An Extra Point for Attendance

The Impact of High School Varsity Athletics on Absenteeism

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Executive Summary

Examining day-level attendance records and varsity participation data for roughly 262,000 Indiana high school students, we find a consistent "double bump" effect of varsity sports participation on attendance: Varsity athletes had better attendance outside their sports seasons than their peers and still lower absence rates during their sports seasons. Athletes also showed substantially lower rates of chronic absenteeism.

Overall, high school absences averaged 6.5 percent statewide, and 23 percent of students played at least one varsity sport. The demographic profile of varsity athletes reflects several advantages that are also associated with better attendance. Nonetheless, after adjusting for key student and school characteristics and weekly variation in absences, varsity athletes' attendance advantage remains substantial both in and out of their sports seasons.

Effects appear for excused and unexcused absences, with the overall athlete advantage larger for unexcused absences. Models that include student fixed effects identify an attenuated but large causal in-season effect. Together, the patterns identified in this report suggest that structured, voluntary extracurricular participation can meaningfully improve attendance behavior and that students have meaningful agency over their own attendance.

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Sports are a fundamental part of high school. Across the United States, more than 8.2 million students participated in high school sports in the 2024–25 school year, a 2.5 percent increase over the previous year.[1] In contrast to the high school "dumb jock" stereotype, high school sports participation is associated with numerous benefits, including for academics. Research suggests athletes are more engaged with school and have fewer disciplinary issues, stronger peer and adult relationships, a greater sense of belonging, higher educational aspirations, lower rates of risky behaviors, and higher grades, test scores, and class ranks.[2] Most of this research is circumstantial, meaning whether sports participation causes these advantages or merely attracts students who already have them remains murky.

Nonetheless, compared with the extensive literature on athletes' advantages in graduation, achievement, and social development, the relationship between sports participation and student attendance has received little direct attention. Attendance is a key factor in school success, and sports participation might affect attendance more directly than it affects either achievement or graduation. For instance, coaches often require athletes to attend school in order to attend practice and compete.

During the pandemic, average absences and chronic absenteeism rates rose to historic levels, and in the years since the pandemic, students have continued to miss far more school than they did in the years prior to it.[3] Accordingly, as states across the nation look to combat the pandemic absenteeism surge, assessing sports participation's influence on attendance may be particularly informative. First, it allows us to see whether and how much athletics participation influences attendance rates. Second, it provides an uncommon view into whether individual agency influences attendance. Students choose to play sports, and if that choice is associated with improved attendance, this finding would add empirical weight to the notion that students and families have the capacity to improve attendance if they are sufficiently motivated to do so.

This 10th report from the Chronic Absenteeism Research Working Group at the American Enterprise

Institute (AEI) uses a unique statewide dataset with universe day-level attendance and varsity sports participation data to examine the relationship between varsity sports participation and attendance after the pandemic. We find that after controlling for various student and school characteristics, varsity athletes have substantially better attendance than their peers across the entire school year—and further, we find that participation causes still better attendance during athletes' sports seasons.

Previous research on the connection between athletics participation and attendance used daily attendance records and team schedules from Seattle schools to estimate the causal effects of athletics participation on absenteeism, finding that participation reduces absences overall—particularly unexcused absences—with specific short-term game-day effects.[4] Our report, which examines a larger and more diverse student population in a post-pandemic context, builds on these findings.

We begin by giving an overview of our data and describing varsity sports participation and absence rates among Indiana high school students. Next, we describe differences in absence and chronic absenteeism rates between varsity athletes and other high school students. To better capture the relationship between sports participation and absenteeism, we then turn to statistical models that control for factors that influence both sports participation and absenteeism. We conclude with a discussion of our findings.

Sports Participation and Absenteeism in Indiana

To study the relationship between sports and absenteeism at an unprecedented scale, we combined two datasets from Indiana. Data from the Indiana Department of Education (IDOE) student data system include daily attendance records for each student in the 2020–21 through 2023–24 school years. Most analyses in this report use data from the 2023–24 school year, but additional years are used in select analyses to gauge dosage effects across school years.[5] Indiana High School Athletic Association (IHSAA) data identify the students who played varsity sports, which sports, and when those sports were played.[6]

IHSAA records identify only varsity participation, so our data do not separately identify students who participate in only junior varsity or other non-varsity athletics. As a result, some non-varsity participants are included in the comparison group that we refer to as non-athletes. Throughout, "non-athletes" includes all students not identified in IHSAA as varsity athletes for the sport or sports examined in a given analysis. For example, when we examine football, the non-athletes comparison group would include all students not participating in varsity football. This measurement limitation likely attenuates estimated differences between varsity athletes and non-athletes.

IDOE merged these data and provided us with a de-identified dataset yielding a final sample of approximately 262,600 high school students for the 2024 school year and approximately 370,200 students and 864,500 student-year observations across the 2021 to 2024 school years.[7]

In Table 1, sports participation and absence rates for this sample are broken down by key student subgroups. Here, we measure sports participation as the percentage of all high school students who were registered by IHSAA as varsity athletes in at least one sport in 2024 and define the absence rate as the percentage of school days missed across all students in the group being considered (e.g., all female students).[8] We also display rates of excused and unexcused absences as defined by the IDOE.

Across all students, the overall absence rate was 6.54 percent, and 23.1 percent of students played at least one varsity sport.[9] Excused absences were more common than unexcused absences (3.76 vs. 2.78 percent), and sports participation rates differed substantially across key student subgroups. In general, sports participation was higher for males and more advantaged groups: white, nonpoor, nondisabled, and high-achieving students; students from low-poverty and nonurban schools; and students with no recorded disciplinary incidents.

In percentage terms, some of these differences were chasms. For example, male students were nearly

43 percent more likely than female students to participate in a sport, rural students were more than twice as likely as urban students to participate in a sport, students receiving full-priced meals were nearly twice as likely to participate in a sport compared with students receiving free or reduced-priced meals,[10] and students scoring in the top quintile in math were nearly three times as likely to participate in a sport compared with students scoring in the bottom quintile.

Absence rates mostly followed opposite patterns. They were higher for female, non-white, poor, disabled, and low-achieving students; students from high-poverty and urban schools; and students with one or more recorded disciplinary incidents. However, patterns differed for excused and unexcused absences. For instance, female students had a substantially higher excused absence rate than male students (4.06 vs. 3.47 percent), but their unexcused absence rates were almost identical (2.80 vs. 2.76 percent).

White students, meanwhile, had both the *lowest* unexcused absence rate and the *highest* excused absence rate of any race. This difference is especially stark when comparing white with black students. White students had the lowest total absence rate (6.01 percent), with more than two-thirds of their absences excused (4.03 percent), while black students had the highest total absence rate (8.03 percent), but with only about one-third of their absences excused (2.73 percent). These differences in excused and unexcused absences may be due to different reasons for absences, different rates of providing excuses, or both.

For other variables—achievement, poverty, and more—the unexcused absence rates tend to increase in concert with the overall absence rates, while excused absence rates remain comparatively stable. For instance, students in the lowest-performing math quintile had excused absence rates that were within two-thirds of a point of those in the highest-performing quintile (3.88 vs. 3.27 percentage points), but they had overall absence rates that were more than twice as high (9.11 vs. 4.29 points) and unexcused absence rates that were more than five times as high (5.23 vs. 1.02 points).

Average absence rates also varied across the year, with distinct patterns for unexcused and excused absences. The unexcused absence rate rose steadily throughout the school year, from 1.60 percent in August to 4.09 percent in May, while the excused absence rate started out at 3.00 percent in August, rose during the fall, leveled off in the early winter, peaked at 4.42 percent in February, and *fell* during the spring, reaching 3.25 percent in May (Figure 1, Panel A).

Because sports seasons correspond to periods when absence rates for all students—not just athletes—are systematically lower or higher, it is critical to account for these seasonal trends when interpreting the effects of sports participation (Figure 1, Panel B). For instance, during the football season, absence rates averaged nearly 5 percent, while they measured close to 7 percent throughout the baseball and softball seasons.

