Does Athletic Success Come at the Expense of Academic Success?

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Abstract

Claims are often made about the impact of high school athletics on academic achievement without reference to empirical research on the issue. In this paper we empirically examine the relationship between the extent to which high schools have winning sports teams, offer a variety of sports options, and facilitate student participation in athletics on schools' overall student achievement and attainment. We find that high school athletics do not appear to detract from academic success. In fact, based on the data we examined from Ohio high schools, an emphasis on athletic success and participation is associated with higher scores on standardized tests and higher graduation rates.

Introduction

Do successful high school athletics programs come at the expense of academic success? In this article we attempt to address this question empirically. In particular, we study the relationship between the athletic record of high schools in Ohio and the student achievement in those high schools, controlling for other characteristics.

Our expectations for what we would find are ambiguous. On the one hand, we might think that resources are finite and that investments in producing success in one arena necessarily would have to reduce the investment in success in another. Schools have limited budgets, a limited supply of talented personnel, and a limited capacity to convey priorities to students. If

schools devote those scarce resources to their football or basketball programs, academics would have to suffer.

On the other hand, there is the potential for synergies in education. Perhaps students learn important skills about self-discipline and delayed gratification from athletics that also produce benefits academically. And more broadly, perhaps schools that have successful academic programs are more likely to attract the interest and involvement of parents and the community. As parents gather for sporting events, they also discuss academic issues, which may help them organize and coordinate to pressure schools to improve their academic quality. More parental and community support may also make it easier to pass essential bond initiatives or increase levies so that schools have sufficient fiscal resources for their academic programs.

Collecting and analyzing evidence to adjudicate between these two competing, plausible hypotheses is particular important at this time. High school sports continue to attract more public attention and to consume greater public resources while school budgets have become very tight. Editorial page writers and local activists have been making a more forceful case that the attention and money devoted to high school athletics is a waste and distracts from the primary responsibility of schools to improve academic achievement (see for example Katz, 2010; Weaver, 2011). But supporters of high school athletics respond that critics lack evidence for their arguments and that sports play a critical role in the growth and development of students (see for example Brooks, 2011; Green, 2009; Strauss, 2011).

Bringing more evidence to bear on these debates is important because too many education policy discussions occur in the absence of empirical evidence. The research presented here could help make those discussions be more productive and data-driven.

II. Literature Review

There is a significant body of research that examines how students who participate in high school athletics are affected academically. The general consensus of this literature is that students who are involved in high school athletics tend to have higher academic achievement and better earnings later in life (see for example Broh, 2002; Guest & Schneider, 2003; Lipscomb, 2006; Marsh, 1992; and McNeal, 1995). In these studies, outcome measures included students' grades and standardized test scores, homework completion rates, school dropout rates, and students' stated educational expectations (e.g. intent to enroll in a postsecondary institution).

High school students that participate in sports have higher grades and standardized test scores in mathematics and language arts courses (Broh, 2002). McNeal (1995) found that student athletes were 1.7 times less likely to drop out of school. High school student athletes have also self-reported higher education aspirations, diligence in homework completion, and lower absenteeism, compared to students that do not participate in sports (Marsh, 1992). When applying student fixed effects to measure changes in students' levels of participation, Lipscomb (2006) estimated that athletic participation is associated with a 2% boost in math and science test scores. Meanwhile, student participation in other extracurricular participation (e.g. yearbook, drama club, etc.) was also associated with significant increases, though effect sizes were only half as large. Finally, while associated with positive outcomes across populations, Guest and Schneider (2003) have also found that this positive athletic-academic association was even stronger for students attending schools serving more disadvantaged populations.

While these findings would suggest a positive relationship between successful high school athletic programs and overall academic achievement at those schools, these studies are addressing a slightly different question than the one we are examining here. These studies only tell us about the effects of athletics on students directly involved in high school sports, but it is

quite possible that the larger portion of students who are not on sports teams are harmed academically even if the students on the teams are helped. If this were the case, the overall effect of high school athletic programs on academic achievement could be negative even if participating in sports improves the education of those students who do participate.

Our research question is somewhat different from the one addressed by the bulk of research on high school athletics. We want to know the overall effect of high school athletics on academic success for students who participate as well as those who do not. On this question there is considerably less research and no consensus on the answer. In general, there are two theories about how athletics programs affect academic achievement in high schools: the social capital theory and the resource tradeoff theory.

