Winning In NCAA Women's Soccer: Does The Gender Of The Coach Matter?

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ABSTRACT

While women's intercollegiate soccer has grown rapidly over the past three decades, men still hold nearly two-thirds of all head coaching positions in NCAA Division I women's soccer programs. This paper explores whether the gender of the head coach affects success in winning games. After considering various reasons why gender might matter, we undertake a multiple regression analysis using data from the 2001-2002 season to answer this question empirically. Controlling for other factors that would be expected to influence a team's success, including the quality of the head coach, the level of institutional support and the tradition of the program, we find that the head coach's gender, and also the head coach's age, have statistically significant effects on team success for schools in Divisions I-AA and I-AAA, but not for the major football schools in Division I-A. We close with possible explanations for these results.

Keywords: Women's Soccer; Winning; Gender; Coaching; NCAA

INTRODUCTION

The first women's college varsity soccer team was organized at Brown University in 1977, five years after Title IX provided a major push to colleges and universities to offer more athletic opportunities to their women students. While the number of teams grew quickly, by 1981 there were still fewer than 50 women's collegiate varsity soccer teams across the country. Nevertheless, these few teams formed the foundation of a national championship event which was held in 1981 under the auspices of the Association for Intercollegiate Athletics for Women (AIAW). The following year, the National Collegiate Athletic Association (NCAA) recognized the growing popularity of women's intercollegiate soccer by sponsoring its first women's soccer championship. Thus began an annual NCAA championship event that has continued to the present. (Pettus, 1998, 248-252)

Since those early beginnings, women's soccer in the U.S. has experienced phenomenal growth. The percentage of all NCAA member schools that offered women's soccer rose from 2.8% in 1978 to 38.3% in 1988, 78.5% in 1998 and 92.0% in 2008. (Acosta & Carpenter, 2008) The first U.S women's national team was organized in 1985. The first Women's World Championship was held in China in 1991 and was won by the U.S. national team. This was followed by the U.S. team's winning of the Olympic gold medal in Atlanta in 1996. (Pettus, 1998, 253-264) The rosters of these national and Olympic teams were filled with current and former collegiate players, whose numbers were increasing rapidly with the surging number of collegiate teams.

With so many women athletes having passed through so many women's collegiate soccer programs over the years, one might suppose that the potential pool of women who might be both interested in and well-qualified for coaching positions in collegiate soccer programs (men's as well as women's) would have grown quite large. However, for all NCAA Divisions (I, II and III) combined, the percentage of women's soccer programs with a female head coach has barely risen from 29.4% in 1978 to 33.1% in 2008. In fact, the peak year since 1978 was actually 1979, when 35.7% of the head coaches were female. The progression of women in the collegiate soccer coaching ranks has since stagnated. For women's intercollegiate athletic teams in *all* sports at NCAA schools, the percentage of teams with women head coaches is higher than for soccer teams, but has declined substantially from 90% in 1970 (Knoppers, 1994, 119) to 58.2% in 1978 and 42.8% in 2008. (Acosta & Carpenter, 2008) And considering that only 2 to 3 percent of *men's* intercollegiate athletic teams have female head coaches (Acosta & Carpenter, 2008), the following assessment, made over 20 years ago, remains valid: "…coaching is a male-dominated profession and the skewness of the gender ratio is increasing." (Knoppers, 1994, 119)

In this paper we address the following question as it pertains specifically to NCAA Division I women's soccer: Does the gender of the head coach have an effect on the success of the team on the field? After a discussion of reasons why gender *might* have such an effect, we conduct an empirical investigation in an attempt to answer the stated question, using data from the 2001-2002 season. In our model, success in winning soccer games is represented as a function of certain demographic characteristics of the head coach (gender and age), the quality of the head coach, the amount of institutional support provided by the college/university, and the tradition of the program. Schools with a high-quality coach, a supportive institutional environment and a longstanding tradition in women's soccer are more likely to attract the kinds of players necessary to field a winning team. By controlling for these other likely determinants of winning, we can obtain a better idea of the possible role of gender.