Athletes also have dramatically lower chronic absenteeism rates. The chronic absenteeism rate for nonathletes was 22.9 percent, while the rate for varsity athletes was 10.0 percent (Figure 2). This difference is even starker than the one for absence rates. Quite simply, comparatively few athletes have the exceptionally high absence rates—10 percent or more—required to be chronically absent. Note that because we examine the effect of only *varsity* sports, and not the effect of non-varsity sports (or other extracurriculars) that might have similar benefits, we might be underestimating the effects of sports participation on attendance.[11]

The Double Bump: Athletes Have Fewer Absences, Especially in Season

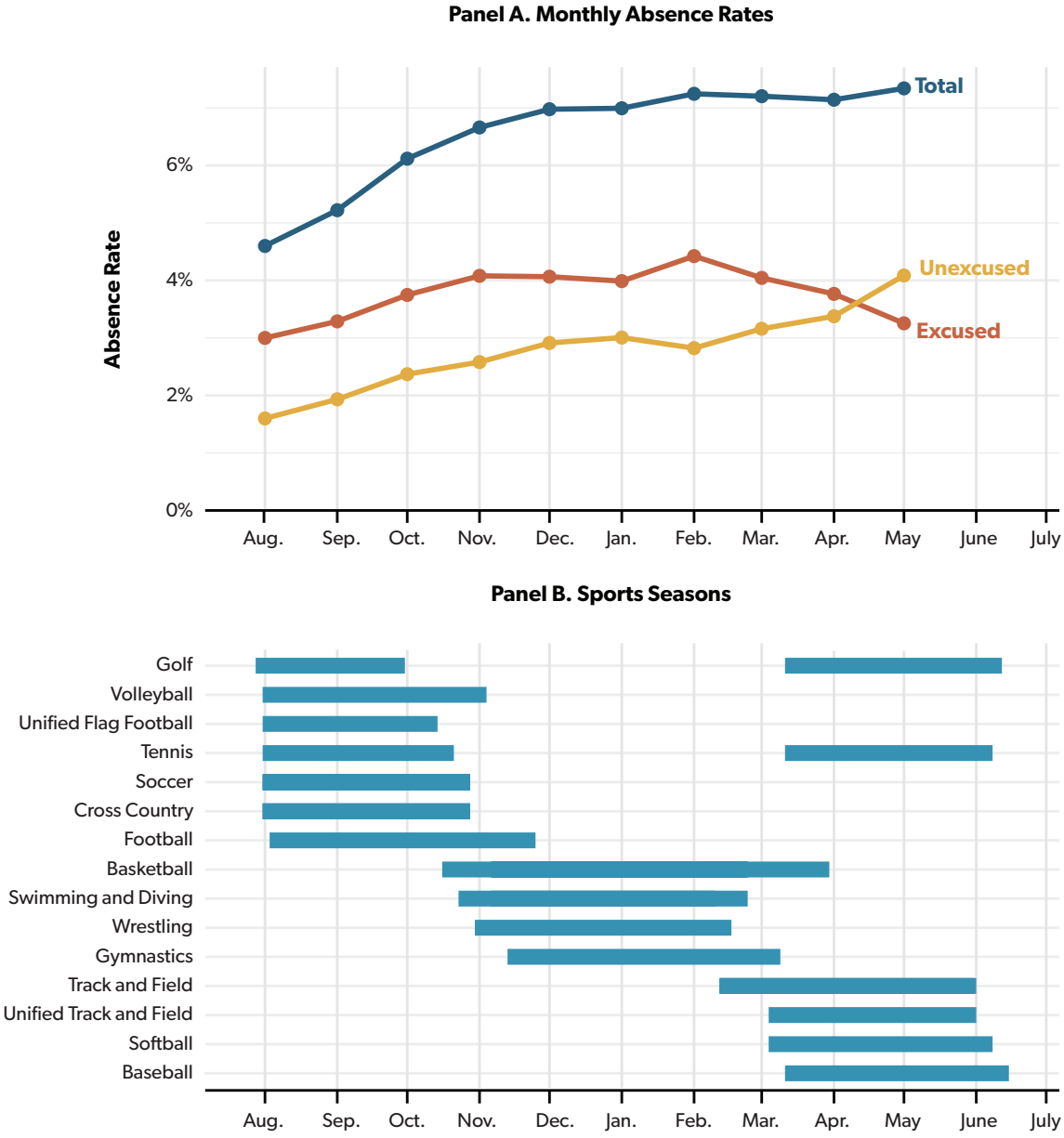
The broad pattern shown in Table 1 is that students from more advantaged groups were more likely to participate in varsity sports and less likely to be absent from school. It's thus no surprise that, in the raw data, there is an association between playing varsity sports and having good attendance (Figure 3). But is that because students who attend school more reliably are more likely to play sports or because

Table 1. Sports Participation and Absence Rates Across Student Subgroups for Our Sample

	Sports Participation (Percentage)	Absence Rate (Percentage)			Number of Students
		Total	Excused	Unexcused	
All High Schoolers	23.1	6.5	3.8	2.8	262,583
Gender					
Female	19.0	6.9	4.1	2.8	128,741
Male	27.1	6.2	3.5	2.8	133,842
Race					
White	26.7	6.0	4.0	2.0	175,628
Black	17.5	8.0	2.7	5.3	29,683
Hispanic	13.5	7.8	3.4	4.3	36,871
Other	18.2	6.7	3.5	3.2	20,401
Meal Status					
Normal-Price Meals	29.0	5.3	3.6	1.7	151,437
Free or Reduced-Price Meals	15.2	8.2	4.0	4.3	111,146
Discipline					
No Incidents	24.4	6.2	3.7	2.4	234,970
One or More Incidents	12.3	9.8	4.1	5.8	27,613
Special Ed					
No	24.8	6.4	3.7	2.7	225,825
Yes	12.8	7.4	4.0	3.4	36,758
Grade					
Ninth	20.2	5.9	3.5	2.4	70,949
10th	23.4	6.4	3.7	2.7	69,776
11th	24.7	6.7	3.8	2.8	63,894
12th	24.7	7.3	4.0	3.3	57,964
Math Score					
First Quintile (Lowest)	11.5	9.1	3.9	5.2	52,635
Second Quintile	18.0	7.5	4.0	3.5	52,594
Third Quintile	23.7	6.4	4.0	2.4	52,463
Fourth Quintile	28.8	5.4	3.7	1.7	52,537
Fifth Quintile (Highest)	33.8	4.3	3.3	1.0	52,354
School Poverty					
First Quintile (Least Poor)	19.6	4.9	3.6	1.3	52,244
Second Quintile	26.8	5.3	4.1	1.2	52,834
Third Quintile	28.8	6.2	3.9	2.3	52,039
Fourth Quintile	24.0	6.9	3.8	3.1	52,858
Fifth Quintile (Poorest)	16.4	9.4	3.4	6.0	52,626
Urbanicity					
Urban	15.3	7.9	3.4	4.5	73,369
Suburban	18.9	5.9	3.7	2.2	81,635
Town	29.9	6.7	4.3	2.4	37,450
Rural	32.7	5.8	3.9	1.9	70,146

Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.
Note: Sports participation percentages are rounded to tenths of a percent, and student counts are rounded to the nearest hundred.

Figure 1. Monthly Absence Rates During Various Sports Seasons

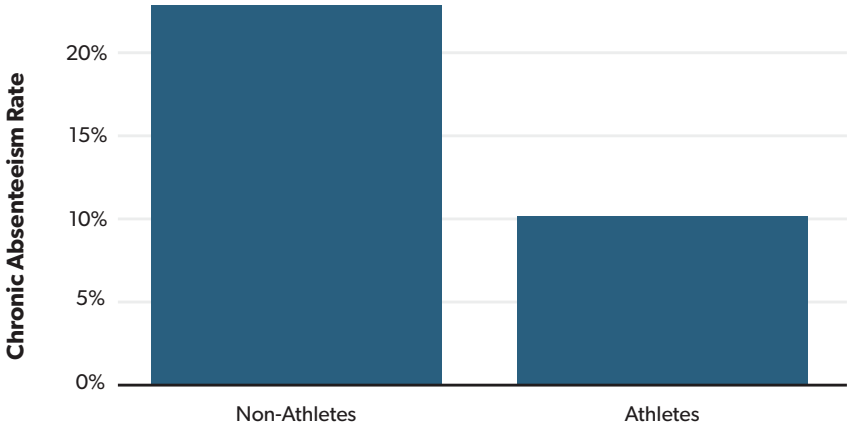


Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.

playing sports leads to better attendance? One way to tease out the answer is to compare varsity athletes' attendance during their sports seasons with their attendance the rest of the year.

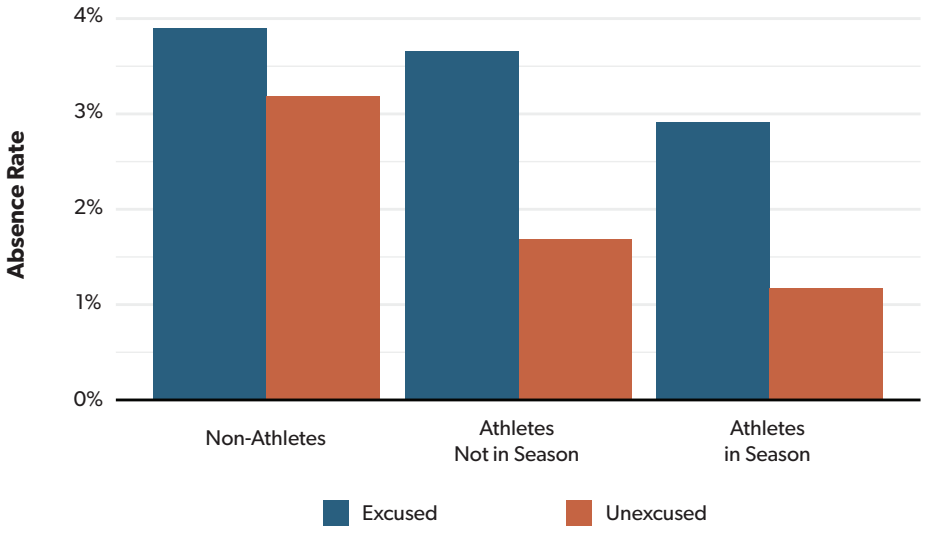
The data show what we call a "double bump" in absence rates. Not only do varsity athletes have lower annual absence rates—especially for unexcused absences—than non-athletes,[12] but their absence rates fall further when their sport is in season. This in-season difference is relatively modest if we look across all sports, in part because many sports—such as baseball and softball—are played during the spring,

Figure 2. Chronic Absenteeism Rates for Athletes and Non-Athletes



Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.