Strangely, both theories originate from different works by the University of Chicago sociologist, James Coleman. Coleman (1990) helped pioneer the concept of social capital, which refers to the strength of social networks and connections in helping people to achieve their collective goals. While Coleman did not focus on the way in which high school athletics contribute to the formation of social capital, other scholars have extended his work on social capital to that issue. The general hypothesis is that sports provide a medium that can enhance a school's sense of community. In other words, Friday night high school football games are more than just gatherings where spectators watch sports. These games can also serve as venues where parents, students, faculties, staffs, etc. come together, interact, and, subsequently, form tighter social networks (Fritch, 1999). This sense of community, in turn, serves as a source of "social control" or reinforcement of "school/community norms" where stakeholders serve as collaborators in the development of students (Broh, 2002).

Fritch (1999) provides empirical evidence for this hypothesis, finding that a substantial number of high school parents often initially meet other parents at sporting events. Additionally, 76-91% of parents report that they were very likely to discuss what is going on at the school at these events. There is also evidence that the development of social capital positively influences the future community involvement of student athletes. Perks (2007) concludes that participation in athletics strongly correlates with becoming more involved members of one's community. Adults that participated in sports early in life are more likely to volunteer, follow the news, keep up with community affairs, etc. Whether social capital is strengthened by students directly participating in high school sports or by parents and community members gathering at the games, the social capital theory holds that athletics contributes to academics by contributing to the formation of social capital. Parents, students, and other members of the community can more effectively work to improve school quality because of their improved connections to each other (Parcel & Dufur, 2001).

The resource trade-off theory also originated with the work of James Coleman. Schools have a finite amount of money, talented personnel, and ability to establish priorities for students. The more these resources are consumed for athletics, the less there is available for academics. Coleman was most concerned with the limited ability of schools to convey priorities to students. Attention given to high school sports distracts schools from their core mission of improving academic achievement. Mission coherence, according to this view, is an essential part of organization success and athletics diverts schools from having a coherent scholarly mission.

In an extensive case study of ten schools in Chicago, Coleman (1961) observed instances where athletics were possibly responsible for altering or "swamping" the value systems of schools. Coleman argued that athletics and academics seem at odds in a zero-sum game, where

increasing dedication towards one aspect will come at the expense of the other. Even when schools try to strike a balance with their academic and athletic successes, Coleman believed that they would never become "highly academically oriented" (p. 278).

It is interesting that Coleman was so critical of high school athletics given how important he considered social capital in contributing to academic success. Coleman (1988) concluded that higher levels of community and social networking amongst key stakeholders produced greater levels of student academic achievement as well as attainment. And Coleman (1987) attributed the successes of private, religious schools to the fact that shared mission and networking at religious services provided natural venues for the growth of social capital; “In effect, this church-and-school community, with its social networks and its norms about what teenagers should and should not do, constituted social capital beyond the family that aided both family and school in the education of the family’s children” (p. 36). Higher levels of social capital produce greater levels of trust within a community, and a community with greater trust is able to accomplish its mission better than a similar community without that same level of trust (Coleman, 1988). But for some reason Coleman never considered how high school sports, like religious services associated with private schooling, could be significant contributors to social capital formation.

Sporting events actually seem very comparable to the religious services of private, religious schools. Others have observed this similarity. For example, with regard to football in Texas, Glanzer (1998) states, “I do not wish to make the case, although others might like to, that courts should declare football in Texas an unconstitutional establishment of religion” (p. 220). Arnold Mandell (1974) also attested to the view that football is more than just a sporting event: “Football is not a game but a religion, a metaphysical island of fundamental truth in a highly verbalized, disguised society, a throwback of 30,000 generations of anthropological time” (p.

12). More importantly, aside from the possibility of instilling a religious-like fervor in supporters, sporting events can facilitate the development of social capital in a community (Uslaner, 1999). Since public high schools often encompass a broad geographic area and draw their students from a broad diversity of religious and cultural backgrounds, sporting events may provide the only practical venues where parents, faculties, staffs, etc. can congregate, network, and, subsequently, build social capital. Sport may be to public schools what church is to Catholic schools.