WHY GENDER *MIGHT* MATTER

There are a number of reasons why the gender of the head coach might affect success on the field in women's soccer. Some studies have found that women athletes preferred male coaches (e.g., Parkhouse & Williams, 1986, and Frey, Czech, Kent & Johnson, 2006), and the first of these two studies found that female athletes perceived male coaches to be more competent than their female counterparts. Whether or not this perception is accurate or is simply a matter of gender bias (see, e.g., Frankl & Babbitt, 1998), it is relevant in that it could affect the relative performance of teams coached by women and men, respectively. Frey et al. (2006) explored the perceptions of a dozen NCAA Division I female athletes regarding their male and female coaches, and found that these female athletes generally perceived male coaches to be more structured, better organized, more aggressive and more demanding, whereas they perceived female coaches to be better at interpersonal relationships and at providing emotional support and positive feedback. Differences such as these could also affect the prospects of winning. These various characteristics might produce offsetting effects. If women coaches are better at interpersonal relationships, this may give them an advantage in recruiting, while some of the characteristics of men coaches may enable them to get better performance out of the players they are able to recruit.

Factors such as those just described do not clearly predict the direction of any gender effect on winning, but there are other factors which suggest that women coaches might be expected to win less often than men. For example, the women's model of sport may differ from the men's model, with less emphasis on winning per se. It has been suggested that women are by nature less competitive than men (e.g., see Birrell & Richter, 1994). In a fascinating study of the early development of youth soccer in the United States, Fields states that "soccer had a vaguely un-American reputation as being almost a kinder, gentler sport than football, baseball, and basketball" and was "sufficiently nontraditional and noncompetitive enough to be an acceptable game for American girls." (Fields, 2005, 98)

While it is possible that winning may be less important to women coaches than to male coaches, it may also be true that coaching may be a less attractive profession for career-driven women, for a variety of reasons. Women coaches may be subject to discrimination, both in the form of sexual harassment (Knoppers, 1994, 124**)** and in the form of reduced institutional support relative to that provided to male coaches. In this latter regard, it may be noteworthy that only 8.4 percent of NCAA Division I athletic directors in 2008 were female. (Acosta & Carpenter, 2008) With limited opportunities to move into administrative positions, coaching may be a dead-end job for women but provide a career ladder for men. (Knoppers, 1994, 123) One implication of this is negative selection, in that hard-charging, high-achieving women who might make the most successful coaches may choose other professions, leaving the coaching field to their less competitive peers.

A related reason that female coaches may be less successful than men has been suggested by Sabock (1979) and further discussed by Knoppers (1994). Married male coaches are described as having a two-person, single career while married female coaches have a one-person, dual career. Male coaches often have helping spouses who provide support for their careers in various ways (e.g., hosting social functions, making public appearances) in addition to carrying out the bulk of the family and household responsibilities. On the other hand, female coaches often receive little career support from their spouses while bearing a disproportionate share of the family/household responsibilities. To the extent this describes the relative situations of men and women in the coaching profession, it would not be surprising to find that coaching is a male-dominated profession, and it also would not be surprising to find that winning may be more difficult for women coaches.

NCAA DIVISION I SUB-DIVISIONS

Before describing our variables and data, it should be noted that, for legislative and competitive purposes, the NCAA divides its membership into three divisions designated as Divisions I, II and III. Divisional membership is generally classified on the basis of the overall size of the intercollegiate athletics program, the number of athletic scholarships required to maintain and operate that program, and whether or not the school participates in the sport of football. As of the 2000-2001 school year, Division I was further sub-divided into Divisions I-A, I-AA and I-AAA, with Divisions I-A and I-AA being separated on the basis of the size of the football programs and Division I-AAA being reserved for programs that did not have football teams. The designations I-A, I-AA and I-AAA were applicable in the 2001-2002 school year but were subsequently changed in 2007 when the NCAA instituted new criteria for the classification of its Division I membership.[1]