Figure 3. Excused and Unexcused Absence Rates for Athletes in and out of Sports Season vs. for Non-Athletes



Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.

when absence rates tend to rise for all students, partly offsetting any effect of sports. Again, the absence rates by month for all Indiana high school students show large differences in Figure 1. Absences are much lower in the fall, during football season, than they are in the spring, during baseball and softball seasons.

When we break the numbers down by sport, the picture becomes clearer because we can distinguish among fall, winter, and spring sports (Figure 4). Since absence rates are generally lower in the fall, they are lower during the fall for both athletes and non-athletes; however, for athletes who

Our Models

Our main set of models are pooled linear probability models of the probability that a student is absent on a given day, with controls for student and school characteristics and an indicator for whether the student is a varsity athlete. The varsity athlete indicator contrasts athletes in the sport or sports included in each model with both non-athletes and athletes in excluded sports. In all models, we use robust standard errors clustered by school. Unless stated otherwise, the response variable combines excused and unexcused absences into a single "absence" category, contrasted with "presence." In our models of excused and unexcused absences, we separately estimate the probability of each type of absence (excused and unexcused), as contrasted with "presence" and the other type of absence.

The models differ in how we operationalize the sports season. For our multisport models (all sports, team sports, and individual sports), we include an indicator for whether a student is currently in season for a sport they play (Table A2). We cannot directly distinguish whether a non-athlete is in or out of season, because seasons vary across sports and because non-athletes have no season. Instead, we include week fixed effects to control for systematic variation in absence rates across the school year.

For our sport-specific models, the "in season" measure applies to varsity athletes and non-athletes alike, and we replace the week fixed effects and the in-season indicator with an indicator for whether the student, regardless of whether they play the sport, is observed *during* the sports season for the sport in question, along with an interaction between that variable and whether the student is an athlete (Table A3).[13] The latter tells us the in-season effect, directly analogous to that in the first set of models. In both cases, the in-season coefficient is a form of difference-in-difference estimator.

play fall sports (football and soccer), the difference between fall attendance rates and attendance rates the rest of the year is even larger. For winter sports (basketball) and spring sports (baseball, softball, and track and field), we see something similar: Although absence rates rise in the spring for non-athletes, they rise less, stay flat, or even fall for spring-sport athletes.

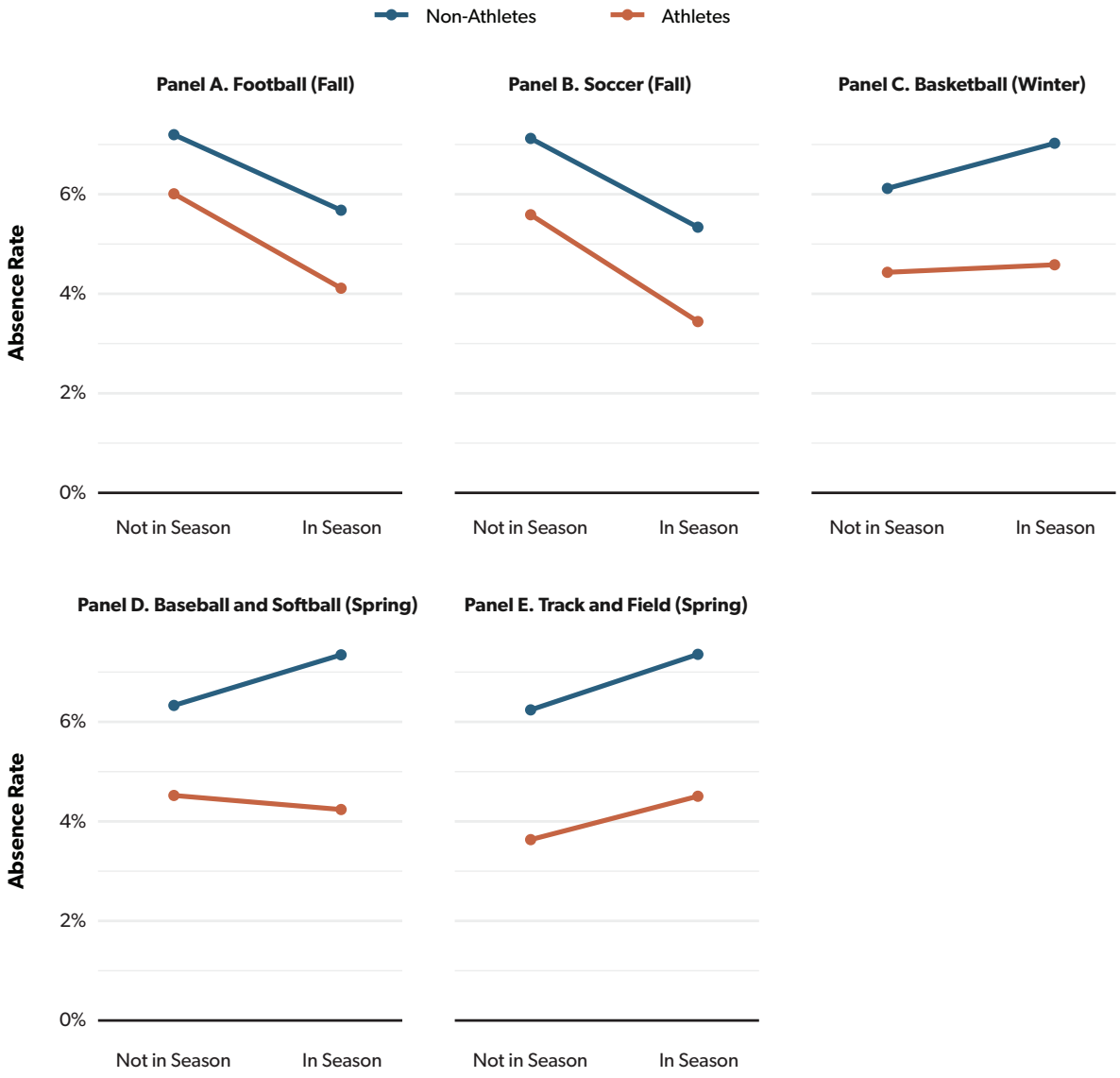
Because we are comparing the same students with themselves at different points in the year and because we see a similar pattern for sports played at every time during the year, it is hard to explain these diverging patterns except as an effect of sports participation. In other words, we are not observing merely a demographic good-student effect or a fall or spring effect. Rather, we're observing that although varsity athletes tended to have better attendance throughout the year, their attendance advantage over their non-athlete peers grew precisely when their own sports came into season.

But how much of this advantage can we attribute to sports participation? Given the large demographic differences between varsity sports participants and their peers—differences that are strongly related to absence patterns—we now turn to statistical modeling to more rigorously estimate the effect sports participation has on attendance.

How Much Does Sports Participation Reduce Absenteeism?

Many student characteristics are correlated with both absence patterns and varsity sports participation. Additionally, attendance rates change across the school year. To control for these confounders, we created a series of models of the effects of being an athlete and being in season. (See the first sidebar for the model specifications and Tables A2–5 for the model results.)

Figure 4. Absence Rates for Athletes and Non-Athletes in and out of Season for Several Major Sports

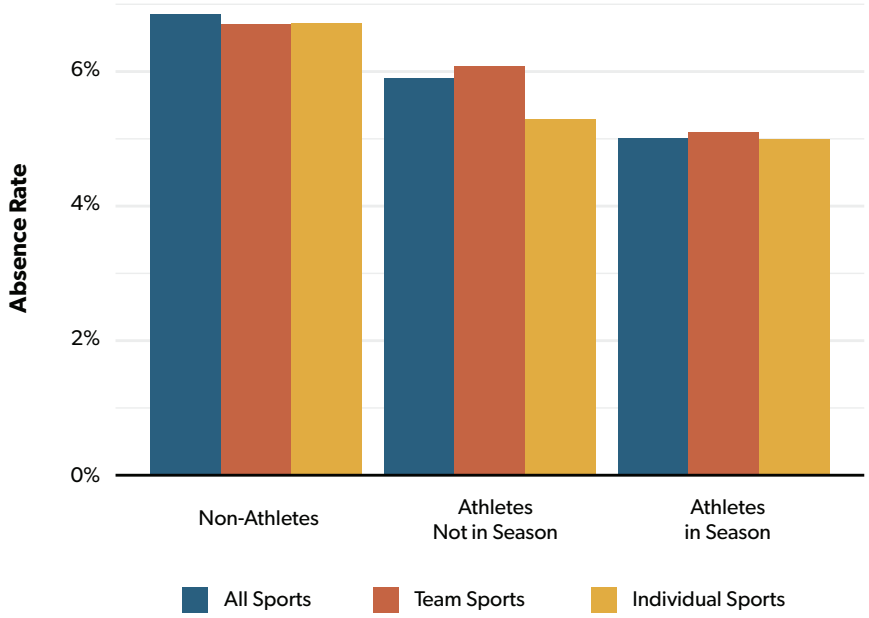


Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.

Our models show the same double bump we discovered in the raw data. That is, varsity athletes have better attendance than non-athletes, especially in season, even after controlling for other factors (Figure 5 and Table A2). Note that since our data do not include junior varsity or other non-varsity athletes, our comparison group includes some non-varsity athletes, and since the benefits of sports might accrue to this portion of our non-athlete group, the attendance advantage presented here is likely an underestimate.