III. Data and Methodology

To test these competing theories about the relationship between high school athletics and school-wide academic achievement, we collected information about high schools in Ohio. To measure the emphasis given to athletics, we collected information about the athletic success of high school programs in winning games. Schools that win more often presumably have a culture in which athletics are given a higher priority. In addition, schools that offer more sports or that have more students directly involved in sports teams are also thought to have a greater emphasis on athletics. For academic outcomes we used measures of achievement as well as attainment. In addition, we collected other information about these high schools, such as their per pupil spending, size, and the demographics of their student body, to serve as control variables.

In particular, we run multiple regressions using ordinary least squares (OLS). We examine two different dependent variables over a five year period (2004-05 through 2008-09): percentage proficient or above on the Ohio State standardized test as a measure of achievement and cumulative promotion index (CPI) as a measure of attainment. CPI is an estimate of the high school graduation rate (Swanson & Chaplin, 2003). Since the conditions of this study do not allow for a pure experimental design, we control for other school characteristics that typically

influence educational outcomes. The controls used in the regressions are schools' district per pupil expenditures (PPE), percentage of economically disadvantaged students, percentage minority, percentage male, and average daily memberships (ADM). The independent variables of interest for this study are the schools' five-year cumulative winning percentage and the number of sports offered as a proxy for school-wide participation in sports. Multiple models are designed and tested to assess the robustness of findings.

Data were gathered from three sources: the Ohio Department of Education's (ODE) interactive Local Report Card (iLRC), MaxPreps.com, and the Ohio High School Athletic Association's (OHSAA) membership directory. The ODE data provide school demographics as well as the data needed for both dependent variables for this study. In addition, the ODE determines the percentage proficient for each school through performance on the state's standardized test. CPI, the other dependent variable, is an index that is an average percentage of students promoted to the next grade. A given year's CPI is calculated by dividing the number of students for a year and grade by the enrollment of the preceding grade from the prior year and then multiplying across the four high school cohorts: 10^{th} grade current / 9^{th} grade prior * 11^{th} grade current / 10^{th} grade prior * …. CPI for this study is calculated with the use of ODE's iLRC data.

The final sample size for this study is 657 public high schools in Ohio after excluding schools that did not offer at least one sport. The winning percentages for schools are calculated by going through MaxPreps.com and manually entering the win-loss records for each school's varsity football, boys' basketball, and girls' basketball teams. Almost all high schools offered and had records available on these three sports teams. Information on other high school sports, such as baseball, softball, and golf, was often unavailable, either because the schools did not

offer these sports or the winning records were not provided to MaxPreps. As a result, we confined our analyses to football and boys' and girls' basketball for which we had more complete information.

Schools' sports participation rates were calculated in two ways. The OHSAA maintains a directory of all high schools and the sports that they offer. We manually recorded which sports were offered by each high school. To estimate the total number of students participating in these sports, we weighted each sport according to the OHSAA minimum number of participants required for the school to offer the sport (e.g. basketball = 5; baseball = 9; football = 11; etc.). After controlling for schools' student enrollments, both the number of sports and the minimum number of participants required for a team for all the sports offered at the school were used as proxies for measuring the extent to which the entire school is directly involved with athletics (i.e. weighted sports offered).

All of these measures are averaged over a five year period in order to reduce their volatility. The winning percentage for high school sports teams can vary significantly from year to year. But their average winning percentage over a five year period may better capture the overall priority given to high school athletics at each school. In addition, academic achievement and graduation rates can vary from year to year. Smoothing everything over a five year period should give us a clearer picture of the general relationship between athletic and academic success. See Table 1 for descriptive statistics on all variables used in our analyses.

<<Table 1>>

IV. Results

Controlling for school demographics and characteristics that are normally associated with school performance, a school's commitment to athletics is positively related to academic

performance. This finding is statistically significant and robust to multiple specifications. With regard to attainment, a 10 percentage point increase in a school's overall winning percentage is associated with a 1.3 percentage point improvement in its CPI, which is an estimate of its high school graduation rate (see Table 2). To examine whether a specific sport was driving the results, each sport was examined independently (see Columns (3), (4), and (5)). While football produces the largest impact, each sport independently produces a positive, significant effect (all at $p < 0.01$).

<<Table 2>>

The number of sports offered by a high school as well as the number of students directly involved in sports teams are also positively related to educational attainment. The addition of one sport increases the estimated graduation rate by 0.3 percentage points (an increase of .003 in the CPI). This positive effect on attainment is statistically significant. When high schools have more students directly participating in sports, we also observe a higher CPI score. The addition of 10 students directly involved in sports raises CPI by 0.004, which is a .4 percentage point increase in estimated high school graduation rate (though this effect falls short of statistical significance) (see Table 3).