Since the breakdown of NCAA Division I schools into the various sub-divisions is based on *football* participation, it has no direct relevance for Division I women's intercollegiate soccer programs. However, the former I-A schools (now designated as FBS schools) tend to be among the largest universities in the country and tend to be schools which place the most emphasis on, and devote the most resources to, their intercollegiate athletics programs. Therefore, while it is unclear whether we should expect the I-A schools to be either stronger or weaker in women's soccer, this is a question we will want to explore in subsequent sections.

VARIABLES, SAMPLE AND DATA

To estimate the effect of the gender of the head coach on winning, we employ a model in which the number of games a team wins is a function of certain demographic characteristics of the head coach, the quality of the head coach, the level of institutional support provided to the team, and the tradition of the school in women's soccer. In our OLS multiple regression analysis, the dependent variable, *W*, represents the number of regular season games a team has won. Although it will not be included in the regression analysis, we will also show some statistics below for an alternative success variable, *NT*, which is a dummy variable taking the value of one for teams invited to the NCAA tournament and zero for other teams. With *W* as our dependent variable, the independent variables for our regression analysis are described immediately below.

Demographic Characteristics of Head Coach

The variable *MALE* is a dummy variable that takes the value of one if the head coach is male and zero if the head coach is female. Based on our earlier discussion, the impact of gender could cut either way, so the predicted sign of the coefficient on *MALE* is ambiguous. The variable *AGE* is the age of the head coach, in years. The age of the head coach may also be a factor that affects the success of the team on the field. For example, it might be argued that younger coaches may find it easier to relate to the problems and concerns of their players, while older coaches may find it easier to command respect and exercise authority over their players. Therefore, the predicted sign of the coefficient on *AGE* is also ambiguous.

Quality of Head Coach

The quality of the head coach is represented by the variable, *QUAL*, which is the head coach's prior winning percentage as a head coach. While winning may not be "the only thing", as once famously claimed by the legendary coach of the Green Bay Packers, Vince Lombardi[2], it certainly must be considered one of the most important criteria in judging the quality of a coach. In general, we would expect that coaches that have been more successful in winning in the past will continue to be more successful. Therefore, the predicted sign on *QUAL* is clearly positive.[3] We also considered including the number of years of coaching experience as an independent predictor of success. However, we had limited information about coaching experience in our data. The only measure of experience available was the number of years of working as a head coach, and the mean of the variable was less than 6 years, suggesting that the variable was capturing only part of the total coaching experience. Furthermore, the variable had an insignificant and negative coefficient in the regression models and did not contribute towards the explanation of winning with our sample data. Therefore, we exclude it from further consideration.

Institutional Support

A successful women's soccer program requires that sufficient resources be devoted to it. We measure a school's level of support for its program with two additional variables: *SAL* is the total expenditure (in thousands of dollars) on salaries for coaches (including the head coach and assistant coaches, if any) in the women's soccer program; *FTE* is the total number of full-time-equivalent grants-in-aid (scholarships) provided by the school for women's soccer. Coaching salaries obviously represent an important part of the explicit financial support for the program. Students on grants-in-aid may displace tuition-paying students, an important implicit cost, and students on scholarship result in additional explicit costs for room and board, travel, incidental expenses, etc.[4] For both *SAL* and *FTE*, the predicted signs are positive.

Tradition of Program

Data were presented previously on the increasing percentage of NCAA schools offering varsity women's soccer. Early adopters had the opportunity to establish a reputation and a tradition as a strong program before the many later entrants could develop quality programs. To capture this possible effect, we include the variable *EST*, which is simply the year in which the program was established. Since older, more established programs might be expected to have an advantage in recruiting, the expected sign of the *EST* coefficient is negative.

