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ARE STUDENT-ATHLETES EXPLOITED?

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ABSTRACT

The Supreme Court decision NCAA vs Alston (June 2021) heightened interest in the benefits and costs of participating in sports for student-athletes. Anecdotal evidence about the exploitation of student-athletes was cited in the opinion and the media. Using panel data, we follow two different cohorts of students from high school through college and beyond. We examine the accuracy of the anecdotes as descriptions of the actual experiences of student-athletes. We show that, on average, student-athletes either out-perform or perform the same as observationally identical non-athletes in terms of graduation and post-collegiate salaries. Participation in athletics promotes social mobility.

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A data appendix is available at http://www.nber.org/data-appendix/w29072

I. Introduction

Many well-intentioned and influential policymakers believe that college athletes are being exploited. For example, Associate Justice of the Supreme Court, Brett Kavanaugh, recently made this claim, stating,

> *But the student-athletes who generate the [college sports] revenues, many of whom are African American and from lower-income backgrounds, end up with little or nothing.*[1]

Nocera and Strauss (2016) present provocative anecdotes analogizing the plight of college athletes to indentured servitude. This paper confronts these anecdotes with data from large representative samples.

The rhetorical power of popular portrayals of the sufferings of college athletes illustrates a maxim of modern journalism: *"A single death is a tragedy; a million deaths are a statistic."*[2] Editors of trade books urge authors to tell personal stories and not present dry facts. Often sports journalists and bloggers sensationalize anecdotal stories for their followers. However good these strategies are for sales and advocacy, they are very bad for fact-based policy.

This paper shows that the anecdotes in play do not accurately portray the state of student athletics in America today. We show that, on average, student-athletes, including disadvantaged and minority students, are not harmed by—and benefit from—participation in sports at both collegiate and secondary school levels, compared to students with the same measured characteristics who do not participate. We correct major misperceptions that shape public policy.

We examine the consequences of participation in intercollegiate athletics for students across all types of colleges. We also study the outcomes for students participating in intercollegiate football and basketball at Division I and Football

[1] Supreme Court decision in Re: National Collegiate Athletic Association v. Shawne Alston, et al. American Athletic Conference, et al. v. Shawne Alston, et al., Decided June 21, 2021.

[2] This quote is attributed to Joseph Stalin. See Tirman (2011).

Bowl Subdivision (FBS) schools, compared to those non-athletes who are otherwise similar.[3] These institutions are often characterized as football and basketball "factories." We show that participation in athletics, on average, causes no harm, as these student-athletes perform as well as or better than comparable non-athlete students. Further, we show that participation promotes the social mobility of minority athletes and those from lower-income families.

Participation in high school varsity athletics improves a student's prospects of finishing high school and attending college. Attending college provides lifelong benefits. However, critics argue that participation in athletics competes with learning and that many athletes drop out before completing their education. They argue that student-athletes do not have a full college experience. We show otherwise. We analyze the progression of athletes through college and into their post-school careers. We show that, on average, those who play varsity intercollegiate sports at four-year institutions, and Division I institutions in particular, graduate at higher rates and earn higher post-school starting wages than otherwise comparable non-athletes.[4]

We analyze two large nationally representative longitudinal datasets: The National Educational Longitudinal Survey (NELS) and the Education Longitudinal Survey (ELS). Longitudinal data enable us to examine the careers of student-athletes as they progress through schooling. We control for cognitive and socioemotional skills as well as family background and environmental variables that affect life outcomes.

We show that substantial benefits are often associated with participation in athletics in general, and in intercollegiate athletics in particular, especially for members of disadvantaged groups. Further, we find little or no evidence of adverse

[3] See Appendix A for descriptions of the precise construction of the athletics variables and other variables used in our analyses.

[4] The survey data we use follows students through their mid-20's, thereby providing information on early life-cycle wages.

effects associated with participation in athletics on academic or labor market outcomes. We reach five main conclusions:

(1) Participation in athletics is associated with a higher probability of graduating from high school.[5] Graduation is an important step in the path toward subsequent achievement and improved life outcomes for student-athletes.

(2) Participation in high school athletics is associated with significant increases in the probability of attending college.[6] This finding is consistent with what would be expected if high school students, in the hope of receiving a scholarship, invest more in their academic and athletic capital to meet the eligibility and admissions standards imposed by colleges. The anticipation of receiving an athletic scholarship can motivate the student learning in high school that brings future rewards.

(3) Intercollegiate varsity athletes are as likely or more likely to earn at least a Bachelor's degree relative to otherwise comparable non-athletes.[7] *"One and done"* is an anecdote, not a valid characterization of college athletics as a whole.

(4) Participation in athletics is associated with better starting wages for participants compared to observationally identical non-athletes.[8]

(5) Participation in scholastic athletics opens the door to college education and its benefits for minorities and disadvantaged students.

In the rest of the paper, we justify these conclusions. Part II presents our conceptual framework and some relevant prior literature. Part III describes our data and methodology. Part IV presents our empirical estimates. Part V summarizes the paper. Extensive web appendices document the variables we use in analyzing the NELS and ELS data. A full set of regression results is presented there.

[5] See Appendix Tables C.1A, C.2A, C.17A, and C.18A.

[6] See Appendix Tables C.3A, C.4A, C.19A, and C.20A.

[7] See Appendix Tables C.13C, C.14C, C.29C, and C.30C.

[8] See Appendix Tables C.15C, C.16C, C.15C, and C.32C.

II. The Economics of Human Capital Investment Provides a Framework for Analyzing the Impact of Athletics on Life Outcomes

A large literature shows that the returns from human capital investments exceed immediate financial benefits.[9] It supports the view that the benefits student-athletes receive from attending college and participating in intercollegiate athletics go well beyond athletic scholarships and other financial benefits accrued during one's time at school. Student-athletes receive benefits from various aspects of their college experiences, including access to top academic programs, sports training, team participation experiences, and social benefits from playing for a high-profile program such as a Division I school, in addition to receiving the value of hundreds of thousands of dollars for tuition, fees, room and board, and other costs of attending college.

Leadership and teamwork skills that are acquired or enhanced through participation on a sports team provide increased value in the job market following a student's time in college.[10] The benefits of improved knowledge about exercise, eating habits, and general physical care last well beyond school years and provide value later in life. Skills and knowledge that improve an individual's future productivity at work (or at other activities such as personal care) are forms of human capital. Heckman, Humphries, and Veramendi (2018a, 2018b) find that educational investments positively influence diverse outcomes later in life, including earnings, health, and a variety of social outcomes such as personality skills that predict many life outcomes.[11]

Many other studies in economics examine the social and non-monetary returns to education. For example, Milligan, Moretti, and Oreopoulos (2004) and

[9] See, e.g., Becker (1964).