Across all sports, varsity athletes' absence rate is 0.97 percentage points lower out of season—call this the athlete effect—and an *additional* 0.88 points lower in season—call this the in-season effect.[14] Given the average Indiana high school absence rate of 6.54 percent, each of these effects is large. Taken together, the combined effect of 1.85 percentage

Figure 5. Effect of Varsity Sports Participation on Absence Rates According to Our Models



Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.
Note: The vertical axis shows the absence rates for athletes and non-athletes in and out of season, controlling for other variables based on our models. "Non-Athlete" refers to students who don't play the sports in question. For instance, Non-Athlete Team Sports refers to students who don't play team sports but may or may not play individual sports.

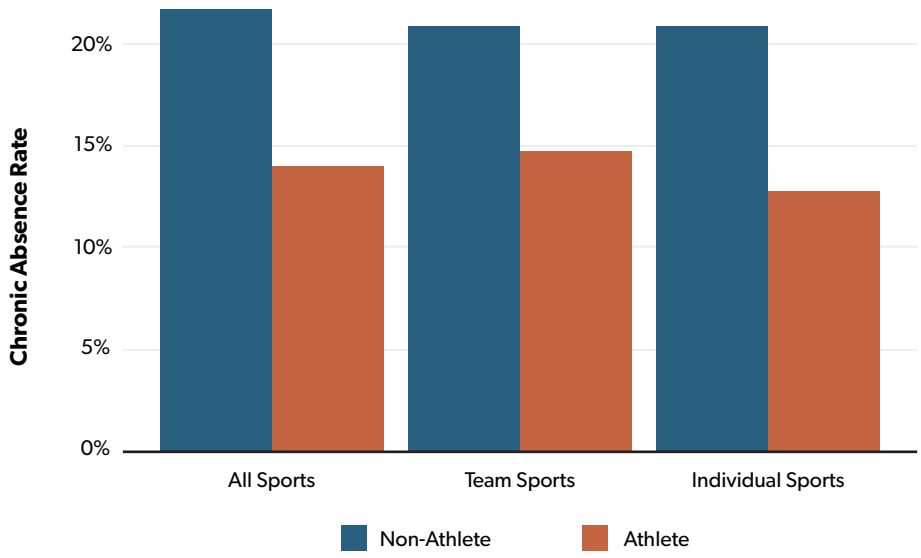
points is especially large. These effects are similar across a variety of model specifications, including models with school fixed effects (Table A7) and student fixed effects (see the second sidebar) that control for unobservable differences across schools and students, respectively.

The effects of sports participation on attendance vary across types of sports (Figure 5). At 0.62 points, the athlete effect for athletes on team sports is relatively modest, but at 0.97 points, the in-season effect is larger.[15] By contrast, individual-sport athletes see a much larger athlete effect (1.43 points), a much smaller in-season effect (0.30 points), and a similar combined effect (1.59 points for team sports vs. 1.73 points for individual sports).

We also find that athletes have substantially lower chronic absenteeism than non-athletes (Figure 6). The difference is smaller (7.7 points) than in the raw data (12.9 points) but still very large. Indeed, the gap in chronic absenteeism is about the same size as that between poor and nonpoor students and larger than that between middle-achieving (third math-score quintile) students and top-achieving students (fifth math-score quintile). As with absence rates, the athlete effect is somewhat larger for individual sports (8.1 points) than team sports (6.1 points).

There are differences among specific sports too (Table A3). Of the five sports we analyzed, baseball and softball (considered as a single category—baseball for boys and softball for girls) had the strongest in-season effect at 1.33 percentage points. Meanwhile, the in-season effects for football and soccer—two other team sports—were only 0.38 and 0.36 points, respectively. Some—but nowhere near all—of these differences are plausibly due to the higher baseline absence rate in the spring. That is, by default, we would expect any effect that lowers absences to be larger when there are more absences

Figure 6. Effect of Varsity Sports Participation on Chronic Absenteeism According to Our Models



Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.

to be avoided, and conversely, it's harder to lower absences by a given amount when the absence rate is closer to zero.

According to our models, sports participation has similar effects on excused and unexcused absences, but the sizes of these effects differ (Figure 7 and Table A4). Athletes have fewer absences of both kinds compared with non-athletes, but the overall effect of being an athlete is three times as large for unexcused absences (0.72 points) as for excused absences (0.24 points). By contrast, the in-season effect is smaller for unexcused absences (0.29 points) than for excused absences (0.59 points).

The models for excused and unexcused absences also shed new light on the patterns we saw in the raw absence rates in Table 1. In particular, our models show that white students have a *higher* total absence rate than black students, Hispanic students, and students of other races after controlling for other factors, such as poverty and achievement. However, this effect is driven entirely by white students' higher *excused* absence rate: The *unexcused* absence rate for white students is still lower than the unexcused absence rates for students of other races after controlling for other factors.

Sports Participation Matters More for Female, Poor, and Non-White Students

Just as the *rate* of sports participation varies across student demographics, so too do its *effects*. We analyzed these effects across three such differences: gender, poverty (free or reduced-price meal status), and race (Figure 8 and Table A5).

Both the athlete and in-season effects are larger for females (1.20 and 1.03 percentage points, respectively) than they are for males (0.77 and 0.81 points, respectively). Indeed, this difference more than offsets the gender gap in absences among non-athletes: In season, the predicted absence rates for female and male athletes are essentially equal.

The athlete effect is nearly twice as large for poor students (1.45 points) as it is for nonpoor students

Getting Better Estimates

Do our models capture the true effect sizes for sports participation? Probably not. We cannot control for factors—such as motivation, engagement, and family structure—that are unmeasured but important.

To get better causal estimates of the in-season effect, we created a series of models that are analogous to our main models but that replace student and school characteristics, as well as the athlete effect, with student fixed effects. Each model is left with just three terms: week fixed effects, student fixed effects, and the in-season effect.

This design gives better causal estimates because it controls for factors that vary across time (week fixed effects) and factors that vary across students (student fixed effects). Importantly, student fixed effects control for unobserved factors, even unmeasurable ones such as students' engagement, on average across the school year. However, student fixed effects do not control for student factors that change during the year, such as changes in motivation from in season to out of season.

The causal models' results are very similar to those of our main models (Table 2). The estimates of the in-season effect are somewhat smaller but always in the same direction. The relative sizes of the estimates are generally preserved too.

Table 2. Estimates of the Effects of Sports Participation from Models with Student Fixed Effects

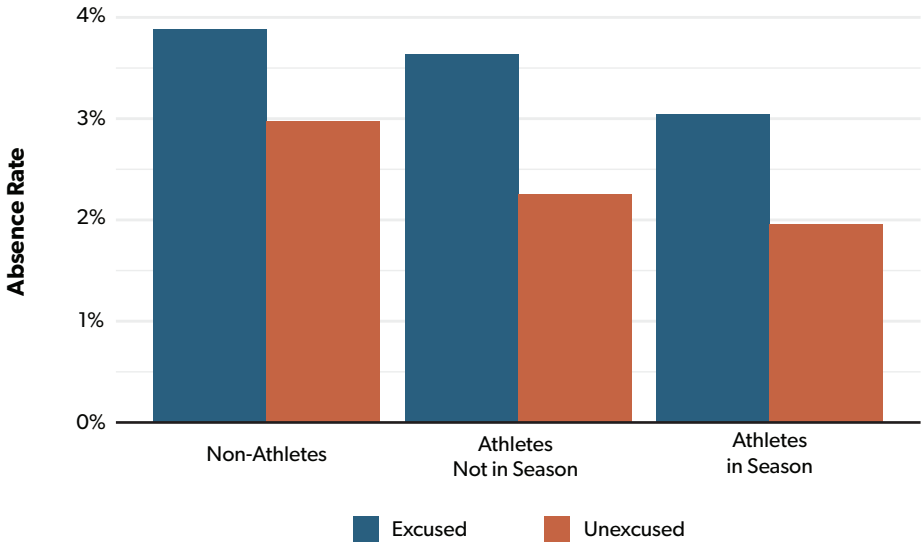
Model	Sports Included	Absences Included	In-Season Effect
All Sports	All	All	−0.70
Team Sports	All Team	All	−0.89
Individual Sports	All Individual	All	−0.18
Excused Absence	All	Excused	−0.46
Unexcused Absence	All	Unexcused	−0.24
Football	Football	All	−0.39
Soccer	Soccer	All	−0.37
Basketball	Basketball	All	−1.00
Baseball and Softball	Baseball and Softball	All	−1.41
Track and Field	Track and Field	All	−0.28

Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.

(0.74 points), and the in-season effect is slightly larger as well (1.00 vs. 0.85 points). Since poor students experience higher absence rates in general, it is not surprising that the effects of sports participation are larger in absolute terms. In fact, in proportional terms, the net impact of the athlete and in-season effects is almost identical for poor and nonpoor students.