Other Control Variables

Not all teams play the same number of regular season games. The maximum number of games permitted is 20,[5] but the range for the teams in our sample was from 13 to 20. Therefore, in estimating the effect of the various independent variables described above on the number of games won, it is necessary to control for the number of games played. This control will be represented in the regression equations by the variable *G***,** the number of games played**,** for which the predicted sign is positive**.**[6] Also, as previously noted, we include a coaching quality variable, *QUAL*, or the head coach's prior winning percentage. But first-year head coaches (there are 24 in our sample) have no prior record, and their prior winning percentage is entered as 0.000. Since this could bias the coefficient on *QUAL*, we control for this by the inclusion of a dummy variable, *FIRST*, which takes the value of one for teams with a first-year head coach and zero for all other teams. In general, for schools with first-year head coaches, the value of *QUAL* will tend to understate the true quality of the coach. FIRST corrects for this, and the predicted sign for *FIRST* is positive. Next, based on our prior discussion, we will also make use of a dummy variable, *I-A*, which takes the value of one for schools that are in Division I-A and the value of zero for Division I-AA and I-AAA schools. Since the divisional breakdown has nothing directly to do with women's soccer, the predicted sign on *I-A* is ambiguous.

Sample and Data

The initial sample consisted of the 280 schools offering NCAA Division I women's soccer in the 2001-2002 season. Missing data resulted in a reduction in the sample used in the statistical analysis to 246 schools.[7] The data for *W*, *MALE, AGE*, *QUAL*, *FIRST***,** *EST***,** *G*, *I-A* and *NT* were publicly available and collected from the Web sites of the individual schools, the conferences to which they belong, and the NCAA. The data for the two institutional support variables, *SAL* and *FTE*, were collected for the NCAA through a confidential survey. The NCAA research staff provided assistance with the multiple regression analysis using the data provided by the authors in combination with the confidential NCAA data.[8]

STATISTICAL DIFFERENCES BETWEEN SUB-DIVISIONS

Table 1 shows the means and the maximum and minimum values for the variables included in our statistical analysis, for the full sample as well as separately for Division I-A schools and all other Division I schools

(I-AA and I-AAA) combined. Statistically significant differences (all at the .01 level or better) exist between the means of the I-A schools and all other Division I schools in what we might call the “success” variables, including the number of games won (*W*), whether or not the team was invited to the NCAA tournament (*NT*), and the prior winning percentage of the head coach (*QUAL*)**.** In terms of winning women’s soccer games, we find that I-A schools are typically more successful than other Division I schools. The 103 I-A schools in our sample averaged 9.77 regular season wins during the 2001-2002 season, compared to the average of 8.17 wins for the 143 I-AA and I-AAA schools combined. (The separate averages for the 71 I-AA schools and the 72 I-AAA schools were virtually identical.) It should be noted that the number of games *played* differed only slightly among the subdivisions averaging 17.6, 17.5 and 17.3 games for I-A, I-AA and I-AAA schools, respectively. With respect to the NCAA tournament, I-A teams were more than twice as likely to be invited as teams in the other sub-divisions (0.33 to 0.15). The big-time football schools clearly do tend to have the most successful women’s soccer programs. This appears to be due in part to having better coaches; I-A coaches have a prior winning percentage of 55% compared to 49% for non-I-A coaches.