[10] For example, see Shulman and Bowen, 2001. Specifically, in discussing the post-schooling careers of student- athletes, the authors report that athletes tend to have better teamwork skills and they attribute positive labor market outcomes to these types of skills.

[11] See Almlund, Duckworth, Heckman, and Kautz (2011).

Henderson, Olbrecht, and Polachek (2006) find positive effects of education on civic participation and involvement.[12]

Oreopoulos and Salvanes (2011) survey several non-monetary outcomes that are positively affected by education.[13] For example, more educated individuals tend, on average, to have higher levels of job satisfaction and jobs with higher levels of prestige. Controlling for income, higher levels of education are associated with lower separation/divorce rates and improved parenting skills, which benefits the next generation (see Cunha, Heckman, and Schennach, 2010; Cunha and Heckman, 2007; García, Heckman, and Ronda, 2021). There are also benefits in terms of learning about cooperation and teamwork and in terms of experiencing the satisfaction of completing a goal. The benefits percolate through subsequent schooling and lead, on average, to higher wages.

III. Data and Methodology

We investigate differences in educational and labor market outcomes between student-athletes and non-athletes. The National Education Longitudinal Study of 1988 (NELS:88) and the Education Longitudinal Survey of 2002 (ELS:2002) are public-use datasets downloaded from a public website. Restricted-use data are obtained under contract with the U.S. Department of Education, Institute of Education Sciences. The restricted-use data provide more detailed information on individual respondents, including information on the post-secondary institutions they attend, which is needed to identify attendance at FBS and other Division I schools.

NELS data are a nationally representative sample of students initially surveyed as eighth graders in 1988. A sample of these initial respondents was

[12] Milligan et al. (2004).

[13] Oreopoulos et al. (2011).

surveyed again in 1990, 1992, 1994 and 2000.[14] Overall, 10,827 individuals responded in every survey wave. Our analysis of the NELS data is based on this set of respondents. Student questionnaires across these survey years cover school experiences, activities, school and labor market outcomes, cognitive and socioemotional traits, and family background characteristics.[15]

The base year survey (1988) captures the characteristics and activities of students as they are about to leave middle or junior high school. The first follow-up (1990) examines these students, many of whom are sophomores in high school. The second follow-up occurs in 1992, when many of these individuals are seniors in high school. The third follow-up surveys these individuals in 1994, when many sample members were enrolled at a post-secondary institution. The final NELS survey wave occurs in 2000, at which point many of the respondents completed their post-secondary education and started their careers.

The ELS data are a representative sample of students surveyed in 2002, 2004, 2006, and 2012. We analyze the outcomes of the 10,895 individuals who respond across every survey wave. Unlike the NELS survey, the ELS survey begins surveying individuals when many of them are sophomores in high school (2002). The first follow-up occurs in 2004, when many of these respondents are in the 12th grade. The second follow-up (2006) occurs at a point in their lives when many of the individuals are enrolled at a post-secondary institution. The last survey occurs in 2012, when most students are in their mid-20's. The ELS survey covers many of the same or similar questions covered by NELS, including educational and income outcomes, measures of cognitive and non-cognitive ability, socio-economic status (including parents' education and income), personal aspirations and attitudes

[14] Additional students were added in the first two follow-up periods to maintain the representativeness of the sample.
[15] See http://nces.ed.gov/surveys/nels88/index.asp.

towards school, work, and home, educational resources and support, and extracurricular activities.[16]

We analyze the NELS and ELS data separately rather than combine them into one dataset. While the NELS and ELS surveys ask many similar questions, there are differences in some question formats. If the data are pooled, the creation of similar but not identical variables across the two surveys might introduce imprecision in the measurement of the various effects of interest.

While specific questions are different, the corresponding measures capture similar characteristics and activities. Some of these differences are due to the introduction of new research and developments in the construction of sample questions. The specific variables used in our analyses are discussed in Appendix A.

While both the NELS and ELS surveys ask respondents about high school athletics participation and college athletics participation, specific sports are only identified in the data at the high school level. For males we use the term "college football players and college basketball players" to refer to intercollegiate athletes who participated in either varsity high school football, varsity high school basketball, or both.[17] For females, we use the term "college basketball players" to refer to intercollegiate athletes who participated in high school basketball.[18]

Methodology

The longitudinal nature of the NELS and ELS data allows us to examine the impact of participation in athletics at each stage of schooling as well as to assess

[16] See https://nces.ed.gov/surveys/els2002/.

[17] In the NELS and ELS data that we examine, a majority of male college athletes either a) only played football in high school, b) only played basketball in high school, c) only played football and basketball in high school, or d) did not play football or basketball in high school. For the above four groups of college athletes, there exists an unambiguous high school sports classification for the purposes of our analysis (college basketball/football athletes and non-basketball/football college athletes). Likewise, a majority of female college athletes either a) only played high school basketball or b) did not play high school basketball.

[18] We discuss the definitions used in NELS and ELS in detail in Appendix C.

the cumulative effects of participation in athletics. For example, consider the effect of participation in high school varsity athletics. Below, we report that—controlling for differences in measured traits—participation in high school athletics increases the likelihood of high school graduation.[19] High school graduation, in turn, increases the likelihood of college attendance, and college attendance is a necessary requirement for earning a Bachelor's degree. It is well documented that college graduates earn, on average, higher wages than those who do not have a college degree. Participation in high school athletics is associated with higher wages in one's mid-20's via the channel of post-secondary education.

We use standard regression analysis to examine educational and labor market outcomes while carefully controlling for a host of individual characteristics, including cognitive abilities, socioemotional skills, socio-economic background, and family histories—the omission of which might lead to spurious relationships between participation in athletics and the outcomes we study. These methods enable us to isolate the effect of athletic participation compared to observationally identical non-athletes and to evaluate whether our estimates are statistically significant.[20]

Studies such as those by Harper, Williams, and Blackman (2013) do not control for student background characteristics such as ability, motivation, and parental resources when they examine differences in college graduation rates between African American student-athletes and other college students. They come to substantially different conclusions from the ones we report because they are not comparing comparable people. A full set of results, including a list of controls used for each outcome, is presented in Appendix C. We now summarize our findings.

[19] See Appendix Tables C.1A, C.2A, C.17A, and C.18A.

