenblat and Szeidl, 2009; Bandiera, Barankay and Rasul, 2010; Gil and Hartmann, 2011; Jackson, Rodriguez-Barraquer and Tan, 2012).

The present study investigates an effectively heretofore-overlooked setting for measuring the potential benefits of social networks. That is the development of high school football players into big-time collegiate football stars.[1] Many of these young men have spent 17 or 18 years surrounded and supported by family members, friends, religious and civic organizations. In a very short time frame after high school graduation, these young men are suddenly separated from this social network as they formally join a collegiate football program and enter a new educational setting, which in many instances is located hundreds of miles from home. For these young men, many of whom are away from home for the first time, familiar faces are often sorely needed but rarely seen. In some cases, however, multiple players from the same high school join the same, distant collegiate football program. This type of convergence offers a natural experiment of the *economic benefits* (role) of social networks.

Auburn University (AU), located in east-central Alabama, constitutes the context for this examination of the potential benefits of social networks in college football. AU is a large, public university, with about 25,000 students currently enrolled. It resides in a state that is also home to one of the most prolific powers in the history of college football – the University of Alabama (UA).[2] Not only does AU often recruit players from other states in the Deep South, but it typically does so at a rate that even surpasses that achieved by UA; this fact may well be somewhat expected, given UA's arguably greater ability to attract in-state recruits. The states in which AU has the most extensive recruiting success are, primarily, Georgia and Florida, though Tennessee, Louisiana, Mississippi, Arkansas and South Carolina have all contributed to AU's recruiting base at one point or another. By recruiting high school football players (student athletes) from all over the Deep South, AU's

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[1] For an interesting examination of the recruitment of high school football stars by colleges and universities, see Dumond, Lynch and Platania (2008). For more on the current climate in college football regarding championships, etc., see Swofford, Mixon and Green (2009).

[2] For more on the history of Alabama and Auburn football, see Caudill and Mixon (1996 and 2007).

recruiting strategy potentially offers a rich source of information about the effects of social networks on individual success in college football.

2. Econometric Model and Data

In order to explore the possibility that social networks are beneficial to the success of individual players, and not just the teams they represent, the following econometric model is proposed:

$$ACHIEVEMENTS_i = \alpha_0 + \beta_1 HSRATING_i + \beta_2 MILESHOME_i + \beta_3 LETTERS_i + \beta_4 CAPTAINS_i + B_5 SAMEHS_i + \varepsilon. \quad (1)$$

The dependent variable in equation (1), ACHIEVEMENTS, is equal to the number of individual awards (achievements) attained by each out-of-state AU player in the sample. This variable is measured as the sum of points given to each AU player for receiving various honors. For purposes of this study, these include being recognized on All America teams, and as Southeastern Conference (SEC) Player of the Year (by position), All SEC, Bowl Game Most Valuable Player (MVP), All SEC Freshman, SEC Freshman of the Year, SEC Player of the Week, Academic All America and Academic All SEC. One point is awarded to each AU player for each occurrence of one of the above achievements.[3]

Included on the right-hand side of equation (1) as one of the explanatory variables is the variable HSRATING. This variable captures the rating of each out-of-state AU player at the end of his high school career. Data on HSRATING come from three sources. The first of these is *The Forrest Davis Football Recruiting Annual*, wherein each issue from 1991-2007 was searched for information on AU's out-of-state signees. To supplement this source, which is often recognized as the oldest among sources covering college football recruiting in the South, we also made use of *Jeff Whitaker's Deep South Football Recruiting Guide* and Rivals.Com. The first of these two additional sources covers the middle time period, i.e., 1998-2001, whereas the latter provides data from 2002-present. Both the Davis and Rivals.Com sources rate college football recruits on a five-point scale, while Whitaker uses a 1-point scale that is compressed to range from 9 to 10, and also includes ratings of 9.25, 9.5, and 9.75. Similarly, Davis uses a "+" system to augment his ratings. Because Whitaker and Rivals.Com rate some players that are omitted in Davis (and vice-versa), use of all three sources yields a larger database.[4] To facilitate this enlargement of the database on rating high school football players, we re-scaled the Whitaker rating system so that it corresponds to those in Davis.