Table 1: Means, Maximums and Minimums for Included Variables

	Full Sample (N=246)			I-A (N=103)			I-AA + I-AAA (N=143)		
Variable	**Mean**	**Max**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Max**	**Min**
*W***	8.84	17	0	9.77	17	2	8.17	17	0
MALE	0.64	1	0	0.67	1	0	0.62	1	0
AGE	35.5	58	24	35.8	56	25	35.3	58	24
*QUAL***^	0.51	0.95	0.02	0.55	0.95	0.08	0.49	0.80	0.02
FIRST	0.10	1	0	0.10	1	0	0.11	1	0
EST	1993	2001	1979	1993	2001	1979	1993	2001	1979
*SAL***	72.9	288.1	5.0	99.1	288.2	29.9	54.1	270.5	5.0
*FTE***	9.7	21.1	1.9	11.2	16.0	2.7	8.6	21.1	1.9
G	17.5	20	13	17.6	20	15	17.4	20	13
*NT***	0.23	1	0	0.33	1	0	0.15	1	0

** Differences in means between I-A and combined I-AA/I-AAA are statistically significant at .01 level or better for these variables (p < .01).
^ Excludes coaches with no prior experience.

Statistically significant differences (all at the .01 level or better) between the means of I-A and other schools also exist with respect to the two ‘institutional support” variables, total coaches’ salaries (*SAL*) and the number of full-time-equivalent grants-in-aid (*FTE*). However, the means for Division I-A schools do not differ statistically from the means for other Division I schools for any of the following variables: the percentage of schools with a male head coach (*MALE*), the average age of the head coach (*AGE*), the percentage of coaches who were in their first year (*FIRST*), the year the program was established (*EST*), and the number of games played (*G*). (The p-values for the tests on these last five variables exceed .10.)

In sum, I-A institutions on average provide more institutional support for their women’s soccer programs and appear to be more successful as a result. But in all other characteristics identified in Table 1, I-A schools are statistically indistinguishable from other Division I schools.

STATISTICAL DIFFERENCES BETWEEN MEN AND WOMEN COACHES

Table 2 shows the various means for male and female coaches, respectively, for the full 246 school sample, and also separately for the 103 I-A schools and the 143 schools in the combined I-AA/I-AAA category. Looking first at the full sample, on average teams coached by men won 1.5 more games during the 2001-2002 season than did teams coached by women, and the difference is statistically significant at the .01 per cent level. Men coaches were, on average, about 5.5 years older, a difference that is also statistically significant at the .01 level. As for other statistically significant differences, men coaches had a much higher average prior winning percentage (0.54 vs. 0.46) and on average had 1.1 more scholarships in place. Men and women coaches did not differ statistically in the number of games played, in the percentage of coaches who were in their first year, in the year in which their schools established the program, in their average program coaching salaries, in their rate of participation in the NCAA tournament, or in terms of their distribution across the sub-divisions of Division I.

Table 2: Means for Male and Female Coaches for Full Sample and by Sub-Division

Variable	Full Sample (N=246) Male (N=158)	Full Sample (N=246) Female (N=88)	I-A (N=103) Male (N=69)	I-A (N=103) Female (N=34)	I-AA + I-AAA (N=143) Male (N=89)	I-AA + I-AAA (N=143) Female (N=54)
W	9.38**	7.86	10.03	9.25	8.88**	6.99
AGE	37.5**	32.0	37.7**	31.9	37.3**	32.1
QUAL^	0.54**	0.46	0.57	0.51	0.52**	0.43
FIRST	0.08	0.14	0.06	0.15	0.09	0.13
EST	1992	1993	1993	1993	1992	1993
SAL	74.3	70.6	96.6	104.2	57.0	49.4
FTE	10.1**	9.0	11.4	10.8	9.1**	7.8
G	17.6	17.3	17.8*	17.2	17.4	17.3
NT	0.23	0.22	0.29	0.41	0.19	0.09

** Significantly different from corresponding female mean at .01 level ($p < .01$).
* Significantly different from corresponding female mean at .05 level ($p < .05$).
^ Excludes coaches with no prior experience.