[20] Throughout our report, we test for statistical significance at a 5% significance level.

IV. Summary of Our Empirical Results

We summarize our main results stage-by-stage starting from high school. All regressions use a common set of background and trait variables. We find that, all else equal, participation in athletics **confers considerable benefits** when analyzing various subsamples of individuals in the data. There is no evidence of exploitation or harm resulting from participation in college athletics for any group. That is, on average, athletes do not perform worse in school than other comparable non-student athletes.

(1) All else equal, high school athletes are on average statistically significantly **more likely to graduate** from high school than comparable non-athletes. In particular, those who participate in football or basketball are statistically significantly more likely to graduate from high school than comparable non-athletes.[21]

(2) All else equal, conditional on graduating from high school, the likelihood of **attending a post-secondary educational institution is statistically significantly higher** on average both for all high school athletes relative to comparable non-athletes and for high school football and basketball players relative to comparable non-athletes.[22,23]

(3) Both athletes in general, and football and basketball players in particular, **graduate college at statistically significantly higher rates than non-athletes**.

(4) Athletes earn **statistically significantly higher wages** in their mid-20's than comparable non-athletes.[24]

[21] See Appendix Tables C.1A, C.2A, C.17A, and C.18A.

[22] See Appendix Tables C.3A, C.4A, C.4A, C.19A, and C.20A.

[23] In the NELS balanced sample, approximately 10% of high school athletes continued to participate in college athletics. In the ELS balanced sample, approximately 14% of high school athletes continued to participate in college athletics. Also, note that some football players and some basketball players also participate in other sports as well. These individuals are included as students who are considered to have played football or basketball.

[24] Specifically, we find that among college students, all else equal, high school athletes are, on average, as likely or statistically significantly more likely to earn at least a Bachelor's degree than comparable non-athletes. Some of these high school athletes also participated in intercollegiate athletics. See Appendix Tables C.13A, C.14A, C.29A, and C.30A for

(5) The empirical evidence shows that **minorities and persons from disadvantaged families benefit, or are not harmed, from participation in athletics**, performing as well as or better than comparable non-athletes. Benefits to individuals in these groups can have wide-ranging effects on families and communities, as skills and opportunities for social mobility are improved**.**

We document these claims in a series of tables with similar formats. We compare athletes with non-athletes at each educational level. Statistically significant results are indicated with asterisks. Estimates without asterisks are for outcomes that, on average, are the same for athletes and non-athletes. We present results from both the ELS and NELS data sets to demonstrate the robustness of our findings. We use the same set of family background variables, ability measures, and noncognitive skill measures in all tables. This enables us to compare comparables. The appendix demonstrates the robustness of our findings relative to alternative choices of trait and family background variables in conducting analyses.

IV.I High School Graduation

Table 1 presents our results for high school graduation for each data set. Estimates are generally larger in ELS, but estimates are statistically significant and in agreement across datasets.

In ELS, on average, participation in high school athletics increases the probability that both males and females graduate high school. Among females, high school athletes are 1.8 percentage points more likely to graduate than comparable non-athletes, and basketball players are 3.0 percentage points more likely to graduate than comparable non-athletes. For males, athletes are 4.6 percentage points more likely to graduate than comparable non-athletes, and those who play

further details on our estimates. Additionally, we find that future wages are higher for athletes. Namely, examining individuals in their mid-20's, all else equal, we find that, on average, those who participated in high school athletics in general, as well as those who participated in high school football or basketball in particular, earn wages that are statistically significantly higher than comparable individuals who did not participate in high school athletics. See Appendix Tables C.15A, C.16A, C.31A, and C.32A for further details on our estimates.

either football or basketball are 5.0 percentage points more likely to graduate than comparable non-athletes. These results are in general agreement with what is found in the NELS data.

TABLE 1— GRADUATE HIGH SCHOOL?*

	NELS	ELS
Males		
HS Sophomore Varsity Athlete (% points)	**7.8*** **	**4.6*** **
Coefficient Estimate	0.078***	0.046***
(Standard Error)	(0.009)	(0.009)
[95% Confidence Interval]	[0.060, 0.097]	[0.028, 0.064]
High School Sophomore BB/FB Varsity Athlete (% points)	**8.4*** **	**5.0*** **
Coefficient Estimate	0.084***	0.050***
(Standard Error)	(0.010)	(0.010)
[95% Confidence Interval]	[0.064, 0.105]	[0.030, 0.071]
Females		
HS Sophomore Varsity Athlete (% points)	**4.3*** **	**1.8** **
Coefficient Estimate	0.043***	0.018**
(Standard Error)	(0.007)	(0.007)
[95% Confidence Interval]	[0.029, 0.057]	[0.005, 0.030]
High School Sophomore BB/FB Varsity Athlete (% points)	**3.9*** **	**3.0*** **
Coefficient Estimate	0.039***	0.030***
(Standard Error)	(0.011)	(0.008)
[95% Confidence Interval]	[0.018, 0.060]	[0.013, 0.046]

Notes: Summary of results of Tables C.1A, C.2A, C.17A, C.18A. Each cell corresponds to the athletic effect of interest from a particular regression specification. Robust standard errors in parentheses. 95-percent confidence intervals in square brackets. *** and ** denote statistical significance of the coefficient estimate at the 0.1 and 1 percent level, respectively.

*Received high school degree. Linear probability model.

In the appendices, we show that in both NELS and ELS data, males below the poverty line who participate in high school athletics are more likely to graduate high school. In NELS, on average, high school athletes below the poverty line are 11.6 percentage points more likely to graduate from high school than comparable non-athletes.[25] Similarly, for males below the poverty line, all else equal, on average, those playing high school football or basketball are a statistically significant 10.7 percentage points more likely to graduate high school than comparable non-athletes. Similar results hold for ELS.[26]

[25] See Appendix Table C.1B.

[26] See Appendix Table C.1B.

IV.II Attending College

The effects of participation in high school athletics on attending a post-secondary institution are comparable across datasets. See Table 2.