We also find that the athlete effect is larger for black (1.32 points) and Hispanic (1.27 points) students than for white students (0.90 points), and it's smaller for students of other races (0.72 points). This pattern closely mirrors the pattern described for poverty, whereby races with higher poverty rates also have higher baseline absence rates and thus

Figure 7. Effect of Varsity Sports Participation on Excused and Unexcused Absences According to Our Models



Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.
Note: The vertical axis shows average predicted absence rates for non-athletes and athletes if all students were in season versus out of season. Hence, the difference between the in-season and not-in-season rates is the average effect for athletes being in season.

larger athlete effects. Meanwhile, the size of the in-season effect did not differ significantly among races, except among black students, who had a somewhat stronger in-season effect (1.02 points) than white students did (0.87 points).

As with poverty, the differences in the athlete and in-season effects by race are not significant in proportional terms. The same is *not* true of gender, however; the effect of being an athlete is larger for females in both absolute (probability) and proportional (odds) terms.[16]

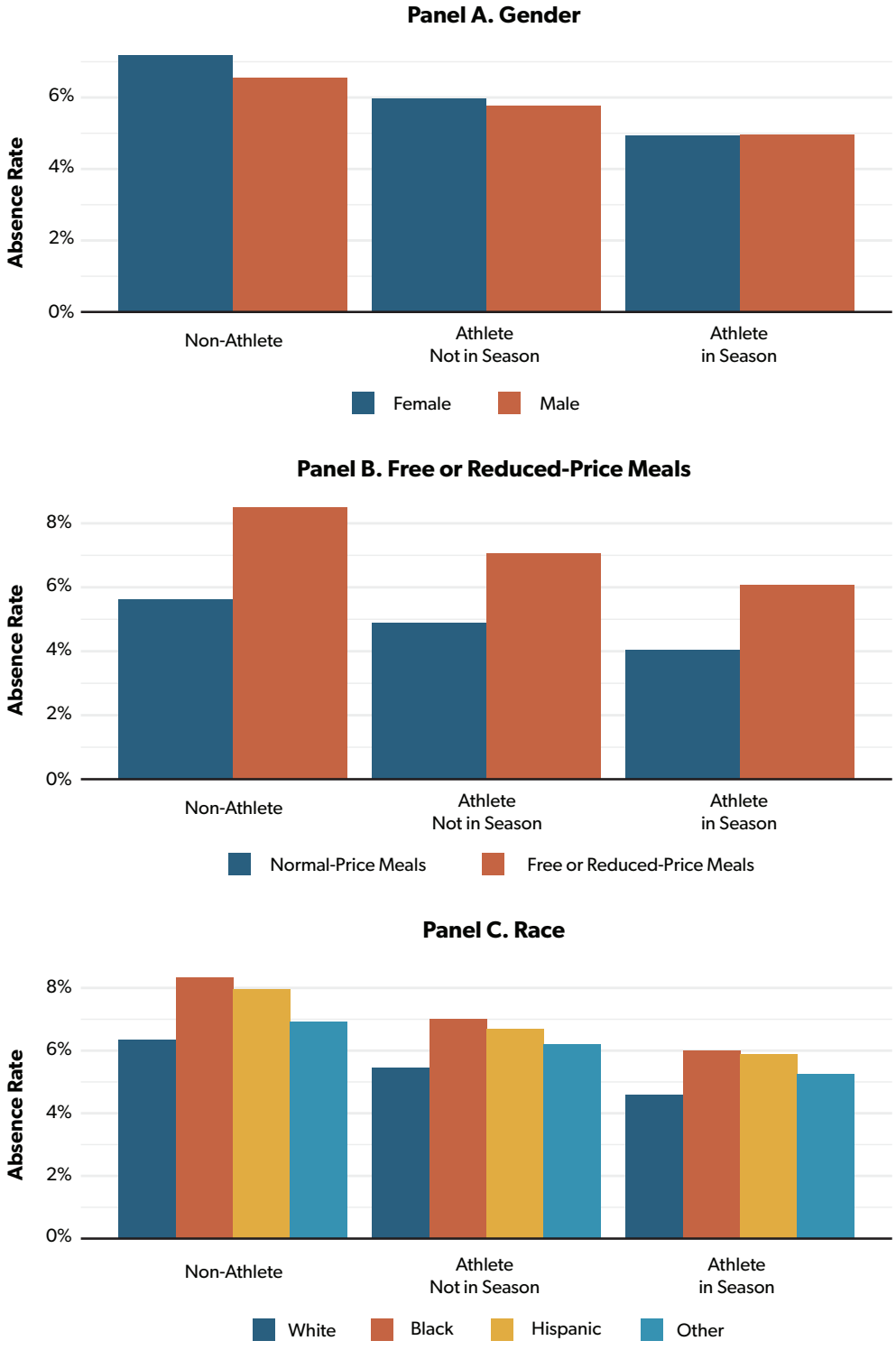
The More Sports, the Lower the Absenteeism?

So far, we have shown that athletes tend to have lower absence rates and chronic absenteeism compared with non-athletes. Are these effects stronger for students who play multiple sports? What about for students who played varsity sports for multiple years? Yes to the first question, and no to the second.

Students who played multiple sports during the year (e.g., football in the fall and baseball in the spring) had even lower chronic absenteeism rates than students who played during just one season (Figure 9). Controlling for an array of other variables, our models predicted that students who played no seasons (i.e., non-athletes) had a chronic absenteeism rate of 21.7 percent, compared with 15.2 percent for students who played one season, 11.4 percent for those who played two seasons, and 10.0 percent for those who played all three seasons. In other words, playing sports during more of the year means lower absenteeism, albeit with diminishing returns.

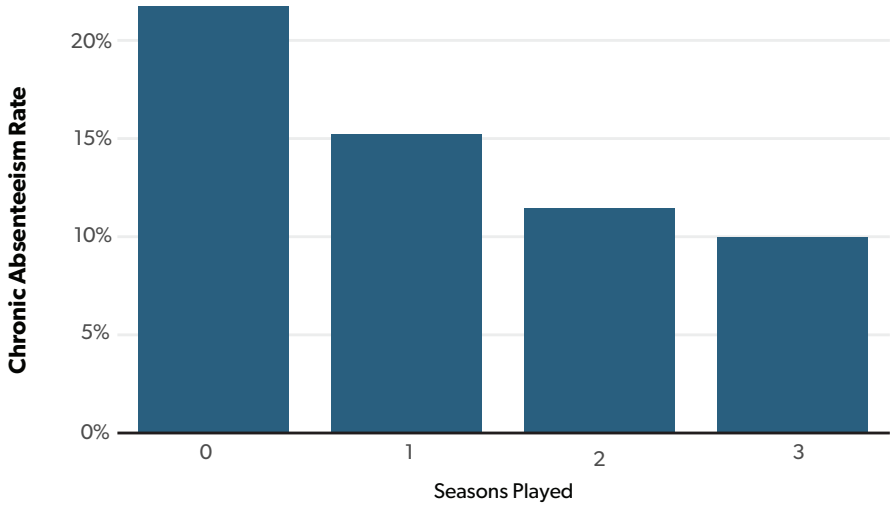
However, playing sports for *more years* did not seem to reduce absenteeism much, if at all. Restricting our sample to students for whom we have four years of data—12th graders and a few students who had been retained—we found that the chronic absenteeism rates of athletes were similar regardless of how

Figure 8. Effect of Sports Participation by Student Demographics According to Our Models



Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.
Note: The vertical axis shows average predicted absence rates for non-athletes and athletes if all students were in season versus out of season. Hence, the difference between the in-season and not-in-season rates is the average effect for athletes being in season.

Figure 9. Chronic Absenteeism by Number of Seasons Played in the 2023–24 School Year



Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.

many years they had played varsity sports (Figure 10). We saw a similar pattern for students who were not currently athletes: Their chronic absenteeism rates did not vary much by whether they had never played a varsity sport, played one year, or played multiple years. Hence, while there appears to be a dosage effect within a given year—playing more seasons in a year matters—there is little or no dosage effect across years.

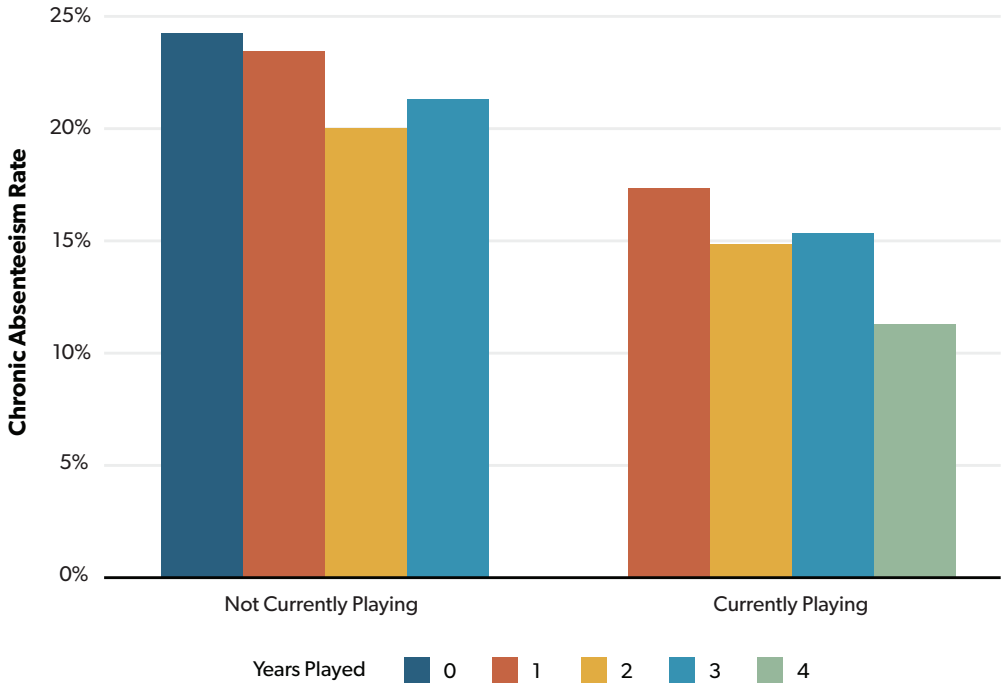
The lack of a dosage effect across years and the existence of a dosage effect across seasons strengthen our main findings regarding the effect of sports participation on attendance. Earlier, for instance, we estimated the athlete effect by controlling for observable variables, such as prior student achievement and school poverty. However, one might worry that much of the remaining effect *could* be due to selection. In other words, if the type of student who tends to become a varsity athlete differs from the general student population in ways we cannot measure that are unrelated to sports participation per se, then we might overestimate the athlete effect.

