

2023

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Recommended Citation

Haub, Christopher; Paugh, Jon; Salcido, Alonso; and McGee, Monnie (2023) "Impact of COVID-19 on Recruitment of High School Athletes to DI Track and Field," *SMU Data Science Review*. Vol. 7: No. 3, Article 4.

Available at: <https://scholar.smu.edu/datasciencereview/vol7/iss3/4>

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Impact of COVID-19 on Recruitment of High School Athletes to DI Track and Field

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Abstract. Due to COVID-19, in the spring of 2020, the NCAA gave scholarship athletes an extra year of eligibility but did not increase the number of scholarships a school could issue. This potentially led to increased competition for scholarships as coaches could choose between retaining athletes or recruiting new ones. Furthermore, the Spring 2020 track and field season for high school seniors ended early – limiting high school athletes’ chance to get their best scores, and interrupting student to college interaction. This research looks specifically at the impact of COVID-19, and the resulting NCAA policy changes, on the recruitment to DI of high school athletes who excelled at the 200-meter track and field events. The study looks at both the supply side, by examining recruitment trends and athlete scores, and the demand-side, by looking at DI track and field grade composition.

1 Introduction

Many high school students participating in track and field hope to take their talents to the college level. For some, a scholarship to a NCAA Division I school is the only way that they can attend a four-year college. They work hard to obtain a scholarship by attending various meets, first local meets, then regional meets that eventually feed into state championships. As the season progresses, students participate in various meets, culminating in a “championship” round of meets starting in April. During the championship round, athletes must place well in their respective events to move to the next round, and finally, the state meet. Generally, track times get faster as the season progresses, and late season events are restricted to faster competitors. Meanwhile, college track and field coaches are reviewing players’ performance, and deciding who to extend roster spots and scholarships to. Starting in 2019, college coaches were forbidden to contact athletes until August 1 of their junior year. Normally the senior year at high school is a student’s last chance to attract attention and be recruited to collegiate track and field, hopefully with a scholarship. And once on a DI track and field team, athletes had five years of eligibility to compete in four full years.

Thanks to NCAA scholarships, Athletes can attend college tuition-free or with beneficial athletic financial aid (Ransom, K. 2022). Typically, only about two percent of high school athletes receive scholarships to participate in college sports. As reported by the NCAA, each year, over 180,000 student-athletes benefit from approximately \$3.6 billion in athletic scholarships within Divisions I and II.

The COVID-19 pandemic in 2020 impacted both high school competitions and DI eligibility rules. Starting in mid-March 2020 high school track and field events were

cancelled, effectively ending the season, just before the championship round of meets. On the collegiate side, in 2020 the NCAA granted an extra year of eligibility and scholarships to athletes currently on the roster. The roster sizes of the schools were not changed even though there was an extra year of eligible athletes for each sport and school. High school seniors experienced increased competition for slots of DI track and field teams.

It is important to research how the COVID-19 and the resulting NCAA eligibility changes affected recruitment outcomes, and thereby the lives of hundreds of high school students. The best student-athletes in track and field can hope to obtain one of the 12.6 scholarships given to men's teams or one of 18 scholarships given to women's teams by each Division I program (NCSA College Recruiting, 2023). In this unprecedented situation where both high school students and college students had not been able to compete in 2020, were high school seniors deprived of the opportunity to be on DI track and field teams, and get scholarships?

Prior research has found that high school seniors in 2020 were more prone to mental health issues than students before them (Miranda, et al., 2020). The impact of recruiting high school athletes due to COVID-19 made students feel like obtaining a scholarship was a far-fetched aspiration (Alcon, J., 2021). Complicating matters further was that different states had different rules, making it difficult for coaches in the recruitment process. The extra-year rule in college sports had repercussions to both incoming and current student-athletes. Many seniors who could have potentially moved on instead remained in school for an extended period to continue their collegiate athletic careers. College coaches could take care of athletes already on their rosters rather than considering new incoming students.