However, the use of the total number of sports offered or our estimate of the total number of students directly involved on sports teams for the entire year may bias estimates. Since the information on exactly how many students are participating in athletics is not available, this proxy for participation remains susceptible to multi-sport athletes biasing schools' participation rates. Looking at sports offerings and minimum number of participants for a given season helps to reduce this bias by eliminating the possibility that the same students may play on multiple teams during the course of the full year.

Examining a single season does have the advantage of using a school's absolute minimum level of participation. Minimum participation levels in Ohio do however provide the advantage of reflecting a greater variance across school participation levels. The winter sports season was chosen due to the fact that it has the largest number of sports offered of any season, allowing the possibility to increase variance in participation across schools. When we only examine winter sports, an increase of one sport improves CPI by 0.01, which would be a 1 percentage point increase in the high school graduation rate. For the winter, the addition of 10 students directly participating in sports is associated with a 0.015 improvement in CPI, or a 1.5% increase in high school graduation rate (see Table 3).

<<Table 3>>

We observe similar positive and statistically significant relationships between the success and participation in high school sports and student achievement as measured by the Ohio standardized test results. A 10 percentage point increase in overall winning percentage is associated with a 0.25 percentage point increase in the number of students at or above academic proficiency. (See Table 4) When we examine the effect of winning percentage in each sport separately, once again winning in football has the largest effect. Girls' basketball also remains positive and statistically significant (at $p < 0.10$), but boys' basketball is not statistically distinguishable from a null effect.

<<Table 4>>

As for participation and achievement, the addition of one sport increases the number of students at or above academic proficiency by 0.2 of a percentage point. The addition of 10 students directly participating in a sports team improves the proportion of students at or above proficient by 0.4 of a percentage point. Both of these results are statistically significant at $p <$

0.01. (See Table 5) When examining just the winter season, adding one winter sport increases the percentage of students performing proficiently by 0.4 of a percentage point, while an additional 10 student able to directly participate in sports during the winter season relates to a 0.6 percentage point increase in students at or above proficiency (see Table 5).

<<Table 5>>

V. Conclusion

Based on these analyses of Ohio high schools, it appears that there is no necessary trade-off between emphasizing high school athletics and producing academic success. In fact, the more that a high school produces winning teams, offers more sports, and expands the number of students who can participate in athletics, the better a school does academically. These conclusions hold true across multiple ways of measuring academic success and across multiple measures of school devotion to its athletic programs.

The addition of these findings to the discussion about high school athletics under tight budget conditions is especially important because, without these findings, local policy discussions could take place with little or no empirical evidence to inform them. Without evidence, advocates for or against high school athletics could rely primarily on competing theories to make their cases and simply assume that their own plausible theories must be correct.

But the only way to adjudicate among competing plausible theories is with evidence, like the kind we present here. The fact that theories for and against an emphasis on high school athletics can both be derived from the work of James Coleman makes our expectations in the absence of evidence even more uncertain. If we give credence to Coleman's view that social capital is the key to successful schools and if we recognize how high school sports contribute to social capital formation in public schools (like church is to Catholic schools), then we would

expect an emphasis on athletics to increase student achievement. However, if we believe Coleman's argument that schools need to have a mission focused on academics in order to succeed and that athletics divert schools from that focused mission, then we would expect an emphasis on athletics to hurt student achievement. The evidence produced in this study supports the former theory.

Of course, it is difficult for us to be completely certain of the causal relationship between success in high school athletics and academics. While we control for a number of school and student characteristics, we cannot be sure that schools with larger and more successful athletic programs do not also tend to have some other quality that is actually the cause of their academic success. For example, it is possible that schools with greater organizational competence and more effective leadership are able to produce both athletic and academic success. If that were true, organizational competence and effective leadership would be the real causes of higher student achievement, not athletics. Our control variables allow us to say that, even for schools that spend the same amount of money per pupil, have similar student demographics, and are of the same size, having a larger and more successful sports program is associated with higher academic achievement. But we cannot observe or control for other possible explanations for success in both athletics and academics.