TABLE 2: ATTENDED ANY POST-SECONDARY INSTITUTION WITHIN TWO YEARS OF HIGH SCHOOL GRADUATION FOR HIGH SCHOOL GRADUATES*

	NELS	**ELS**
Males		
HS Sophomore Varsity Athlete (% points)	**9.3*** **	**4.3** **
Coefficient Estimate	0.093***	0.043**
(Standard Error)	(0.015)	(0.013)
[95% Confidence Interval]	[0.063, 0.123]	[0.017, 0.069]
High School Soph. BB/FB Varsity Athlete (% points)	**10.3*** **	**4.6** **
Coefficient Estimate	0.103***	0.046**
(Standard Error)	(0.017)	(0.015)
[95% Confidence Interval]	[0.070, 0.137]	[0.016, 0.076]
Females		
HS Sophomore Varsity Athlete (% points)	**8.2*** **	**5.8*** **
Coefficient Estimate	0.082***	0.058***
(Standard Error)	(0.013)	(0.010)
[95% Confidence Interval]	[0.056, 0.108]	[0.039, 0.078]
High School Soph. BB Varsity Athlete (% points)	**9.8*** **	**6.0*** **
Coefficient Estimate	0.098***	0.060***
(Standard Error)	(0.019)	(0.015)
[95% Confidence Interval]	[0.060, 0.136]	[0.031, 0.090]

Notes: Summary of results of Tables C.3A, C.4A, C.19A, C.20A. Each cell corresponds to the athletic effect of interest from a particular regression specification. Robust standard errors in parentheses. 95-percent confidence intervals in square brackets. *** and ** denote statistical significance of the coefficient estimate at the 0.1 and 1 percent level, respectively.

*Linear probability model.

In ELS, all else equal, on average, high school graduates who participate in high school athletics are statistically significantly more likely to attend a post-secondary institution. In particular, male athletes are 4.3 percentage points more likely to attend a post-secondary institution than comparable males who did not participate in sports, and female athletes are 5.8 percentage points more likely to attend a post-secondary institution than comparable females who did not participate in sports. This also holds when we examine the impacts of participating in the specific sports of football and basketball. Among males, those who played football or basketball are 4.6 percentage points more likely to attend a post-secondary institution than comparable non-athletes. Furthermore, female high school basketball players are 6.0 percentage points more likely to attend a post-secondary institution than

comparable females who did not participate in high school athletics. Beneficial effects are found for students from disadvantaged backgrounds (see Table 3).

TABLE 3: BREAKDOWN: ATTEND ANY POST-SECONDARY INSTITUTION WITHIN TWO YEARS OF HIGH SCHOOL GRADUATION*
CONDITIONAL ON GRADUATION FROM HIGH SCHOOL

Subpopulation:	Below the Poverty Line		Single-Parent Household		African Americans	
	NELS	ELS	NELS	ELS	NELS	ELS
Males						
HS Sophomore Varsity Athlete (% points)	**13.1***	**7.8**	**7.7***	**3.8**	**17.2****	**2.4**
Coefficient Estimate	0.131*	0.078	0.077*	0.038	0.172**	0.024
(Standard Error)	(0.056)	(0.062)	(0.034)	(0.027)	(0.065)	(0.049)
[95% Confidence Interval]	[0.021, 0.241]	[-0.042, 0.199]	[0.011, 0.143]	[-0.015, 0.092]	[0.044, 0.300]	[-0.072, 0.119]
HS Soph. BB/FB Varsity Athlete (% points)	**17.2****	**11.1**	**8.6***	**0.9**	**18.8****	**2.1**
Coefficient Estimate	0.172**	0.111	0.086*	0.009	0.188**	0.021
(Standard Error)	(0.060)	(0.068)	(0.038)	(0.032)	(0.067)	(0.052)
[95% Confidence Interval]	[0.053, 0.290]	[-0.023, 0.245]	[0.013, 0.160]	[-0.054, 0.072]	[0.057, 0.319]	[-0.080, 0.123]
Females						
HS Sophomore Varsity Athlete (% points)	**10.5***	**5.0**	**10.7*****	**7.4*****	**-3.3**	**3.5**
Coefficient Estimate	0.105*	0.050	0.107***	0.074***	-0.033	0.035
(Standard Error)	(0.049)	(0.040)	(0.028)	(0.020)	(0.049)	(0.035)
[95% Confidence Interval]	[0.009, 0.201]	[-0.028, 0.129]	[0.053, 0.161]	[0.035, 0.113]	[-0.129, 0.063]	[-0.035, 0.104]
HS Soph. BB Varsity Athlete (% points)	**7.3**	**4.8**	**11.9****	**7.9***	**7.3**	**1.4**
Coefficient Estimate	0.073	0.048	0.119**	0.079*	0.073	0.014
(Standard Error)	(0.069)	(0.074)	(0.043)	(0.032)	(0.066)	(0.053)
[95% Confidence Interval]	[-0.063, 0.208]	[-0.096, 0.193]	[0.036, 0.203]	[0.017, 0.141]	[-0.057, 0.203]	[-0.090, 0.119]

Notes: Summary of results of Tables C.3B, C.4B, C.19B, C.20B. Each cell corresponds to the athletic effect of interest from a particular regression specification. Robust standard errors in parentheses. 95-percent confidence intervals in square brackets. ***, **, and * denote statistical significance of the coefficient estimate at the 0.1, 1, and 5 percent level, respectively.

*Linear probability model.

We generally find statistically significant beneficial effects in ELS data. We find beneficial but not statistically significant effects in NELS data. None of our estimates show any harmful effect of participation at the high school level for disadvantaged students in terms of their college attendance (see Table 3). For example, in the ELS data, for males below the poverty line, [27] those who participate in high school athletics are, on average, a statistically significant 15.0 percentage

[27] When analyzing ELS data, we use 2001 U.S. poverty thresholds (adjusted for household size and number of children). When analyzing NELS data, we use 1987 U.S. poverty thresholds (adjusted for household size and number of children). Poverty thresholds for both years are available at https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html.

points more likely to graduate high school compared to non-athletes with the same observed characteristics.[28]

For those who graduate high school, all else equal, the effect of participating in high school athletics on the likelihood of attending a post-secondary institution is, on average, the same for students below the poverty line compared to otherwise identical students from poverty households.[29] For males below the poverty line who graduate from high school, those who play high school football or basketball are, on average, 17.2 percentage points more likely to attend a post-secondary institution.

Similar results are found for students from single-parent households in ELS.[30] Male high school athletes from single-parent households are 7.4 percentage points more likely to graduate from high school than comparable non-athletes.[31] Examining the same group of males, those who are high school football or basketball players are, on average, 6.8 percentage points more likely to graduate from high school than comparable non-athletes from single-parent households.[32] These results are statistically significant.

Females from single-parent households also benefit from playing high school basketball. All else equal, we find that female high school basketball players are, on average, 5.2 percentage points more likely to graduate from high school than comparable non-athletes.[33] Furthermore, for females from single-parent households who graduate from high school, high school basketball players are, on

[28] See Appendix Table C.17B.