Up to this point, how student-athletes were affected by COVID-19 is anecdotal. This research sheds light on these impacts by gathering data on athlete performance and athletic rosters before, during and after COVID-19's major impacts in 2020. The study draws from public data, web-scraped from Athletic.net and TFRRS.org, of high-school track and field athlete performance and collegiate team rosters. This is complemented by manual research into track and field DI recruitment results for top ranked high school Senior track and field athletes from 2019 and 2020. Together this data is used to analyze the impacts of the shortened 2020 season and DI eligibility changes due to COVID-19 on DI track and field recruitment. The next section reviews the literature on college recruitment and COVID-19. Next, the paper focuses on the impact of COVID-19's shortened season on the fastest times of the top 200-meter high school track and field athletes from 2019 and 2020. The relationship between recruitment and best times is examined, and recruitment outcomes for these two years are compared. Finally, the grade composition of DI track and field teams is analyzed to see how COVID-19 changes have impacted recruitment of freshmen vs. retention of other grades.

2 Literature Review

2.1 College Recruitment

There are specific rules from the NCAA that govern recruiting for Division I track and field. Prior to June 15th after a recruit's sophomore year, contact is off limits for all forms of communication and interaction. Starting on June 15th after their sophomore year recruits can receive texts, direct messages, and emails. Then, starting August 1st of their junior year, they can take official and unofficial visits to college campuses. Finally, off campus contact in person with college coaches is prohibited before August 1st of their junior year, this includes at meets.

In standard years, Division I track and field coaches would attend high school track meets to get a first-person look at potential recruits. This provides valuable information to the coaches outside of track times themselves. This in-person interaction allows the coach to see how the recruits interact with each other and if they could be a good fit for their program in addition to other non-measurable factors.

Athletes are recruited based on their event times, training history, as well as academic data like GPA and test scores. The NCAA offers guidelines for Division I recruitment in terms of a range of times for each event, coaches are not obliged to adhere to this. For example, for men competing in the 200-meters event, the DI Top time is 10.41 seconds, and the Low time is 10.8 seconds. For women in the 200-meters event, the DI Top time is 22.78 seconds, and the DI Low time is 23.9 seconds.

2.2 COVID-19 Impact

Due to COVID-19 and the suspension of meets and in-person recruiting in March of 2020, coaches lost out on valuable information about high school track athletes. The pandemic had one of the biggest effects on recruiting and being able to take in-person campus visits (Illum, J., 2022).

The pandemic's profound impact on recruitment manifested most prominently in the athletes' inability to conduct thorough visits to the campuses of the schools they aspired to join. The customary on-campus excursions to assess facilities and engage in face-to-face conversations with coaches were rendered impossible by the pandemic's constraints. COVID-19 presented formidable challenges for both athletes and recruiters in the recruitment process.

Prior research has examined the factors influencing the decision of elite junior track and field athletes to either persist or discontinue their engagement in elite-level athletic participation during the transitional period spanning from 18 to 24 years of age (Bennie et al., 2006). The findings of this study revealed that the transition years pose a significant challenge for elite athletes due to the remarkable influence of psychological, social, economic, educational, and political factors, which exert substantial pressure on the athletes and contribute to athlete withdrawal from elite participation. Nevertheless, the results underscore the growing prospects for elite athletes to sustain their involvement at an elite level during these transitional years, provided that the athletes demonstrate determination and receive suitable support. The COVID-19 pandemic impacted this scenario, leading to a decline in available scholarships and adversely affecting the past two graduating recruiting classes.

The COVID-19 pandemic has led to a significant shift in the value placed on high school athletes as potential college recruits (Ransom, K., 2022). With schools facing financial constraints and having fewer scholarships available for incoming freshmen, the recruitment process has become exceptionally challenging. As a result, finding a

suitable athletic program to call home has never been more difficult for these young athletes. The pandemic's impact has reshaped the landscape of college sports recruitment, putting high school athletes in a more precarious position than ever before.

2.3 Analysis Methods

One factor overlooked by most of the research on college athletes is the differences between scholarship and non-scholarship athletes. This research focused on the differences between those two groups about academic performance and time-to-degree in addition to demographic and profile characteristics of Division IA scholarship and non-scholarship student-athletes (Rubin et al., 2014). The analysis identified specific variables, namely sport (Women's Outdoor Track and Field), race (Asian, White), sport type (Individual), and sex (Female), as descriptors for the non-scholarship student-athlete group. Notably, non-scholarship student-athletes exhibited higher grade point averages than their scholarship counterparts. In contrast, the scholarship student-athlete group was characterized by race (Black), sport (Football, Men's Basketball, Women's Basketball), sport type (Team), and sex (Male). Moreover, scholarship student-athletes completed their degrees in a shorter timeframe than non-scholarship student-athletes. These findings suggest an inverse relationship between academic performance and time-to-degree variables based on scholarship status. The study's results demonstrate significant differences between the scholarship and non-scholarship student-athlete groups regarding demographic factors, academic performance, and time-to-degree variables.