Next, the variable MILESHOME is equal to the one-way driving distance (in miles) between Auburn, AL, and each out-of-state AU player's hometown, as listed in each of the three rating sources above. Data on MILESHOME were taken from MapQuest.Com. Also included on the right hand side of equation (1) are the variables LETTERS and CAPTAINS, which are equal, respectively, to the number of varsity letters awarded (by AU) to each AU player in the database, and the number of years each AU player was named to the list of

[3] The achievements come from the 2007 edition of the *Auburn Football Media Guide*, available online at www.auburn.edu.

[4] For instances where a player is listed in multiple sources, the Davis guide is used to rate that player.

team captains while at Auburn University.[5] Out-of-state signees who failed to earn at least one letter were omitted from this study. Finally, the variable SAMEHS is equal to, in the case of each out-of-state player signed to AU, the number of *other* signees from that player's signing class who come from the same out-of-state high school.

One would expect that more highly regarded high school football players will earn, over the course of their college careers, more ACHIEVEMENTS than others who participate in college football, *ceteris paribus*. As such, ACHIEVEMENTS is expected to be positively related to HSRATING, as well as to LETTERS, given that the latter variable proxies the length of out-of-state player *i*'s football career at AU. Similarly, ACHIEVEMENTS is expected to be positively related to CAPTAINS, given that team captains are typically some of the team's most talented players.

When out-of-state recruits sign scholarships to attend a given university and play college football, a migration from a home in one state to a new "home" in another state results. The variable MILESHOME proxies the psychic cost of each individual's college migration scenario, a cost not unlike the "mobility cost constraint" developed in Gatons and Cebula (1972). It is not unusual for individuals attending college far from home to feel homesick and even display symptoms of mild depression. Students experiencing such emotional setbacks may find it difficult to focus on either academics or athletics, and, subsequently, performance in each of these domains may diminish.[6] Therefore, ACHIEVEMENTS is expected to be negatively related to MILESHOME. The regressor capturing the social network aspects of individual success in college football is SAMEHS, which is equal to the number of other individuals from out-of-state player *i*'s high school who sign a football scholarship with AU in the same year as did player *i*. Having another individual, or other individuals, from player *i*'s high school also sign a scholarship(s) to play football helps mitigate these psychic costs (it reduces the mobility cost constraint) facing player *i* (and vice-versa). As such, when SAMEHS exceeds zero, a social network is potentially formed, and one would expect that the benefits of that social network would result in greater success for player *i*, both on-field and off-field.

Table 1: Social Networks in AU Football Recruiting

Year	City, State	High School
1991	Ft. Lauderdale, FL	Dillard High School
1997	Cordele, GA	Crisp County High School
2000	Ft. Lauderdale, FL	Dillard High School
2001	Nashville, TN	Christ Presbyterian Academy
2002	Ellenwood, GA	Cedar Grove High School
2003	Brentwood, TN[a]	Brentwood Academy
2004	Waynesboro, MS	Wayne County High School
2006	Lovejoy, GA	Lovejoy High School
2007	Ft. Lauderdale, FL	St. Thomas Aquinas High School
2008	Ft. Lauderdale, FL	St. Thomas Aquinas High School
2010	College Park, GA	Benjamin Banneker High School
	Little Rock, AR	Little Rock Christian Academy

[a]Brentwood is part of the Nashville area in central Tennessee. Some of athletes from Brentwood are listed as residents of Brentwood, while others are listed as residents of Nashville.

[5] Both of these pieces of information come from the 2007 edition of the *Auburn Football Media Guide*, available online at www.auburn.edu.

[6] Citing Berkman (1995), Costa and Kahn (2007) point out that health researchers argue that social networks provide benefits via their positive impact on the immune and neuroendocrine systems.