Additional research could help solidify a causal understanding of the relationship between athletics and academics. Some areas for future research could include deeper explorations into the specific roles that sports play within schools. For example, how might schools channel social capital, accumulated from sports, into higher academic outcomes? Other opportunities for more rigorous studies could also come about if school budget constraints become more severe. If budgeting constraints lead to more widespread cuts of school sports

programs, then examining the impacts of these discontinuities could make it possible to get a better grasp of the causal relationship between academic and athletic successes.

Even if we cannot be absolutely certain of the causal relationship between sports and academics, our study provides useful descriptive information on this matter. In general, schools that are struggling academically are not the ones with the largest and most successful sports programs. Winning on the field and winning in the classroom tend to go hand in hand. Since we can be confident that this is an accurate description, it is very unlikely that high school sports are a major detriment to academic success.

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Table 1 - Ohio High School Descriptive Statistics (5 year averages)

Variable	Observations	Mean	Std. Dev.	Min.	Max.
Cumulative Promotion Index (CPI)	657	0.82	0.17	0.17	1.24
% Proficient	657	0.87	0.07	0.52	0.95*
Overall Sports Winning %	650	0.49	0.14	0.00	0.87
Football Winning %	600	0.48	0.19	0.00	0.95
Basketball (F) Winning %	649	0.48	0.22	0.00	0.92
Basketball (M) Winning %	650	0.48	0.18	0.00	0.92
Total Sports Offered	657	16.7	3.96	4	24
Weighted Total Sports	657	116	25.6	18	163
Winter Sports Offered	645	4.89	2.05	2	9
Weighted Winter Sports Offered	657	28.6	12.3	10	51
District Per Pupil Expenditure	657	9,225	1,684	6,787	18,789
% Economic Disadvantaged	628	0.24	0.19	0.00	0.97
% Minority	657	0.11	0.23	0.00	1.00
% Male	657	0.51	0.03	0.29	0.76
Average Daily Membership (ADM)	657	757	484	73	2,884

* - Maximum reported % Proficient is capped at 95% by the Ohio Department of Education

Table 2 – Winning Percentages and Academic Attainment

CPI[†]	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Overall[±] Winning%	0.1320				
	(0.0330)***				
Football Winning%		0.0608	0.0768		
		(0.0258)**	(0.0250)***		
Basketball (F) Winning%		0.0391		0.0581	
		(0.0235)*		(0.0214)***	
Basketball (M) Winning%		0.0438			0.0681
		(0.0286)			(0.0261)***
District PPE (x $1,000)	0.0047	0.0049	0.0039	0.0037	0.0034
	(0.0038)	(0.0040)	(0.0040)	(0.0038)	(0.0038)
% Economic Disadvantaged	-0.3764	-0.3767	-0.3935	-0.3873	-0.3932
	(0.0353)***	(0.0371)***	(0.0366)***	(0.0355)***	(0.0351)***
% Minority	-0.2640	-0.2676	-0.2523	-0.2532	-0.2550
	(0.0345)***	(0.0361)***	(0.0357)***	(0.0345)***	(0.0346)***
% Male	0.0322	0.0405	0.0383	0.0292	0.0267
	(0.0390)	(0.0401)	(0.0402)	(0.0393)	(0.0392)
ADM (x100 students)	0.0005	0.0005	0.0008	0.0007	0.0008
	(0.0010)	(0.0011)	(0.0011)	(0.0010)	(0.0010)
Constant	0.8060	0.7953	0.8384	0.8527	0.8532
	(0.0447)***	(0.0475)***	(0.0443)***	(0.0421)***	(0.0423)***
N	621	579	580	620	621
R^2	0.5222	0.5202	0.5168	0.5155	0.5152

* - p-value significant at $p < 0.10$; ** - p-value significant at $p < 0.05$; *** - p-value significant at $p < 0.01$

[†] - CPI restricted to CPI < 1.25 due to outliers (e.g. one case where school has a recorded CPI of 497.17); 17 observations are dropped due to this restriction.