The stopping of high school athletics affected the mental health of those who normally could complete (McGuine et al., 2022). In the Spring of 2020, certain high schools within the United States decided to permit their students' engagement in interscholastic sports, while others opted to cancel or delay their sports programs considering apprehensions surrounding the transmission of COVID-19. The McGuine study found that adolescents who engaged in sporting activities amid the COVID-19 pandemic reported a reduced manifestation of symptoms related to anxiety and depression. They also demonstrated enhanced physical activity levels and quality-of-life scores compared to their counterparts who did not participate in sports.

COVID-19 affected many aspects of life in 2020, including academic research at universities (Alam et al., 2021). Academic institutions were undeniably impacted by funding reductions, with the charity sector, a prominent source of research funding, experiencing significant financial setbacks. The Alam study concludes that COVID-19 had a pronounced negative influence on research output due to the implementation of national lockdowns and the enforcement of social distancing measures, as well as impacting the completion of research projects by Ph.D. candidates. The pandemic led to an upsurge in the production of substandard studies focused on investigating the virus, often characterized by inadequate methodology and execution (Alam et al., 2021). The surge was attributed to the popularity and trendiness surrounding COVID-19 research at the time. Additionally, evidence indicates that the pandemic exacerbated pre-existing gender disparities within the research field, further widening the gender inequality gap.

Media reports addressed adolescents' mental health throughout the COVID-19 pandemic (Gertrud et al. 2021). They emphasized the potential immediate and lasting ramifications of the pandemic and the accompanying containment measures. The reports garnered significant attention, with headlines highlighting the notion of a "lost generation" of young individuals who have been deprived of essential developmental opportunities due to the pandemic. Given the broad reach of such messages, the research explored the question: Does the present generation of adolescents truly face irreparable setbacks due to the pandemic? They found that some groups of adolescents are more at risk of being present with mental health issues than others. The study found that while there were risks to mental health, the long-term consequences are not fully understood. In conclusion, the portrayal of young people's well-being in news headlines is likely to oversimplify the true complexity of the situation.

The impact of COVID-19 was felt throughout the education system (Tarkar et al. 2020). The closing of schools and colleges disrupted the entire education system. Students graduating from university in the spring of 2020 received no job offers as most businesses were closed or operating in a reduced capacity. The study concluded that evaluating students' internal learning assessment should not be disregarded; instead, it is advisable to defer it (Tarkar et al. 2020). To mitigate prolonged unemployment among fresh graduates, it is imperative to devise novel policies to facilitate their successful integration into the labor market.

COVID-19 has had a particularly negative impact on sports (Mehrsafar et al.). In 2020, athletic events at all levels were cancelled or postponed to limit the spread of the virus. Canceling events and mandates for social distancing affected athletes' abilities to continue training. The Mehrsafar study concluded that during critical circumstances, health authorities and sporting communities must discern their priorities and devise comprehensive plans to uphold the well-being of athletes and sustain athletic endeavors. The National Basketball Association played in a self-contained bubble at the Disney World resort in Florida. While it was an effective strategy for continuing the season, athletes said they underestimated the mental impact of not having the ability to go out in the outside world (Bird, S.P., 2021) Various factors come into play when prioritizing and strategizing, including but not limited to physical and mental health, resource allocation, and the consideration of short-term and long-term environmental factors.

These tools play a crucial role in extending offers to prospective players. For athletes on the cusp of receiving an offer based solely on their film, their chances can significantly improve by showcasing their skills during camps, practices, or workouts. Such performances can potentially elevate their standing on recruiting boards, leading to extended offers.

The suspension of all spring college sports, coupled with the cancellation of the NCAA Men's Basketball Tournament, precipitated a significant revenue setback for college athletics, as documented by Williams et al. This unforeseen financial challenge compelled college presidents and athletic directors to depart from their conventional business models and embark on a journey of restructuring their athletic budgets, navigating uncharted territory.

Even before the onset of the COVID-19 Pandemic, college athletics grappled with persistent issues such as mounting long-term debt, an excessive number of sports offerings, an overabundance of athletic personnel, and exorbitant coach salaries.

However, the pandemic catalyzed a paradigm shift, compelling college presidents and athletic directors to undertake drastic measures for survival. These measures included salary reductions, the discontinuation of certain sports programs, and personnel downsizing.