[29] See Appendix Tables C.19B, C.20B.

[30] When analyzing ELS data, we use 2001 U.S. poverty thresholds (adjusted for household size and number of children). When analyzing NELS data, we use 1987 U.S. poverty thresholds (adjusted for household size and number of children). Poverty thresholds for both years are available at https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html.

[31] Appendix Table C.17B.

[32] Appendix Table C.17B.

[33] Appendix Table C.18B.

average, 7.9 percentage points more likely to attend a post-secondary institution (see Table 3). These results are statistically significant.

In NELS data, students from single-parent households who are high school football and basketball players are statistically significantly more likely to graduate from high school compared to non-athletes.[34] Among high school graduates, they are also statistically significantly more likely to attend a post-secondary institution than comparable non-athletes.

For ELS, African Americans who participate in high school athletics are, on average, 6.7 percentage points more likely to graduate from high school than comparable non-athletes.[35] This result is statistically significant. For other outcomes, we show no harm. Athletes perform like comparable non-athletes. In no case do we find statistically significant harm or exploitation for either sex.

For African American males, the NELS data show beneficial results. In particular, Table 3 shows that, among African American males, all else equal, high school athletes are, on average 11.0 percentage points more likely to graduate from high school[36] and 17.2 percentage points more likely to attend a post-secondary institution. These results are statistically significant. For ELS, the results show beneficial results. In no cases is participation in athletics harmful.

IV.III College Graduation

The findings heretofore discussed show evidence of the benefits of participation in high school athletics in general, and in high school football and high school basketball in particular. We also find that athletes have a **higher probability of obtaining at least a Bachelor's degree** relative to comparable college students who did not participate in intercollegiate athletics. See Table 4.

[34] Appendix Tables C.1B, C.2B.
[35] Appendix Table C.18B.
[36] Appendix Table C.1B.

TABLE 4: EARNED A BACHELOR'S DEGREE OR HIGHER*

	NELS	ELS
Males		
College Athlete (% points)	**6.1***	**6.7****
Coefficient Estimate	0.061*	0.067**
(Standard Error)	(0.028)	(0.026)
[95% Confidence Interval]	[0.006, 0.115]	[0.017, 0.118]
College FB/BB Athlete (% points)	**4.9**	**6.9***
Coefficient Estimate	0.049	0.069*
(Standard Error)	(0.037)	(0.035)
[95% Confidence Interval]	[-0.023, 0.121]	[0.001, 0.138]
Females		
College Athlete (% points)	**10.9*****	**1.9**
Coefficient Estimate	0.109***	0.019
(Standard Error)	(0.028)	(0.027)
[95% Confidence Interval]	[0.053, 0.164]	[-0.033, 0.071]
College BB Athlete (% points)	**16.7*****	**-0.8**
Coefficient Estimate	0.167***	-0.008
(Standard Error)	(0.039)	(0.053)
[95% Confidence Interval]	[0.090, 0.244]	[-0.111, 0.095]

Notes: Summary of results of Tables C.13C, C.13C, C.29C, C.30C. Conditional on attending a non-profit 4-year PSE institution. Each cell corresponds to the athletic effect of interest from a particular regression specification. Robust standard errors in parentheses. 95-percent confidence intervals in square brackets. ***, **, and * denote statistical significance of the coefficient estimate at the 0.1, 1, and 5 percent level, respectively.

*Linear probability model.

For NELS students, there are substantial benefits attributable to participation in intercollegiate athletics. They are more likely to earn at least a Bachelor's degree relative to other comparable non-athlete college students. For example, among male college students, those who participate in intercollegiate athletics are 6.1 percentage points more likely to earn at least a Bachelor's degree. Among female college students, all else equal, those who participate in intercollegiate athletics are, on average, 10.9 percentage points more likely to earn at least a Bachelor's degree (see Table 4).[37]

[37] Similarly, using Multinomial Logit to examine the categorical outcome of highest level of educational attainment of those who attended a post-secondary education institution, all else equal, we find that intercollegiate athletes are on average statistically significantly more likely to earn a Bachelor's degree than non-athletes. In particular, all else equal, male intercollegiate athletes in ELS are on average 13.1 percentage points more likely to attain a Bachelor's degree than non-athletes, and female athletes are 11.4 percentage points more likely to attain a Bachelor's degree than non-athletes (based on the results of Appendix Tables C.27D and C.28D). In NELS, all else equal, male intercollegiate athletes are on average 15.5 percentage points more likely to attain a Bachelor's degree than non-athletes, and female athletes are 22.3 percentage points more likely to attain a Bachelor's degree than non-athletes (based on the results of Appendix Tables C.11D and C.12D).

In ELS, college athletes are as likely or more likely to earn at least a Bachelor's degree relative to comparable college students who did not participate in intercollegiate athletics (see Table 4). Many of these results are statistically significant. College male football and basketball players are statistically significantly more likely to earn at least a Bachelor's degree compared to observationally identical individuals who did not participate in intercollegiate athletics. For females, there is no evidence of any harm from participating in athletics.

Division I and FBS Students

Among high school graduates, all else equal, we find that those who participated in high school athletics are on average statistically significantly more likely to attend a Division I school than comparable non-athletes. This also holds true when we examine only high school football and basketball players compared to non-athletes.[38] In NELS, we find that, all else equal, high school athletes are on average statistically significantly more likely to attend a Division I school than comparable non-athletes.[39]

We examine the extent to which the beneficial effects of participation in athletics extend to those who specifically attend FBS and other Division I institutions, the "football factories" of common lore. On average, when examining both the NELS and ELS datasets, we find no adverse effects of participation in intercollegiate athletics on various outcomes. We also find no difference in the effect of intercollegiate athletics on various outcomes when comparing Division I students with comparable non-Division I students.[40]

[38] Appendix Tables C.23A, C.24A.

[39] Appendix Tables C.7A, C.8A.

[40] See Appendix Tables C.13C, C.14C, C.29C, C.30C, C.15C, C.16C, C.31.C, and C.30C.