Ratings data on all out-of-state players who signed with AU over the 1991-2003 period were collected from the three sources above.[7] Of these, 83 earned at least one varsity letter at AU. Finally, after encountering difficulty with MapQuest.Com's ability to pinpoint MILESHOME for three signees, our database ultimately contained 80 usable observations. Table 1 shows some of the social networks captured by our overall database (from 1991-2003) and beyond (i.e., 2004-2011). These include Fort Lauderdale, Florida, a long-time popular recruiting enclave for AU, and Brentwood/Nashville, Tennessee, a more recent hotbed for AU football recruiting.[8] Dillard High School has been the source of most of AU's successful recruits from Fort Lauderdale, including two separate social networks in our database.[9] One of these social networks of recruits arrived at AU in 1991, whereas the other arrived nearly a decade later, in 2000. More recently, Fort Lauderdale's St. Thomas Aquinas High School has been the source of AU's recruiting success by providing it with a social network in 2007.[10] Much of AU's success in Tennessee has been in its recruitment from Brentwood Academy, an institution that most recently provided AU with a social network in 2003.[11] Nashville's Christ Presbyterian Academy, which sits only about 10 miles from Brentwood, has also been an important social network recruiting ground for AU, as it was back in 2001 and again in 2008.[12]

3. Estimation and Results

Because discrete count data are present for the endogenous variable, ACHIEVEMENTS, estimation by least squares (OLS) violates the assumptions of classical linear regression and leads to inefficient estimates (Greene, 2003; Kennedy, 2003). Therefore, estimation by maximum likelihood (Poisson) is suggested (Maddala, 1983; Winkelmann, 1997; Greene, 2003; Cameron and Trivedi, 1998; Zelterman, 1999; Kennedy, 2003).

The Poisson regression model specifies that each y_i is drawn from a Poisson distribution with parameter λ_i, which is related to the regressors, x_i (Greene, 2003: 740; Kennedy, 2003: 279). The primary equation of the model is,

$$\text{Prob}(Y = y \mid x) = e^{-\lambda}\lambda^{y}/y!, \text{ for } y = 0, 1, 2, \ldots \quad (2)$$

The mean and variance of this distribution are both λ, typically specified to be $\lambda = \exp(x\beta)$, where x is a row vector of explanatory variables (Kennedy, 2003: 279). The parameters are estimated by maximum likelihood. The log-likelihood function is,

[7] Recently, the AU media guide was downsized (from previous editions), partially by omitting much of the information taken from earlier guides to construct ACHIEVEMENTS.
[8] Players who have gone from Ft. Lauderdale to star at AU include James Bostic, Calvin Jackson, Stanley McClover, Brian Robinson, Junior Rosegreen, Frank Sanders and Pat Sims. Former AU stars from Brentwood include Kody Bliss, King Dunlap, Jake Slaughter, and John Vaughn.
[9] Dillard High School is an Arts and Technology Magnet school that is a part of the Broward County Public Schools system in South Florida.
[10] St. Thomas Aquinas High School is a private college preparatory coeducational Catholic school located in Fort Lauderdale.
[11] Brentwood Academy is a private college preparatory coeducational day school located in Brentwood.
[12] Christ Presbyterian Academy is a parochial school affiliated with Christ Presbyterian Church of Nashville.

$$\ln L = \sum_{i=1}^{n} [-\lambda + y_i\beta' x_i - \ln y_i!], \tag{3}$$

and the likelihood equations are (Greene, 2003: 741),

$$\partial \ln L/\partial\beta = \sum_{i=1}^{n} (y_i - \lambda_i)\, x_i = 0. \tag{4}$$

According to Kennedy (2003: 279), "researchers need to begin their analysis of count data by testing for overdisperson." The Poisson is the special case of the negative binomial (NB) with $\alpha = 0$ (Cameron and Trivedi, 1998: 77-78). The null hypothesis, H_0: $\alpha = 0$, is tested against the alternative, H_1: $\alpha > 0$, by estimating the Poisson model, constructing fitted values, $\hat{\mu} = \exp(x_i'\hat{\beta})$, and performing the auxiliary univariate OLS regression (without a constant term):

$$\frac{(y_i - \hat{\mu}_i)^2 - y_i}{\hat{\mu}_i} = \alpha\hat{\mu}_i + u_i, \tag{5}$$

where u_i is the stochastic error term (Cameron and Trivedi, 1998: 78). Our estimation does not reject H_0 at the .05 level.

Poisson estimates for equation (1), and variations of equation (1), above are presented in Table 2. Also included in Table 2 are results from OLS estimations. Not only is each of the first two Poisson estimations jointly significant, but the parameter estimates are well-behaved from one specification to the next. One can also see the improvement that Poisson estimation of equation (1) above yields over OLS estimation. In terms of specific results, each of the regressors in versions (1) and (2) of the Poisson estimations retains its expected sign, and, with the exception of MILESHOME, each is significant at the .10 level or better. Versions (1) and (2) of the Poisson regressions in Table 2 also produce R_d^2 statistics (see Cameron and Trivedi, 1998) ranging from 0.261 to 0.352.