A further look at Table 2 reveals some important differences between I-A and other schools. For the I-A schools, there are statistically significant differences between male and female coaches in age and number of games played. However, there are not any statistically significant differences in the number of wins, in the coach's prior winning percentage, or in the number of scholarships between men and women coaches. For the non-I-A institutions, on the other hand, statistically significant differences between men and women coaches exist in number of wins, age, prior winning percentage, and scholarships. Of course, the differences reported in Table 2 are measured without controlling for other variables. This is the task of the multiple regression analysis presented in the next section. In particular, this analysis allows us to answer the question: Is there a difference in success (wins) between men and women coaches after controlling for other likely determinants of winning?

MULTIPLE REGRESSION RESULTS

Table 3 presents our main OLS regression results for the full sample. In equation (1), the coefficient on *MALE* has a positive sign, but this is the only variable that is not statistically significant at the .05 level or better, although it is a close call (p=.066). The size of the coefficient indicates that, when controlling for the other variables, male coaches on average win 0.75 additional regular season games. On the other hand, *AGE* has a statistically significant, *negative* effect on winning ($p < .05$). The size of this coefficient indicates that, holding all other variables constant (including gender), a coach that is approximately 13 years older could be expected to win one fewer game during a season. All other variables have the expected signs and are statistically significant at either the .05 or .01 level. The level of institutional support (*SAL* and *FTE*), the past success of the head coach (*QUAL*), and the tradition of the program (*EST*) all have the expected impact, as do the two control variables (*FIRST* and *G*).

Given the fact, noted previously, that Division I-A schools tend to win more than other Division I schools, it may be useful also to examine whether there is any independent effect. There could be additional divisional differences not yet accounted for in our model. Equation (2) in Table 3 is identical to Equation (1) except for the addition of the dummy variable ***I-A.*** This variable adds nothing to the explanatory power of the equation (the adjusted R^2 falls slightly from 0.37 to 0.36) and is not statistically significant. Apparently, Division I-A schools win more for reasons already represented in Equation (1), such as more institutional support, better coaches with better track records, etc., and there is no additional divisional effect. The model is quite stable, as the addition of variable *I-A* results in only slight changes in the other coefficients and their statistical significance.

One other possibility to consider is that our model may work differently (better or worse) for Division I-A schools than for the other Division I schools. To examine this possibility, we separate our sample into the two groups and estimate two separate regression equations.[9] The results can be found in Table 4.

Table 3: Multiple Regression Results for the Effects of Gender and Other Variables on the Number of Wins (W) for the Full Sample (N = 246)

	Equation (1)			Equation (2)		
Variable	**B**	**SE B**	**β**	**B**	**SE B**	**β**
Intercept	118.323	70.104		112.077	70.998	
MALE	0.755	0.408	0.105	0.756	0.409	0.105
AGE	-0.074	0.029	-0.149*	-0.075	0.029	-0.152*
QUAL	7.638	1.259	0.472**	7.626	1.260	0.472**
FIRST	1.977	0.825	0.170**	1.973	0.826	0.169**
EST	-0.062	0.035	-0.095*	-0.059	0.035	-0.090*
SAL	0.013	0.005	0.158**	0.015	0.006	0.174**
FTE	0.235	0.078	0.184**	0.249	0.082	0.195**
G	0.575	0.143	0.207**	0.580	0.144	0.209**
I-A				-0.266	0.452	-0.038

** Statistically significant at one percent level ($p < .01$).
* Statistically significant at five percent level ($p < .05$).
Notes: Two-tailed tests for Intercept, *MALE, AGE* and *I-A;* one-tailed tests for all other variables. Adjusted R^2 for Equation (1) is 0.37; adjusted R^2 for Equation (2) is 0.36.

Equation (1) in Table 4 shows the results for Division I-A schools. Equation (1) can be compared directly with Equation (1) for the full sample from Table 3. There are some notable differences. For Division I-A schools, only *QUAL*, *FTE*, and *G* are statistically significant, while all variables except *MALE* were significant in the full sample regression. Also, the overall explanatory power of the model is much lower for the I-A sample (the adjusted R^2 is 0.37 for the full sample and only 0.26 for the Division I-A sample).