TABLE 5: DIVISION I AND FBS BREAKDOWN: EARNED A BACHELOR'S DEGREE OR HIGHER

Subpopulation:	**Division I**		**FBS**	
	NELS	**ELS**	**NELS**	**ELS**
Males				
College Athlete (% points)	**6.1**	**8.5***	**4.1**	**2.1**
Coefficient Estimate	0.061	0.085*	0.041	0.021
(Standard Error)	(0.038)	(0.036)	(0.057)	(0.052)
[95% Confidence Interval]	[-0.014, 0.135]	[0.015, 0.155]	[-0.071, 0.153]	[-0.081, 0.122]
College FB/BB Athlete (% points)	**9.6***	**8.5**	**6.3**	**-2.5**
Coefficient Estimate	0.096*	0.085	0.063	-0.025
(Standard Error)	(0.047)	(0.053)	(0.069)	(0.081)
[95% Confidence Interval]	[0.005, 0.188]	[-0.019, 0.189]	[-0.071, 0.198]	[-0.184, 0.134]
Females				
College Athlete (% points)	**5.5**	**0.6**	**4.8**	**1.2**
Coefficient Estimate	0.055	0.006	0.048	0.012
(Standard Error)	(0.041)	(0.038)	(0.058)	(0.049)
[95% Confidence Interval]	[-0.025, 0.136]	[-0.069, 0.081]	[-0.066, 0.162]	[-0.083, 0.107]
College BB Athlete (% points)	**14.4****	**-3.7**	**14.8**	**-3.8**
Coefficient Estimate	0.144**	-0.037	0.148	-0.038
(Standard Error)	(0.048)	(0.107)	(0.083)	(0.154)
[95% Confidence Interval]	[0.050, 0.238]	[-0.248, 0.173]	[-0.014, 0.310]	[-0.339, 0.263]

Notes: Summary of results of Tables C.13C, C.14C, C.29C, C.30C. Conditional on attending a non- profit 4-year PSE institution. Each cell corresponds to the athletic effect of interest from a particular regression specification. Robust standard errors in parentheses. 95-percent confidence intervals in square brackets. ** and * denote statistical significance of the coefficient estimate at the 1 and 5 percent level, respectively.

Similar results are found for college graduation. *"One and done"* is the exception and not the rule. For ELS, among comparable Division I male students, the incremental effect of participation in intercollegiate athletics on the likelihood of earning a Bachelor's degree or higher is **positive and significant**.[41] Among comparable Division I female students, there are no adverse effects of intercollegiate athletics on the likelihood of earning a Bachelor's degree or higher.[42] Among comparable FBS students, all else equal, there are on average no adverse effects of intercollegiate athletics on the likelihood of earning a Bachelor's

[41] Appendix Table C.29C.

[42] Appendix Table C.30C.

degree or higher.[43] Among comparable Division I students, all else equal, we find that, on average, college football players and college basketball players earn a Bachelor's degree or higher at the same rate as non-athletes.[44] Among comparable FBS students, we find that, on average, college football players and college basketball players earn a Bachelor's degree at the same or higher rate as non-athletes.[45]

For the NLS sample, we find that for comparable Division I students, all else equal, there are on average no statistically significant adverse effects of intercollegiate athletics on the likelihood of earning a Bachelor's degree or higher.[46] Among comparable FBS students, all else equal, there are on average no statistically significant adverse effects of intercollegiate athletics on the likelihood of earning a Bachelor's degree or higher.[47] Among comparable Division I students, all else equal, we find that college football players and college basketball players are on average more likely to earn a Bachelor's degree or higher than comparable non-athletes.[48] Among comparable FBS students, all else equal, we find that, on average, college football players and college basketball players earn a Bachelor's degree or higher at the same rate as non-athletes.[49] On average, college athletes graduate like their classmates with similar characteristics. The myth of exploitation fails for this outcome as for all others.

[43] Appendix Tables C.29C, C.30C.
[44] Appendix Tables C.29C, C.30C.
[45] Appendix Tables C.29C, C.30C.
[46] Appendix Tables C.13C, C.14C.
[47] Appendix Tables C.13C, C.14C.
[48] Appendix Tables C.13C, C.14C.
[49] Appendix Tables C.13C, C.14C.

IV.IV Post-Graduate Earnings

We analyze the post-graduate earnings for those who work.[50] On average, those who were college athletes earn statistically significantly higher wages in their mid-20's than other comparable individuals.[51]

TABLE 6: MID-20'S WAGES: LOGARITHMIC ANNUAL INCOME IN MID-20'S CONDITIONAL ON EARNING EMPLOYMENT INCOME

	NELS	ELS
Males		
College Athlete&	**15.3%**	**12.0%**
Coefficient Estimate	0.142***	0.113*
(Standard Error)	(0.036)	(0.051)
[95% Confidence Interval]	[0.071, 0.213]	[0.013, 0.213]
College FB/BB Athlete&	**16.9%**	**12.8%**
Coefficient Estimate	0.156***	0.121
(Standard Error)	(0.043)	(0.068)
[95% Confidence Interval]	[0.073, 0.240]	[-0.013, 0.255]
Females		
College Athlete&	**8.7%**	**18.5%**
Coefficient Estimate	0.083	0.170**
(Standard Error)	(0.045)	(0.056)
[95% Confidence Interval]	[-0.006, 0.172]	[0.059, 0.280]
College BB Athlete&	**1.5%**	**28.2%**
Coefficient Estimate	0.014	0.249**
(Standard Error)	(0.070)	(0.096)
[95% Confidence Interval]	[-0.123, 0.152]	[0.061, 0.436]

Notes: Summary of results of Tables C.15C, C.16C, C.31C, C.32C. Each cell corresponds to the athletic effect of interest from a particular regression specification. Robust standard errors in parentheses. 95-percent confidence intervals in square brackets. ***, **, and * denote statistical significance of the coefficient estimate at the 0.1, 1, and 5 percent level, respectively. & denotes percent computed according to $e^{(\text{Coefficient Estimate})} - 1$.

In ELS data, we find that males who were college athletes earn wages in their mid-20's that are approximately 12% higher than those of other comparable males. Females earn wages in their mid-20's that are approximately 18% higher than those of other comparable females (see Table 6).[52] These results are statistically significant. In NELS data, among males who earn wages in their mid-

[50] Because we can only follow students through their early-20s, some students may be engaged in post-graduate studies have low earnings.

[51] Throughout our analysis of the effects of athletics on mid-20's wages, we examine survey respondents who reported earning positive wages from employment.

[52] Note that the effect of athletics on mid-20's wages is calculated by exponentiating the relevant estimate displayed in Table 5 and subtracting one. For example, the 12.0% figure cited in Table 5 is calculated according to $e^{0.113} - 1$. Results are similar when employing an alternative transformation of the coefficient estimate to percentage effects.