Table 2: OLS and Poisson Regression Estimates

Dependent Variable: ACHIEVEMENTS [1.36; 2.12]

	OLS Models		*Poisson Models*			
Regressors	(1)	(2)	(1)	(2)	(3)	(4)
constant	−2.898† (−2.37)	−3.153† (−2.33)	−3.893* (−4.86)	−4.414* (−5.33)	−3.740* (−4.65)	−4.281* (−5.18)
HSRATING [3.84; 0.70]	0.705† (2.42)	0.691† (2.14)	0.448* (3.29)	0.516* (3.66)	0.435* (3.17)	0.504* (3.57)
MILESHOME [309; 189]	−0.001 (−0.72)	−0.001 (−0.53)	−0.001 (−0.92)	−0.001 (−0.93)	−0.4e−3 (−0.79)	−0.4e−3 (−0.81)
LETTERS [3.16; 1.15]	0.430† (2.40)	0.614* (3.20)	0.645* (4.09)	0.776* (4.95)	0.616* (3.92)	0.749* (4.80)
CAPTAINS [0.10; 0.30]	2.881* (4.22)		1.041* (4.84)		1.030* (4.80)	
SAMEHS [0.25; 0.58]	0.559‡ (1.63)	0.455 (1.21)	0.314† (2.09)	0.269‡ (1.89)		
SAMEHSYRS [0.17; 0.45]					0.359† (2.17)	0.317† (2.07)

nobs	80	80	80	80	80	80
F-statistic	7.77*	4.30*				
R^2	0.344	0.187				
Log-Likelihood			−35.55	−45.83	−35.43	−45.56
R_d^2			0.352	0.261	0.353	0.264

Notes: The numbers in brackets next to the dependent variable and the regressors are means and standard deviations of those players with one or more LETTERS earned. The numbers in parentheses below the regression coefficients are *t*-statistics. *=.01 level of significance; †=.05 level of significance; ‡=.10 level of significance.

The list of correctly-signed and statistically-significant regressors also includes the variable of greatest interest, SAMEHS, whose Poisson parameter estimates range from +0.269 to +0.314. Because SAMEHS is positively and significantly related to ACHIEVEMENTS, *ceteris paribus*, a social network-effect appears to be important in explaining individual success of college football players. That is, having his high school football teammates sign scholarships with AU in the same year significantly increases out-of-state player *i*'s probability of individual success at AU (and vice-versa).

Versions (3) and (4) of the Poisson regressions extend the analysis by proxying the cohesiveness of each of the social networks in our study. They do so through the new variable SAMEHSYRS, which replaces SAMEHS and is equal to the sum of the years that out-of-state player *i* lettered with *each* of the other members of his original social network while at AU, divided by four. Using this new variable, a social network involving two AU players who played together for two years is coded, using SAMEHSYRS, as a 0.50, while that involving two players who played together for one year is coded as a 0.25. This variable replaces SAMEHS, which would be equal to 1 in *both* cases mentioned above.[13]

As indicated in versions (3) and (4) of the Poisson regressions in Table 2, all of the regressors are correctly signed, and only MILESHOME is statistically insignificant. Version (3) also produces an R_d^2 of 0.353. HSRATING, LETTERS and CAPTAINS are all positive and statistically significant, and the parameter estimates associated with each are generally stable when compared to their counterparts from versions (1) and (2) in Table 2. Most importantly, the new variable of interest – SAMEHSYRS – retains the expected positive sign and is statistically significant.[14] That is, the cohesiveness of out-of-state player *i*'s (and out-of-state player *j*'s, etc.) original social network is positively related to the probability of achieving individual success on the college gridiron.