Table 4: Multiple Regression Results for the Effects of Gender and Other Variables on the Number of Wins (W) for Separate I-A and I-AA/I-AAA Samples

	Equation (1) I-A (N = 103)			Equation (2) I-AA+I-AAA (N = 143)		
Variable	**B**	**SE B**	**β**	**B**	**SE B**	**β**
Intercept	138.252	119.914		71.199	93.125	
MALE	0.094	0.653	0.015	1.222	0.542	0.165*
AGE	-0.060	0.050	-0.125	-0.091	0.038	-0.188**
QUAL	7.128	1.993	0.490**	7.701	1.730	0.459**
FIRST	1.965	1.428	0.184	1.529	1.079	0.131
EST	-0.072	0.060	-0.115	-0.040	0.047	-0.061
SAL	0.008	0.007	0.120	0.022	0.010	0.178*
FTE	0.358	0.151	0.225**	0.183	0.103	0.135*
G	0.468	0.214	0.199*	0.685	0.206	0.230**

** Statistically significant at one percent level ($p < .01$).
* Statistically significant at five percent level ($p < .05$).
Notes: Two-tailed tests for Intercept, *MALE* and *AGE;* one-tailed tests for all other variables. Adjusted R^2 for Equation (1) is 0.26; adjusted R^2 for Equation (2) is 0.36.

The results for the non-I-A schools can be found in Equation (2) in Table 4. Equation (2) can be compared to the full sample results of Equation (1) in Table 3 and the I-A results in Equation (1) in Table 4. For the non-I-A schools, the results are much more similar to the full sample results and quite different from the results for the I-A schools. Among the independent variables, *MALE***,** *AGE***,** *QUAL***,** *SAL***,** *FTE* and *G* are all statistically significant in the non-I-A sample, while only *QUAL***,** *FTE* and *G* are statistically significant in the I-A sample. But the key finding here is that both *MALE* and *AGE do* have statistically significant independent effects on the number of regular season victories for the non-I-A schools, after controlling for other relevant explanatory variables.[10]

DISCUSSION

In Table 1, we saw that 33% of head coaches in Division I-A were female, while 38% of head coaches in non-I-A schools were female, a difference that is not statistically significant. The differential effect of gender on winning in I-A and non-I-A schools shown in Table 4 raises an obvious question: Why might women win as much as men in Division I-A but not in Divisions I-AA and I-AAA? There are at least two possible answers.

First, since there may be fewer women interested in coaching as a career, there may be fewer highly-qualified women coaches, and the best of them may be snapped up by Division I-A schools, which pay higher salaries and offer better institutional support (more assistants, more scholarships, etc.). Given a smaller absolute number of highly-qualified women coaches, Divisions I-AA and I-AAA women's programs that hire women coaches may be drawing from a lower part of the overall quality distribution of potential candidates (at least from the perspective of winning), relative to those programs that hire men coaches. They may be willing to do this to promote diversity, believing that, given the overall dominance of men in sports, women's programs should be headed by women.

Second, women's model of sport may differ from men's (as previously discussed). The highly competitive women coaches who are most interested in winning may be sought after most intensely by Division I-A schools. Those with a somewhat different mix of objectives remain in Divisions I-AA and I-AAA, where they find themselves competing with male coaches who place more emphasis on winning than they (and their schools) do.

It should be emphasized that the statistically significant and positive effect of *MALE* on the number of wins in the non-I-A schools has been obtained while controlling for both coaches' salaries (*SAL*) and the number of scholarships (*FTE*), both of which are higher for male coaches in these schools. (See Table 2.) Therefore, the higher salaries and scholarship numbers cannot be part of the explanation for this result.