20's, college athletes earn statistically significantly higher wages than all other males. They earn wages that are 15% higher than all others. Among females who earn wages in their mid-20's, we do not find statistically significant differences in wages when we compare college athletes relative to non-athletes (see Table 7). There is no statistically significant benefit, but there is also no evidence of harm.

Our finding that college athlete males earn wages in their mid-20's that are on average statistically significantly higher relative to all other males also holds when only examining the mid-20's wages of males who played college football and college basketball relative to the mid-20's wages of males who did not participate in intercollegiate athletics (see Table 6). We find no evidence of exploitation.

Division I and FBS Starting Wages

In ELS data, we find for all Division I students, all else equal, there are on average no adverse effects of intercollegiate athletics on starting wages (see Table 7).[53] For FBS students, all else equal, there are on average no adverse effects of intercollegiate athletics on mid-20's wages.[54] Among Division I students, all else equal, we find that, on average, college football players and college basketball players earn the same wages in their mid-20's as non-athletes.[55] Among FBS students, all else equal, we find that, on average, college football players and college basketball players earn the same wages in their mid-20's as non-athletes.[56]

[53] Appendix Tables C.31C, C.32C.
[54] Appendix Tables C.31C, C.32C.
[55] Appendix Tables C.31C, C.32C.
[56] Appendix Tables C.31C, C.32C.

TABLE 7: BREAKDOWN OF POST-SCHOOL STARTING WAGES: LOGARITHMIC ANNUAL INCOME IN MID-20'S CONDITIONAL ON EARNING EMPLOYMENT INCOME

Subpopulation:	**Division I**		**FBS**	
	NELS	ELS	NELS	ELS
Males				
College Athlete&	**22.0%**	**13.3%**	**13.8%**	**7.9%**
Coefficient Estimate	0.199**	0.125	0.129	0.076
(Standard Error)	(0.065)	(0.066)	(0.090)	(0.099)
[95% Confidence Interval]	[0.072, 0.325]	[-0.004, 0.254]	[-0.047, 0.305]	[-0.117, 0.269]
College FB/BB Athlete&	**27.6%**	**19.3%**	**24.0%**	**13.1%**
Coefficient Estimate	0.243***	0.176	0.215**	0.123
(Standard Error)	(0.069)	(0.091)	(0.079)	(0.130)
[95% Confidence Interval]	[0.108, 0.379]	[-0.002, 0.354]	[0.060, 0.370]	[-0.131, 0.377]
Females				
College Athlete&	**2.6%**	**11.4%**	**8.6%**	**4.5%**
Coefficient Estimate	0.026	0.108	0.082	0.044
(Standard Error)	(0.067)	(0.093)	(0.104)	(0.143)
[95% Confidence Interval]	[-0.105, 0.157]	[-0.074, 0.290]	[-0.122, 0.287]	[-0.237, 0.324]
College BB Athlete&	**-7.5%**	**22.7%**	**-12.2%**	**-7.1%**
Coefficient Estimate	-0.078	0.204	-0.130	-0.073
(Standard Error)	(0.095)	(0.194)	(0.134)	(0.304)
[95% Confidence Interval]	[-0.264, 0.108]	[-0.176, 0.584]	[-0.393, 0.133]	[-0.670, 0.523]

Notes: Summary of results of Tables C.15C, C.16C, C.31C, C.32C. Each cell corresponds to the athletic effect of interest from a particular regression specification. Robust standard errors in parentheses. 95-percent confidence intervals in square brackets. *** and ** denote statistical significance of the coefficient estimate at the 0.1 and 1 percent level, respectively. & denotes percent computed according to $e^{(\text{Coefficient Estimate})} - 1$.

The NELS data show that for Division I male students, all else equal, the incremental effects of intercollegiate athletics on mid-20's wages are on average positive and statistically significant (see Table 7).[57] Among FBS male students, all else equal, there are on average no adverse effects of intercollegiate athletics on mid-20's wages.[58] Among Division I male students, all else equal, we find that, on average, college football players and college basketball players earn statistically significantly higher wages in their mid-20's than non-athletes.[59] For FBS male students, we find that college football players and college basketball players earn statistically significantly higher wages in their mid-20's than non-athletes.[60] Beneficial results for females are less firmly established. Using NELS data, among

[57] Appendix Table C.15C.

[58] Appendix Table C.15C.

[59] Appendix Table C.15C.

[60] Appendix Table C.15C.

Division I females, there are no statistically significant adverse effects of intercollegiate athletics on starting wages.[61] For FBS female students, there are no statistically significant adverse effects of intercollegiate athletics on mid-20's wages.[62] For Division I female students, we find that college basketball players earn the same wages in their mid-20's as non-athletes.[63] For FBS female students, college basketball players earn the same wages in their mid-20's as non-athletes.[64]

IV.V Sensitivity and Robustness

These results hold up after we perform numerous robustness checks that we document in the appendix. They include disaggregating results for various demographic groups, using different functional forms, controlling for cognitive and socioemotional skills in various ways, using different definitions of who is a high school athlete and college athlete, and including or excluding a variety of explanatory variables. We find no statistically significant evidence of harm in any of these analyses.

V. Summary and Conclusions

Tables 8 and 9 summarize our estimates. Table 8 summarizes our findings for high school graduation, college attendance, college graduation and post-college wages. Table 9 examines whether athletes at "football factories" do worse than non-athletes. Table 10 discusses these summaries in detail.

[61] Appendix Table C.16C.
[62] Appendix Table C.16C.
[63] Appendix Table C.16C.
[64] Appendix Table C.16C.

TABLE 8: OUTCOMES OF HIGH SCHOOL ATHLETICS AND INTERCOLLEGIATE ATHLETICS COMPARED TO NON-ATHLETE STUDENTS

		Effects of High School Athletics	Effect of Intercollegiate Athletics		
Source		**HS Graduation**	**Attending a Post-Secondary Institution**	**Earning a Bachelor's Degree or Higher**	**Wages**
ELS	Female	1.8**	5.8***	1.9	18.50%
	Male	4.6***	4.3**	6.7**	12%
NELS	Female	4.3***	8.2***	10.9***	8.70%
	Male	7.8***	9.3***	6.1*	15.30%

1. Coefficients reported in percentage points. The "Wages" column reports the percentage increase in college athletes' mid-20's wages relative to other comparable individuals.
2. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Controlling for a rich variety of traits and background variables, Table 8 shows that participation in scholastic athletics does not harm, and in most cases, benefits participants. Contrary to journalistic folklore, there are on average no adverse academic or labor market outcomes for students participating in intercollegiate basketball and football in Division I or FBS "sports factories" (see Table 9). To the extent that intercollegiate athletic scholarships provide incentives and paths to educational and athletic opportunities otherwise limited or unavailable for such students, participation in athletics offers a vehicle for social mobility.