Table 3: OLS and Poisson Regression Estimates

Dependent Variable: ACHIEVEMENTS2 [2.30; 3.82]

	OLS Models		*Poisson Models*			
Regressors	(1)	(2)	(1)	(2)	(3)	(4)
constant	−5.794† (−2.56)	−6.182† (−2.56)	−3.920* (−6.09)	−4.426* (−6.71)	−3.718* (−5.75)	−4.066* (−6.02)
HSRATING [3.84; 0.70]	1.381† (2.57)	1.359† (2.36)	0.516* (4.89)	0.589* (5.44)	0.504* (4.74)	0.518* (4.65)
MILESHOME [309; 189]	−0.001 (−0.73)	−0.001 (−0.58)	−0.001 (−1.26)	−0.001 (−1.37)	−0.001 (−1.10)	−0.001 (−1.06)
LETTERS	0.783†	1.062*	0.719*	0.835*	0.679*	0.799*

[13] Similarly, if out-of-state player *i* played three years with one network member (player *j*), and four years with another (player *k*), player *i*'s score for SAMEHSYRS is equal to (3+4)/4, or 1.75. Player *k* receives an identical SAMEHSYRS score, while player *j* receives a SAMEHSYRS score of 1.5.

[14] As a proxy for social networks, SAMEHSYRS retains a model coefficient of +0.359 in version (3) of Table 2.

[3.16; 1.15]	(2.37)	(3.09)	(5.60)	(6.53)	(5.32)	(6.15)
CAPTAINS [0.10; 0.30]	4.382* (3.47)		0.931* (5.52)		0.917* (5.45)	
SAMEHS [0.25; 0.58]	1.270† (2.01)	1.112‡ (1.65)	0.408* (3.73)	0.364* (3.51)		
SAMEHSYRS [0.17; 0.45]					0.432* (3.60)	0.358* (3.04)
nobs	80	80	80	80	80	80
F-statistic	6.73*	4.70*				
R^2	0.313	0.201				
Log-Likelihood			42.15	28.66	41.67	13.19
R_d^2			0.355	0.289	0.352	0.274

Notes: The numbers in brackets next to the dependent variable and the regressors are means and standard deviations of those players with one or more LETTERS earned. The numbers in parentheses below the regression coefficients are *t*-statistics. *=.01 level of significance; †=.05 level of significance; ‡=.10 level of significance.

The results presented thus far are perhaps limited by our definition of ACHIEVEMENTS, which treats All-America designations and All-SEC designations equally. The former designations are more substantial than the latter, given the greatly enhanced visibility afforded to an All-America team placement. Likewise, the All-SEC designations are more visible and prestigious than the other, non-All-America, achievements in our equation for the dependent variable. Thus, we constructed a new dependent variable, ACHIEVEMENTS2, which counts the two All-America designations four points each, and the three main All-SEC designations two points each. All of the other achievements in the equation are again counted one point each. OLS and Poisson estimations results using ACHIEVEMENTS2 are presented in Table 3.

As the results in Table 3 indicate, each of the first two Poisson models is again jointly significant. In terms of specific results, each of the regressors in versions (1) and (2) of the Poisson estimations retains its expected sign, and, with the exception of MILESHOME, each is significant at the .01 level. Using ACHIEVEMENTS2, the variable MILESHOME is only marginally insignificant using the .10 level. Versions (1) and (2) of the Poisson regressions in Table 3 also produce R_d^2 statistics ranging from 0.289 to 0.355. In these versions, SAMEHS is positive and statistically significant at the .01 level, an improvement over the results using ACHIEVEMENTS. Similar results, and improvement in the results moving from ACHIEVEMENTS to ACHIEVEMENTS2, are obtained when SAMEHSYRS is substituted for SAMEHS.

Table 4: OLS and Poisson Regression Estimates

Dependent Variable: ACHIEVEMENTS3 [3.44; 6.14]

	OLS Models		*Poisson Models*			
Regressors	(1)	(2)	(1)	(2)	(3)	(4)
constant	−10.18* (−2.77)	−10.73* (−2.78)	−4.004* (−7.44)	−4.512* (−8.22)	−3.773* (−6.96)	−4.290* (−7.78)
HSRATING [3.84; 0.70]	2.446* (2.80)	2.415* (2.62)	0.611* (7.02)	0.689* (7.77)	0.600* (6.83)	0.675* (7.58)
MILESHOME [309; 189]	−0.002 (−0.74)	−0.002 (−0.61)	−0.001‡ (−1.68)	−0.001‡ (−1.91)	−0.001 (−1.49)	−0.001‡ (−1.67)
LETTERS [3.16; 1.15]	1.190† (2.22)	1.585* (2.89)	0.745* (6.95)	0.853* (7.99)	0.699* (6.57)	0.809* (7.64)
CAPTAINS [0.10; 0.30]	6.204* (3.03)		0.862* (6.18)		0.844* (6.07)	
SAMEHS [0.25; 0.58]	2.299† (2.24)	2.075‡ (1.92)	0.469* (5.41)	0.427* (5.21)		
SAMEHSYRS					0.474*	0.436*