Regarding age, from Table 1 we saw that the mean age of head coaches in Division I-A was 35.8 years compared to 35.3 years in non-I-A schools, an insignificant difference. From Table 4, we see that age has an insignificant effect on winning among I-A schools but a highly significant, negative effect on winning in non-I-A schools. This differential effect of the coach's age on winning between I-A and non-I-A schools is more difficult to explain. One possibility is that there may be a tendency for the more successful coaches in Divisions I-AA and I-AAA to move to Division I-A, so that the more experienced coaches who remain at non-I-A schools are both older and less successful than the less experienced coaches.

SUMMARY/CONCLUSIONS

Over the past thirty years there has been little change in the percentage of head coaching positions in NCAA women's soccer that are held by women, despite the rapid expansion of women's soccer programs in the U.S. and the concomitant increase in the number of women who presumably would be well-qualified to fill such positions. In this paper, we explore whether the gender of the head coach in NCAA Division I women's soccer affects success on the field. After considering various reasons why gender might affect winning, we undertake a multiple regression analysis using data from the 2001-2002 season to answer this question empirically. Controlling for a number of other factors that would be expected to influence a team's success, including characteristics of the head coach, the level of institutional support for the program, and the program's tradition, we find that the head coach's gender (and also the head coach's age) have statistically significant effects on team success for schools in Divisions I-AA and I-AAA, but not for the major football schools in Division I-A. In the non-I-A schools, male coaches win more and younger coaches win more, while in I-A schools, neither gender nor age has any significant effect. Although we offer possible explanations for the differences between I-A and other Division I schools, it seems clear that this is a subject deserving of further study.

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ENDNOTES

1. The former I-A sub-division has been renamed the Football Bowl Subdivision (FBS) and the former I-AA subdivision is now the Football Championship Subdivision (FCS). I-AAA continues to be an informal designation for Division I schools that do not play football. See *2000-2001 NCAA Division I Manual*, Bylaw Article 20.01.2, p. 23, and *2007-2008 NCAA Division I Manual*, Bylaw Article 20, pp. 313-334.
2. The full statement is: “Winning isn’t everything, it’s the only thing.” See http://www.brainyquote.com/quotes/authors/v/vince_lombardi.html.
3. A recent study found that, in the intensely competitive sport of Division I-A college football, the quality of the players recruited significantly affected team performance, and vice-versa. The key point for us is that a coach with a track record of success will be able to attract high quality recruits to enable future success. See Langlett (2003).
4. See *2000-2001 NCAA Division I Manual*, Bylaw Articles 15.02.4.5, 15.1 and 15.2, pp. 178-185.
5. *2000-2001 NCAA Division I Manual*, Bylaw Article 17.18.5.1, p. 274.
6. We used regular season wins rather than total wins (including conference and NCAA tournament games) as the dependent variable to avoid introducing simultaneity between wins and games played. In tournaments, winning a game prior to the championship game means playing another game, so causality flows from number of wins to number of games.
7. Twenty-seven schools were lost from the sample due to missing information on scholarships (data on coaches’ salaries were also missing for 20 of these same 27 schools). Five schools were excluded because the head coach’s age could not be determined, one school was excluded because the year the women’s soccer program was established could not be determined, and one school was excluded because of inconsistent data.
8. We are especially indebted to Roberto Vicente, Assistant Director of Research, NCAA, for his assistance. Conclusions drawn from or recommendations based on the data provided by the National Collegiate Athletic Association are those of the authors based on analyses/evaluations of the authors and do not represent the views of the officers, staff or membership of the NCAA.
9. The point estimates of the marginal effect of each independent variable obtained using the two split sample regressions are exactly equivalent to the point estimates that would be obtained by using a single full-sample regression equation that included interaction terms between variable I-A and every other independent variable, but the latter approach would involve greater complexity, since additional calculations would be needed to obtain the point estimates.
10. We also tested for the possible interaction between *MALE* and *AGE*. For every equation reported in this paper, the addition of an interaction term resulted in *MALE*, *AGE* and the interaction term all being statistically insignificant with no increase in the adjusted R^2.