However, Figure 10 shows us that students who played sports in a past year but not during the one under consideration have essentially the same chronic absenteeism rate as those who never played. This suggests that it's participation during the *current* year that makes the difference, not unobserved differences that persist across years. Likewise, the existence of a dosage effect across seasons within a given year aligns our expectations from the in-season effect: If playing a sport lowers a student's absence rate, then playing more of the year should lower it even more.

Conclusion

We find that varsity sports participation is strongly associated with better student attendance, and we argue it is plausible that varsity sports participation *causes* better attendance. When we control for a number of factors that we know matter for both sports participation and attendance, we continue to find that varsity athletes are absent less often than their peers across the entire year and, further, that their attendance improves even more during their sports seasons. Across the school year, athletes' absence rate was 1.37 points lower than non-athletes'. That's a reduction of almost 20 percent.

Figure 10. Chronic Absenteeism by Total Years of Participation and Current-Year Participation



Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.
Note: The sample is restricted to students for whom we have four years of data.

It is difficult to explain these effects except by attributing some portion of them to varsity sports participation itself. Indeed, while the athlete effect could be explained by factors beyond achievement, race, and the other variables we control for, the in-season effect is harder to dismiss. It is almost certain that athletes' improved attendance during their sports seasons is predominantly *caused* by their active sports participation.

The magnitudes of these effects are substantial. According to even our most conservative estimates, the in-season effect alone reduces absence rates by 0.70 percentage points—more than 10 percent of the average absence rate for Indiana high school students—and the athlete effect is at least as large. Given the benefits athletics has on attendance, it is plausible that varsity sports participation also improves athletes' other outcomes.

Our research does not tell us why athletes have lower absence rates. The argument that sports participation increases student engagement is intuitive, but so are other explanations. For instance, it is not hard to imagine that eligibility rules for students, coaches' requirements for players, athletes' increased status at school, and the positive social pressures that come with being on a team might play a role. Nonetheless, from a policy perspective, these competing explanations may matter less than their shared implication: Structured voluntary activities can meaningfully change attendance behaviors.

In the pandemic's wake, much of the policy response to chronic absenteeism has focused, for good reasons, on mitigating structural attendance barriers that students and families face—such as obstacles related to poverty, transportation, housing, or health care—which neither families nor schools can easily

resolve. However, the in-season effect documented here points to a complementary insight: Students and families have meaningful agency over attendance.

Varsity sports are not a scalable attendance solution for all students, but they show that students have the means to improve their attendance when they have credible, motivating reasons to show up consistently. Varsity athletes' attendance shows that many students already do use these means, and solutions to the attendance crisis after the pandemic may lie in motivating more students to do the same.

About the Authors

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Appendix A

Table A1. Sports Participation and Absence Rates Across Student Subgroups for Our Sample, Broken Down by Team vs. Individual Sports

	Sports Participation (Percentage)			
	All Sports	Team Sports	Individual Sports	Number of Students
All High School Students	23.1	15.4	11.5	262,583
Gender				
Female	19.0	11.6	10.0	128,741
Male	27.1	19.0	12.9	133,842
Race				
White	26.7	17.5	13.7	175,628
Black	17.5	13.1	7.1	29,683
Hispanic	13.5	9.2	5.9	36,871
Other	18.2	11.9	9.1	20,401
Meal Status				
Normal-Price Meals	29.0	18.8	15.0	151,437
Free or Reduced-Price Meals	15.2	10.7	6.7	111,146
Discipline				
No Incidents	24.4	16.1	12.3	182,825
One or More Incidents	12.3	9.2	4.7	79,758
Special Ed				
No	24.8	16.5	12.3	225,825
Yes	12.8	8.3	6.4	36,758
Grade				
Ninth	20.2	13.2	10.0	70,949
10th	23.4	15.7	11.6	69,776
11th	24.7	16.4	12.2	63,894
12th	24.7	16.4	12.3	57,964
Math Score				
First Quintile (Lowest)	11.5	8.6	4.4	52,635
Second Quintile	18.0	23.9	7.8	52,594
Third Quintile	23.7	16.5	11.0	52,463
Fourth Quintile	28.8	18.9	14.7	52,537
Fifth Quintile (Highest)	33.8	20.0	19.7	52,354
School Poverty				
First Quintile (Least Poor)	19.6	12.4	9.4	52,244
Second Quintile	26.8	17.3	13.9	52,834
Third Quintile	28.8	19.6	14.7	52,039
Fourth Quintile	24.0	16.2	12.2	52,858
Fifth Quintile (Poorest)	16.4	11.6	7.3	52,626

Continued on the next page.

Table A1 (*continued*)

	Sports Participation (Percentage)			Number of Students
	All Sports	Team Sports	Individual Sports	
Urbanicity				
Urban	15.3	10.1	7.1	73,369
Suburban	18.9	11.8	9.2	81,635
Town	29.9	20.1	15.6	37,450
Rural	32.7	22.6	16.6	70,146

Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.

Table A2. Results of Linear Probability Models of the Absence Rates for All Sports, Team Sports, and Individual Sports

	All Sports	Team Sports	Individual Sports
Athlete	−0.97	−0.62	−1.43
In Season	−0.88	−0.97	−0.30
Male	−0.62	−0.66	−0.69
Race			
Black	−1.08	−1.09	−1.12
Hispanic	−0.48	−0.45	−0.45
Other	−0.20	−0.18	−0.19
Free or Reduced-Price Meals	1.48	1.56	1.54
Any Disciplinary Incidents	2.43	2.48	2.47
Special Ed	−0.57	−0.54	−0.51
Grade			
10th	0.70	0.69	0.69
11th	1.14	1.12	1.12
12th	1.93	1.91	1.91
Achievement			
First Quintile (Lowest)	1.79	1.85	1.83
Second Quintile	0.67	0.70	0.69
Fourth Quintile	−0.55	−0.59	−0.56
Fifth Quintile (Highest)	−1.25	−1.34	−1.24
School Poverty			
First Quintile (Least Poor)	−0.67	−0.60	−0.62
Second Quintile	−0.51	−0.50	−0.50
Fourth Quintile	0.24	0.23	0.24
Fifth Quintile (Poorest)	2.07	2.05	2.06
Urbanicity			
Suburban	−0.38	−0.40	−0.40
Town	0.05	−0.04	−0.03
Rural	−0.48	−0.58	−0.59
Observations	46,112,207	46,112,207	46,112,207
AIC	1,441,532	1,455,450	1,449,929
BIC	1,442,580	1,456,498	1,450,977
Standard Errors	By School	By School	By School
Week Fixed Effects	Yes	Yes	Yes

Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.
Note: Coefficients are multiplied by 100 and can be read in units of percentage points. In each model, a student is considered an athlete if they play the included sports (all, team, or individual), as contrasted with non-athletes and athletes in the excluded sports. Students are considered in season if the date is during the season of a sport the student plays. Hence, non-athletes are never considered in season, and the in-season coefficient is an additive effect specific to athletes. Reference categories are omitted and include non-athletes, out-of-season school days, and students who are female, are white, receive regular-priced meals, have no disciplinary incidents in the given year, have no state-recorded disability, are in ninth grade, are in the middle achievement quintile, attend a school in the middle poverty quartile, and attend urban schools. All coefficients are significant ($p < 0.05$).