[0.17; 0.45]					(5.00)	(4.91)
nobs	80	80	80	80	80	80
F-statistic	6.25*	4.98*				
R^2	0.297	0.210				
Log-Likelihood			184.73	167.73	182.70	166.28
R_d^2			0.366	0.314	0.360	0.310

Notes: The numbers in brackets next to the dependent variable and the regressors are means and standard deviations of those players with one or more LETTERS earned. The numbers in parentheses below the regression coefficients are *t*-statistics. *=.01 level of significance; †=.05 level of significance; ‡=.10 level of significance.

For comparison, Table 4 presents results from the previous models using ACHIEVEMENTS3 as the dependent variable. This new dependent variable counts All-America achievements nine points each, while All-SEC and other achievements count two points and one point each, respectively. The results in Table 4 look much like those in Table 3, with the exception of MILESHOME, which is both negative and significant using ACHIEVEMENTS3 instead of ACHIEVEMENTS2. Both SAMEHS and SAMEHSYRS are again positive and significant in explaining individual success in college football.

Table 5: Poisson Regression Predictions

HSRATING	MILESHOME	LETTERS	SAMEHS	*pred*ACHIEVEMENTS2
3.0	293	4	2	3.22
3.0	293	4	1	2.14
3.0	316	4	0	1.41

Finally, Tables 5 and 6 contain some comparison predictions for various individuals in our data set. Table 5 presents predicted values for ACHIEVEMENTS2 for various 3-star high school prospects using version (1) of the Poisson models in Table 3, whereas Table 6 presents predicted values for ACHIEVEMENTS2 for these same 3-star high school prospects using version (3) of the Poisson models in Table 3.

Table 6: Poisson Regression Predictions

HSRATING	MILESHOME	LETTERS	SAMEHSYRS	*pred*ACHIEVEMENTS2
3.0	293	4	2.00	3.45
3.0	293	4	0.75	2.01
3.0	316	4	0.00	1.44

For brevity, we focus our discussion on the statistics in Table 6. There we first compare predicted values of ACHIEVEMENTS2 for three similarly situated 3-star out-of-state high school prospects who chose to attend AU. As shown, each comes from a high school located about 300 miles from AU and each lettered at AU for four years. While the third 3-rated player was not part of a social network while at AU, the first two were, although these varied somewhat (as indicated by SAMEHSYRS). As indicated in Table 5, as the quality of out-of-state player *i*'s social network improves, so does player *i*'s probability of achieving individual gridiron achievements while at AU. In our example, as SAMEHSYRS rises from 0 to 0.75 to 2, the predicted achievements for out-of-state player *i* increase from 1.44 to 2.01 to 3.45, reflecting a difference of 2.01 between the achievements earned by an out-of-state 3-star AU recruit without a social network to rely on, and one with a robust social network. In all, the results presented here offer a quite compelling example of the benefits that social networks provide to young participants in big-time college football.

4. Concluding Comments

Whether the situation an individual faces is a dire one, such as with Union soldiers in Confederate prisoner-of-war camps, or one in which an individual is simply in unfamiliar, yet highly-competitive territory, such as that confronting thousands of young men (i.e., 18 and 19 years old) across the country who are a new part of some out-of-state major collegiate football program, social networks may provide an advantage in overcoming the obstacles to success that one faces. The results presented in this study indicate that the presence on an individual's college football team of former high school teammates increases the likelihood that the individual will succeed at the collegiate level (and vice-versa). Depending on the caliber of the football player in question, a high-quality social network can increase that player's success rate substantially, as measured by the attainment of various individual awards while on campus. This result is not only valued by the individual players involved, but also by the big-time football programs that recruit them.

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