[±] - Cumulative winning percentage for football and boys' and girls' basketball

Table 3 – Sports Participation and Academic Attainment

CPI[†]	**(1)**	**(2)**	**(3)**	**(4)**
Total Sports	0.0034		0.0105	
	(0.0016)**		(0.0030)***	
Weighted Total Sports		0.0004		0.0015
		(0.0002)		(0.0005)***
District PPE (x $1,000)	0.0017	0.0018	0.0010	0.0013
	(0.0038)	(0.0038)	(0.0038)	(0.0038)
% Economic Disadvantaged	-0.4119	-0.4122	-0.4054	-0.4070
	(0.0350)***	(0.0351)***	(0.0348)***	(0.0349)***
% Minority	-0.2266	-0.2299	-0.2302	-0.2319
	(0.0342)***	(0.0342)***	(0.0337)***	(0.0337)***
% Male	0.0281	0.0262	0.0274	0.0259
	(0.0396)	(0.0396)	(0.0393)	(0.0394)
ADM (x100 students)	-0.0008	-0.0003	-0.0018	-0.0013
	(0.0014)	(0.0014)	(0.0013)	(0.0013)
Constant	0.8581	0.8641	0.8751	0.8792
	(0.0439)***	(0.0448)***	(0.0398)***	(0.0399)***
Winter Season Only	NO	NO	YES	YES
N	628	628	628	628
R^2	0.5347	0.5334	0.5406	0.5383

* - p-value significant at $p < 0.10$; ** - p-value significant at $p < 0.05$; *** - p-value significant at $p < 0.01$

Table 4 – Winning Percentages and Academic Achievement

% Proficient	(1)	(2)	(3)	(4)	(5)
Overall[±] Winning%	0.0248				
	(0.0104)**				
Football Winning%		0.0157	0.0195		
		(0.0078)**	(0.0076)***		
Basketball (F) Winning%		0.0129		0.0121	
		(0.0071)*		(0.0067)*	
Basketball (M) Winning%		0.0053			0.0096
		(0.0086)			(0.0082)
District PPE (x $1,000)	0.0027	0.0041	0.0038	0.0031	0.0025
	(0.0012)**	(0.0012)***	(0.0012)***	(0.0012)***	(0.0012)**
% Economic Disadvantaged	-0.2246	-0.2181	-0.2222	-0.2278	-0.2283
	(0.0112)***	(0.0112)***	(0.0110)***	(0.0111)***	(0.0111)***
% Minority	-0.1168	-0.1347	-0.1314	-0.1162	-0.1146
	(0.0108)***	(0.0109)***	(0.0108)***	(0.0107)***	(0.0109)***
% Male	-0.0299	-0.0253	-0.0260	-0.0307	-0.0309
	(0.0125)**	(0.0122)**	(0.0122)**	(0.0124)**	(0.0125)**
ADM (x100 students)	0.0020	0.0020	0.0020	0.0020	0.0021
	(0.0003)***	(0.0003)***	(0.0003)***	(0.0003)***	(0.0003)***
Constant	0.8957	0.8774	0.8873	0.9002	0.9063
	(0.0140)***	(0.0143)***	(0.0133)***	(0.0130)***	(0.0132)***
N	636	592	593	634	636
R^2	0.7376	0.7617	0.7606	0.7417	0.7358

* - p-value significant at $p < 0.10$; ** - p-value significant at $p < 0.05$; *** - p-value significant at $p < 0.01$

[±] - Cumulative winning percentage for football and boys' and girls' basketball

Table 5 – Sports Participation and Academic Achievement

% Proficient	(1)	(2)	(3)	(4)
Total Sports	0.0023		0.0040	
	(0.0005)***		(0.0010)***	
Weighted Total Sports		0.0004		0.0006
		(0.0001)***		(0.0002)***
District PPE (x $1,000)	0.0019	0.0019	0.0019	0.0020
	(0.0012)*	(0.0012)	(0.0012)	(0.0012)*
% Economic Disadvantaged	-0.2320	-0.2306	-0.2310	-0.2310
	(0.0111)***	(0.0111)***	(0.0112)***	(0.0112)***
% Minority	-0.1015	-0.1014	-0.1069	-0.1071
	(0.0108)***	(0.0107)***	(0.0107)***	(0.0107)***
% Male	-0.0297	-0.0309	-0.0308	-0.0314
	(0.0127)**	(0.0127)**	(0.0127)**	(0.0127)**
ADM (x100 students)	0.0007	0.0007	0.0010	0.0010
	(0.0004)*	(0.0004)	(0.0004)**	(0.0004)**
Constant	0.8855	0.8802	0.9043	0.9050
	(0.0139)***	(0.0141)***	(0.0127)***	(0.0127)***
Winter Season Only	NO	NO	YES	YES
N	645	645	645	645
R^2	0.7508	0.7523	0.7494	0.7491

* - p-value significant at p < 0.10; ** - p-value significant at p < 0.05; *** - p-value significant at p < 0.01

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