Table A3. Results of Linear Probability Models of the Absence Rates for Specific Sports

	Football	Soccer	Basketball	Baseball and Softball	Track and Field
(Intercept)	5.88	5.85	4.83	5.05	4.92
Athlete	−0.44	−0.71	−0.88	−0.97	−1.62
During Sports Season	−1.52	−1.79	0.91	1.03	1.13
Athlete × During Sports Season	−0.38	−0.36	−0.75	−1.33	−0.27
Male	−0.68	−0.74	−0.74	−0.73	−0.73
Race					
Black	−1.12	−1.14	−1.10	−1.16	−1.08
Hispanic	−0.41	−0.38	−0.41	−0.43	−0.41
Other	−0.18	−0.18	−0.17	−0.20	−0.17
Free or Reduced-Price Meals	1.62	1.61	1.60	1.59	1.59
Any Disciplinary Incidents	2.52	2.52	2.51	2.51	2.50
Special Ed	−0.50	−0.49	−0.50	−0.51	−0.50
Grade					
10th	0.67	0.67	0.68	0.67	0.68
11th	1.10	1.11	1.11	1.11	1.11
12th	1.89	1.90	1.89	1.89	1.90
Achievement					
First Quintile (Lowest)	1.89	1.89	1.89	1.89	1.87
Second Quintile	0.73	0.72	0.72	0.72	0.71
Fourth Quintile	−0.61	−0.60	−0.60	−0.61	−0.59
Fifth Quintile (Highest)	−1.38	−1.35	−1.36	−1.37	−1.32
School Poverty					
First Quintile (Least Poor)	−0.49	−0.50	−0.51	−0.52	−0.53
Second Quintile	−0.45	−0.45	−0.46	−0.46	−0.46
Fourth Quintile	0.25	0.25	0.25	0.25	0.25
Fifth Quintile (Poorest)	2.05	2.05	2.07	2.07	2.05
Urbanicity					
Suburban	−0.40	−0.40	−0.38	−0.39	−0.39
Town	−0.10	−0.10	−0.07	−0.08	−0.06
Rural	−0.68	−0.68	−0.64	−0.63	−0.61
Observations	46,112,207	46,112,207	46,112,207	46,112,207	46,112,207
AIC	1,502,609	1,493,527	1,527,616	1,525,022	1,515,208
BIC	1,503,000	1,493,918	1,528,007	1,525,413	1,515,599
Standard Errors	By School	By School	By School	By School	By School
Week Fixed Effects	No	No	No	No	No

Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.
Note: Coefficients are in percentage points. In each model, a student is considered an athlete if they play the specific sport included (all, team, or individual), and the comparison group includes non-athletes, non-varsity athletes, and varsity athletes in the excluded sports. Reference categories are omitted and include non-athletes, out-of-season school days, and students who are female, are white, receive regular-priced meals, have no disciplinary incidents in the given year, have no state-recorded disability, are in ninth grade, are in the middle achievement quintile, attend a school in the middle poverty quartile, and attend urban schools. An observation is considered to occur during sports season if the date falls in the season of the sport of interest, regardless of whether the student plays it. Hence, both athletes and non-athletes are observed during and outside the season. The interaction *Athlete × During Sports Season* gives the additive effect of participating in a sport that is currently being played and is analogous to the in-season effect in the multisport models. (See Table A1.) These models lack the week fixed effects used in the multisport models because the factor *During Sports Season* performs an analogous function. All coefficients are significant ($p < 0.05$).

Table A4. Results of Linear Probability Models of the Absence Rates for All Sports for Excused and Unexcused Absences

	Excused Absence	Unexcused Absence
Athlete	−0.24	−0.72
In Season	−0.59	−0.29
Male	−0.56	−0.05
Race		
Black	−1.52	0.44
Hispanic	−0.83	0.35
Other	−0.53	0.33
Free or Reduced-Price Meals	0.45	1.03
Any Disciplinary Incidents	0.39	2.04
Special Ed	0.02	−0.60
Grade		
10th	0.27	0.43
11th	0.38	0.76
12th	0.57	1.36
Achievement		
First Quintile (Lowest)	0.12	1.67
Second Quintile	0.08	0.59
Fourth Quintile	−0.24	−0.31
Fifth Quintile (Highest)	−0.63	−0.62
School Poverty		
First Quintile (Least Poor)	−0.07	−0.59
Second Quintile	0.25	−0.76
Fourth Quintile	−0.01	0.25
Fifth Quintile (Poorest)	−0.10	2.17
Urbanicity		
Suburban	0.18	−0.56
Town	0.54	−0.49
Rural	0.20	−0.68
Observations	46,112,207	46,112,207
AIC	−22,284,322.5	−36,672,218.2
BIC	−22,283,274.2	−36,670,169.9
Standard Errors	By School	By School
Week Fixed Effects	Yes	Yes

Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.
Note: For both excused and unexcused absences, the reference category is "presence." In each model, a student is considered an athlete if they play the included sports (all, team, or individual), as contrasted with both non-athletes and athletes in the excluded sports. Students are considered in season if the date is during the season of a sport the student plays. Hence, non-athletes are never considered in season, and the in-season coefficient is an additive effect specific to athletes. Reference categories include non-athletes, out-of-season school days, and students who are female, are white, receive regular-priced meals, have no disciplinary incidents in the given year, have no state-recorded disability, are in ninth grade, are in the middle achievement quintile, attend a school in the middle poverty quartile, and attend urban schools. Coefficients in blue are not significant ($p > 0.05$).

Table A5. Results of Linear Probability Models of the Absence Rates for All Sports with Student Demographic Interactions

	By Gender	By Meal Status	By Race
Athlete	−1.2	−0.74	−0.9
In Season	−1.03	−0.85	−0.87
Male	−0.73	−0.61	−0.61
Race			
Black	−1.08	−1.06	−0.99
Hispanic	−0.48	−0.48	−0.43
Other	−0.20	−0.19	−0.22
Free or Reduced-Price Meals	1.48	1.63	1.48
Any Disciplinary Incidents	2.44	2.42	2.43
Special Ed	−0.57	−0.57	−0.57
Grade			
10th	0.70	0.70	0.70
11th	1.14	1.14	1.14
12th	1.93	1.93	1.93
Achievement			
First Quintile (Lowest)	1.79	1.78	1.79
Second Quintile	0.67	0.67	0.67
Fourth Quintile	−0.55	−0.56	−0.55
Fifth Quintile (Highest)	−1.24	−1.26	−1.25
School Poverty			
First Quintile (Least Poor)	−0.67	−0.65	−0.66
Second Quintile	−0.51	−0.51	−0.51
Fourth Quintile	0.24	0.24	0.24
Fifth Quintile (Poorest)	2.08	2.07	2.07
Urbanicity			
Suburban	−0.38	−0.37	−0.38
Town	0.05	0.05	0.05
Rural	−0.48	−0.48	−0.48
Is Athlete × Male	0.43		
In Season × Male	0.22		
Is Athlete × Free or Reduced-Price Meals		−0.71	
In Season × Free or Reduced-Price Meals		−0.15	
Is Athlete × Race			
Is Athlete × Black			−0.42
Is Athlete × Hispanic			−0.37
Is Athlete × Other Race			0.18
In Season × Race			
In Season × Black			−0.15
In Season × Hispanic			0.07
In Season × Other Race			−0.08

Continued on the next page.

Table A5 (*continued*)

	By Gender	By Meal Status	By Race
Observations	46,112,207	46,112,207	46,112,207
AIC	1,440,585	1,439,788	1,441,141
BIC	1,441,665	1,440,868	1,442,283
Standard Errors	By School	By School	By School
Week Fixed Effects	Yes	Yes	Yes

Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.
Note: In each model, a student is considered an athlete if they play the included sports (all, team, or individual), as contrasted with both non-athletes and athletes in the excluded sports. Students are considered in season if the date is during the season of a sport the student plays. Hence, non-athletes are never considered in season, and the in-season coefficient is an additive effect specific to athletes. Reference categories include non-athletes, out-of-season school days, and students who are female, are white, receive regular-priced meals, have no disciplinary incidents in the given year, have no state-recorded disability, are in ninth grade, are in the middle achievement quintile, attend a school in the middle poverty quartile, and attend urban schools. Coefficients in blue are not significant ($p > 0.05$).

Table A6. Results of Linear Probability Models of the Chronic Absence Rates for All Sports, Team Sports, and Individual Sports

	All Sports	Team Sports	Individual Sports
Athlete	−7.68	−6.13	−8.06
Male	−3.85	−4.06	−4.28
Race			
Black	−4.98	−5.06	−5.18
Hispanic	−2.05	−1.88	−1.90
Other	−1.05	−0.95	−0.97
Free or Reduced-Price Meals	7.72	8.12	8.05
Any Disciplinary Incidents	8.96	9.18	9.07
Special Ed	−2.74	−2.60	−2.37
Grade			
10th	3.11	3.02	3.00
11th	4.78	4.67	4.65
12th	7.89	7.78	7.77
Achievement			
First Quintile (Lowest)	9.29	9.57	9.53
Second Quintile	3.22	3.37	3.34
Fourth Quintile	−2.83	−3.03	−2.88
Fifth Quintile (Highest)	−5.67	−6.14	−5.66
School Poverty			
First Quintile (Least Poor)	−2.49	−2.16	−2.23
Second Quintile	−1.83	−1.78	−1.76
Fourth Quintile	1.43	1.37	1.42
Fifth Quintile (Poorest)	8.97	8.85	8.88
Urbanicity			
Suburban	−1.86	−1.99	−1.98
Town	0.40	−0.03	−0.02
Rural	−2.05	−2.55	−2.62
Observations	262,583	262,583	262,583
AIC	236,321	237,209	236,913
BIC	236,573	237,461	237,164
Standard Errors	By School	By School	By School

Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.
Note: Coefficients are in terms of percentage point change in the probability of chronic absenteeism. In each model, a student is considered an athlete if they play the included sports (all, team, or individual), as contrasted with both non-athletes and athletes in the excluded sports. Students are considered in season if the date is during the season of a sport the student plays. Hence, non-athletes are never considered in season, and the in-season coefficient is an additive effect specific to athletes. Reference categories include non-athletes, out-of-season school days, and students who are female, are white, receive regular-priced meals, have no disciplinary incidents in the given year, have no state-recorded disability, are in ninth grade, are in the middle achievement quintile, attend a school in the middle poverty quartile, and attend urban schools. Observations are for the full 2024 school year. Coefficients in blue are not significant ($p > 0.05$).