TABLE 9: THE EFFECTS OF INTERCOLLEGIATE ATHLETICS - DIVISION I AND FBS STUDENTS COMPARED TO NON-ATHLETE STUDENTS

			Bachelor's Degree or Higher	**Annual Income in Mid-20's**
Division I	ELS	Females	0.6	11.4%
		Males	8.5*	13.3%
	NELS	Females	5.5	2.6%
		Males	6.1	22% ***
FBS	ELS	Females	1.2	4.5%
		Males	2.1	7.9%
	NELS	Females	4.8	8.6%
		Males	4.1	13.8%

1. Coefficients of post-secondary education reported in percentage points.
2. Conditional on earning employment income.

One might object that our analyses omit important intangible motivations or skills possessed by athletes. However, we have far richer data on family backgrounds and individual abilities and traits than are available to the journalists

and judges who denounce the college athletic system. When we account for these factors, claims about the harms caused by participation in athletics crumble. The most cautious reading of our work must acknowledge that the sensationalized journalistic descriptions of the adverse consequences associated with athletic participation and of the exploitation of student-athletes that drive policy are inaccurate.

The colorful anecdotes promoted by the media do not capture the factual reality of the benefits of participating in sports. Courts and legislature that act on media anecdotes about a few athletes run the risk of compromising—or possibly destroying—a proven avenue of benefit to many.

Table 10: Summary of Results

	Effect of High School Athletics					Effect of Intercollegiate Athletics	
	Education		Socioeconomic Background			Education	
Data Source	HS Graduation	Attending a Post-Secondary Institution	Poverty	Single-Parent Household	African American Student	Earning a Bachelor's Degree or Higher	Wages
ELS	Participation in high school athletics increases the likelihood that both males and females graduate high school.	Participation in high school athletics increases the likelihood of attending a post-secondary institution for both males and females. This also holds true when examining the specific sports of basketball and football.	For both male and female students below the poverty line, participation in high school athletics increases the likelihood of graduating high school. Moreover, the effect on the likelihood of attending a post-secondary institution is not significantly different relative to other comparable students. This also holds true when examining the specific sports of basketball and football.	Participation in high school athletics increases the likelihood of graduating high school and attending a post-secondary institution for both male and female students from single-parent households. This also holds true when examining the specific sports of basketball and football.	Participation in high school athletics increases the likelihood of graduating high school and attending a post-secondary institution for both male and female African American students. This also holds true when examining the specific sports of basketball and football.	On average college athletes are as likely or statistically significantly more likely to earn at least a Bachelor's degree relative to comparable college students who did not participate in intercollegiate athletics.	All else equal, individuals who were college athletes earn statistically significantly higher wages in their mid-20's on average than other comparable individuals.
	Female: athletes are 1.8 percentage points more likely to graduate, and those who play basketball are 3.0 percentage points more likely to graduate than comparable non-athletes.	Female: athletes are 5.8 percentage points more likely to attend a post-secondary institution.	Female: athletes are 3.5 percentage more likely to graduate high school and 5.0 percentage points more likely to attend a post-secondary institution.	Female: athletes are 2.1 percentage more likely to graduate high school and 7.4 percentage points more likely to attend a post-secondary institution.	Female: athletes are 6.7 percentage more likely to graduate high school and 3.5 percentage points more likely to attend a post-secondary institution.		Female college athletes earn approximately 18% higher wages in their mid-20's.
	Male: athletes are 4.6 percentage points more likely to graduate, and those who play either football or basketball are 5.0 percentage points more likely to graduate than comparable non-athletes.	Male: athletes are 4.3 percentage points more likely to attend a post-secondary institution.	Male: athletes are 15.3 percentage more likely to graduate high school and 7.8 percentage points more likely to attend a post-secondary institution.	Male: athletes are 1.4 percentage more likely to graduate high school and 3.8 percentage points more likely to attend a post-secondary institution.	Male: athletes are 3.7 percentage more likely to graduate high school and 2.4 percentage points more likely to attend a post-secondary institution.		Male college athletes earn approximately 12% higher wages in their mid-20's.
NELS	Female: Athletes are 4.3 percentage points more likely to	All else equal, male and female high school athletes are on	Females below the poverty line: athletes are 4.6 percentage	Females from single-parent households: athletes are 6.7	Female African American students: athletes are 6.2	All else equal, female college students who participate in	Among females who earn wages in their mid-20's, no difference in

	graduate from high school, and basketball players are 3.9 percentage points more likely to graduate from high school than comparable females.	average statistically significantly more likely to attend a post-secondary institution than comparable non-athletes. Female: high school basketball players are 8.2 percentage points more likely to attend a post-secondary institution.	points more likely to graduate high school and 10.5 percentage points more likely to attend a post-secondary institution.	percentage points more likely to graduate high school and 10.7 percentage points more likely to attend a post-secondary institution.	percentage points more likely to graduate high school and 3.3 percentage points less likely to attend a post-secondary institution.	intercollegiate athletics are on average 10.9 percentage points more likely to earn at least a Bachelor's degree.	wages was found.
	Male: Athletes are 7.8 percentage points more likely to graduate from high school, and basketball/football players are 8.4 percentage points more likely to graduate from high school than comparable males.	Male: both football and basketball athletes are 9.3 percentage points more likely to attend a post-secondary institution.	Males below the poverty line: athletes are 11.6 percentage points more likely to graduate high school and 13.1 percentage points more likely to attend a post-secondary institution.	Males from single-parent households: athletes are 11.2 percentage points more likely to graduate high school and 7.7 percentage points more likely to attend a post-secondary institution.	Male African American students: athletes are 11 percentage points more likely to graduate high school and 17.2 percentage points more likely to attend a post-secondary institution.	All else equal, male college students who participate in intercollegiate athletics are on average 6.1 percentage points more likely to earn at least a Bachelor's degree.	Males who were college athletes earn statistically significantly higher wages than all other males. In particular, all else equal, male college athletes earn wages that are on average approximately 15% higher than all others.

1. When analyzing ELS data, we use 2001 U.S. poverty thresholds (adjusted for household size and number of children). When analyzing NELS data, we use 1987 U.S. poverty thresholds (adjusted for household size and number of children). Poverty thresholds for both years are available at https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html.

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