Table A7. Results of Linear Probability Models of the Absence Rates for All Sports, Team Sports, and Individual Sports with School Fixed Effects

	All Sports	Team Sports	Individual Sports
Athlete	−1.03	−0.63	−1.48
In Season	−0.86	−0.95	−0.28
Male	−0.64	−0.68	−0.72
Race			
Black	−0.93	−0.96	−0.99
Hispanic	−0.38	−0.35	−0.36
Other	−0.22	−0.21	−0.22
Free or Reduced-Price Meals	1.44	1.53	1.50
Any Disciplinary Incidents	2.28	2.33	2.32
Special Ed	−0.63	−0.6	−0.56
Grade			
10th	0.69	0.67	0.67
11th	1.13	1.10	1.10
12th	1.94	1.92	1.92
Achievement			
First Quintile (Lowest)	1.84	1.90	1.87
Second Quintile	0.72	0.75	0.73
Fourth Quintile	−0.62	−0.66	−0.62
Fifth Quintile (Highest)	−1.34	−1.44	−1.34
Observations	46,112,207	46,112,207	46,112,207
AIC	1,160,992	1,176,011	1,169,413
BIC	1,167,720	1,182,739	1,176,141
Standard Errors	By School	By School	By School
Week Fixed Effects	Yes	Yes	Yes
School Fixed Effects	Yes	Yes	Yes

Source: Authors' calculations using data from the Indiana Department of Education and the Indiana High School Athletic Association.
Note: In each model, a student is considered an athlete if they play the included sports (all, team, or individual), as contrasted with both non-athletes and athletes in the excluded sports. Students are considered in season if the date is during the season of a sport the student plays. Hence, non-athletes are never considered in season, and the in-season coefficient is an additive effect specific to athletes. Reference categories include non-athletes, out-of-season school days, and students who are female, are white, receive regular-priced meals, have no disciplinary incidents in the given year, have no state-recorded disability, are in ninth grade, are in the middle achievement quintile, attend a school in the middle poverty quartile, and attend urban schools. Observations are rounded to the nearest hundred.

Notes

1. National Federation of State High School Associations, "Participation in High School Sports Hits Record High with Sizable Increase in 2024–25," September 9, 2025, https://nfhs.org/stories/participation-in-high-school-sports-hits-record-high-with-sizable-increase-in-2024-25.

2. Stephen Lipscomb, "Secondary School Extracurricular Involvement and Academic Achievement: A Fixed Effects Approach," *Economics of Education Review* 26, no. 4 (2007): 463–72, https://www.researchgate.net/publication/222600546_Secondary_School_Extracurricular_Involvement_and_Academic_Achievement_A_Fixed_Effects_Approach; Howard T. Everson and Roger E. Millsap, *Everyone Gains: Extracurricular Activities in High School and Higher SAT® Scores*, College Entrance Examination Board, 2005, https://files.eric.ed.gov/fulltext/ED562676.pdf; Ryan Yeung, "Athletics, Athletic Leadership, and Academic Achievement," *Education and Urban Society* 47, no. 3 (2015): 361–87, https://journals.sagepub.com/doi/abs/10.1177/0013124513495277; Daniel I. Rees and Joseph J. Sabia, "Sports Participation and Academic Performance: Evidence from the National Longitudinal Study of Adolescent Health," *Economics of Education Review* 29, no. 5 (2010): 751–59, https://www.sciencedirect.com/science/article/abs/pii/S0272775710000506; Christopher J. Wretman, "School Sports Participation and Academic Achievement in Middle and High School," *Journal of the Society for Social Work and Research* 8, no. 3 (2017): 399–420, https://www.journals.uchicago.edu/doi/full/10.1086/693117; James J. Heckman et al., "The Benefits of Scholastic Athletics," Working Paper No. 34046 (National Bureau of Economic Research, July 2025), https://www.nber.org/papers/w34046; and John M. Barron et al., "The Effects of High School Athletic Participation on Education and Labor Market Outcomes," *The Review of Economics and Statistics* 82, no. 3 (2000): 409–21, https://www.jstor.org/stable/2646801?seq=1.

3. Nat Malkus, *Lingering Absence in Public Schools: Tracking Post-Pandemic Chronic Absenteeism into 2024*, American Enterprise Institute, June 12, 2025, https://www.aei.org/research-products/report/lingering-absence-in-public-schools-tracking-post-pandemic-chronic-absenteeism-into-2024/; Nat Malkus, *Long COVID for Public Schools: Chronic Absenteeism Before and After the Pandemic*, American Enterprise Institute, January 31, 2024, https://www.aei.org/research-products/report/long-covid-for-public-schools-chronic-absenteeism-before-and-after-the-pandemic/; and Return to Learn Tracker, American Enterprise Institute, https://www.returntolearntracker.net.

4. One notable exception used daily attendance records and team schedules from Seattle schools to estimate the causal effects of athletics participation on absenteeism, finding that participation reduces absences overall—particularly unexcused absences—with specific short-term game-day effects. Harold E. Cuffe et al., "Can School Sports Reduce Racial Gaps in Truancy and Achievement?," *Economic Inquiry* 55, no. 4 (2017): 1966–85, https://pages.uoregon.edu/waddell/papers/2017_EI_Cuffe-Waddell-Bignell.pdf.

5. We will hereafter refer to the school year 2023–24 by its latter year, 2024, as we will do with all other school years.

6. These data were constructed via a data-sharing agreement among IDOE, IHSAA, and AEI. IHSAA provided IDOE with student-level varsity athlete records for the 2022 through 2024 school years. IDOE matched IHSAA data with its own student data using names, dates of birth, and school identifiers. IDOE provided AEI with a de-identified dataset to ensure the protection of personally identifiable information.

7. We excluded elementary and middle school students, students who attended fewer than 90 days or more than 200 days (very rare), missing values, conflicting records, dates outside the usual school year, private schools, special programs, and schools without varsity athletes. In total, we dropped about 12.2 percent of student-day records.

8. This rate is more technically called the "average daily absence rate," which equals one minus the more familiar "average daily attendance rate."

9. Throughout, we use the term "varsity" to clarify that our data include only varsity athletes and not athletes participating in junior varsity or other organized sports teams. Our percentages underestimate total sports participation. Given the demonstrated lower absence rate of varsity athletes, the underestimate of total sports participation, and the assumption that athletes participating in junior varsity or other organized sports teams likely had somewhat better attendance than

non-athletes, the attendance differences are likely underestimates of the attendance differentials between all athletes and non-athletes.

10. Part of the difference in sports participation by income may be due to fees that public school students are asked to pay to participate in school sports teams. Researchers have established that these fees are relatively common. See C. S. Mott Children's Hospital, *Pay-to-Play Sports Keeping Some Kids on the Sidelines*, National Poll on Children's Health, January 20, 2015, https://mottpoll.org/reports-surveys/pay-play-sports-keeping-some-kids-sidelines. Researchers have also established that these fees function as a disincentive for low-income students to participate, though more research is needed on this topic and its effect. See Jennifer Zdroik and Philip Veliz, "The Influence of Pay-to-Play Fees on Participation in Interscholastic Sports: A School-Level Analysis of Michigan's Public Schools," *Journal of Physical Activity and Health* 13, no. 12 (2016): 1317–24, https://pubmed.ncbi.nlm.nih.gov/27617620/.

11. Some data suggest that the relationship between sports and grades may be somewhat stronger than that between some other school-related activities and grades; however, the associations are similar in direction and only slightly weaker based on survey evidence. See 50CAN and Edge Research, *The State of Educational Opportunity in America*, October 2024, https://50can.org/wp-content/uploads/2024/10/50CAN.EducationOpportunitySurvey.pdf.

12. Key to interpreting these differences is understanding that we call our comparison group non-athletes for ease of reference, but it includes non-athletes and non-varsity athletes. Those in the latter group play non-varsity sports, but we cannot distinguish them from non-athletes in our data.

13. For sports that both females and males play, the season for females may be slightly different than that for males. In our single-sport models, we use the most inclusive categorization for the season, counting a day as during the sports season if either males or females are in season. In practice, this choice makes little difference, as the gender-specific sports calendars are closely aligned, typically no more than a week or two off at either end.

14. Our results are for 2024. The equivalent estimates for 2023 are all in the same directions but generally with larger magnitudes, likely because Indiana's absence rate was higher in that year. The athlete effect across all sports was a 1.13-point drop, and the in-season effect was a 0.96-point drop.

15. "Team sports" include baseball, basketball, football, softball, soccer, unified flag football, and volleyball. "Individual sports" include cross-country, golf, gymnastics, swimming and diving, tennis, track and field, unified track and field, and wrestling.

16. We used a logit model to test this proportional case and found that the interactions between being an athlete and being in poverty, being in season and being in poverty, being an athlete and race, and being in season and being in poverty are all insignificant. In other words, the estimated effect of being an athlete or being in season as an athlete on the *odds* of absence are independent of race and poverty. In contrast, the interactions with gender were significant: The athlete and in-season effects on the *odds* of absence are larger for female students than for male students.