In 2020, the repercussions of the COVID-19 pandemic became a major source of apprehension for college athletic departments (Hartman, 2020). During this period, five NCAA Division I conference collectively addressed a letter to Mark Emmert, the association's President, seeking flexibility to various NCAA regulations. Their request aimed to navigate the challenges posed by the pandemic and its significant impact on collegiate sports. The study delves into the challenges posed by the pandemic. It highlights the implications for maintaining gender equity in sports, specifically focusing on issues such as bylaw waivers, compliance, NCAA regulations, and the experiences of women athletes. This research serves as a valuable contribution to the graduate-level discourse surrounding the intersection of COVID-19, financial constraints, and Title IX compliance in the field of sports communication.

On March 13, 2020, the NCAA responded to the coronavirus pandemic, which resulted in the shutdown of almost all societal activities (McAllister, M. 2021). The institution of a pandemic dead period by the NCAA prohibited any face-to-face contact. Consequently, recruits' intentions to attend spring practices, participate in regional and school camps, and make unofficial or official visits to potential colleges were entirely wiped out.

3 Methods

3.1 Looking at Collegiate Track and Field Division I Participation Instead of Scholarship Offer

This study originally hoped to look at the impact of COVID-19 on NCAA Division I track and field scholarships; however, there is no publicly available data-driven way to identify which athletes on a Division I team are receiving scholarships. The financial aid department at each school or the individual team coaches are aware of which teams have received a scholarship for track and field. Neither of the web sites offering data for track and field rosters, Athletic.net nor tfrss.org, provide a way to identify which students are on scholarship. Furthermore, in terms of judging impact, the concern is which students were offered scholarships (whether they accepted or not), and this information is not available.

The NCAA publishes guidance on scholarships for track and field athletes (NCAA College Recruiting, 2023), with a top and low score for each track and field event by event and gender. The purpose of this guidance is to inform students about their scholarship prospects. But the guidance is not binding for the teams – a coach can recruit students outside of this range. Furthermore, students may participate in many events, and it is up to the recruiting college to review the records of each student-athlete, it is not based on a single sport. Given that the top and low scores are only guidance, and that we have no records of which students received a scholarship, this study focuses instead on whether a student is on the Division I track and field team roster. Not all students on the roster receive scholarships – so there is a limitation to this approach.

Another question would be to look at whether student athletes remained in Division I an extra year due to the extension for COVID-19. While COVID-19 gave student athletes in Division I track and field an extra year of eligibility, it is difficult to identify whether a student is taking advantage of this extra year due to redshirt rules. The student athlete normally gets 5 years to play 4 full seasons, starting from when they begin college. However, a student may be on the team roster and not participate (redshirt status), thus not using the eligibility of one of their 4 years, while counting against the 5 years limit (see section 12.8.1.7.1.2 of NCAA, 2023). Also, if an athlete is injured or has other special situations, they can petition to not count the year towards eligibility even if they participated in some events. Further, a student could transfer schools, and while Division I will track their years of activity across teams, the individual student records are not linked together in a systematic fashion. Section 12.8.1.71 of the NCAA Division I manual outlines waiver criteria for the five-year rule on athlete eligibility, including injury, illness, bad athletic advice, natural disaster, and financial difficulties (NCAA, 2023). These rules make it hard to determine if a student athlete is counting a year on a team towards their 4-year maximum. In turn, if an athlete is on a roster for five years, it is difficult to determine if that is due to one of the years being a redshirt year. Anecdotally, this issue manifested while researching DI roster data- there were examples of athletes listed on the roster of teams, but their “bio” section on their team’s web site noted the year as a redshirt year. Due to this challenge, this study does not attempt to examine to what degree individual students are taking advantage of the extra year of eligibility. The study focuses solely on Division I team rosters.

3.2 High School and Collegiate Track and Field Athlete Performance

The primary source of data is the web site Athletic.net. The web site allows high school and collegiate athletes and teams to self-submit scores and times for track and field events. Athletic.net also provides a ranked list of scores for athletes by year, event, and gender for high school and collegiate athletes. For example, Athletic.net maintains the ranked list of top athletes for 100, 200, and 400-meter for 2019 and 2020.

Unfortunately, while there are both high school and collegiate records on this web site, they are not necessarily linked. In many cases the high school and collegiate records are maintained separately, with different primary student identifiers on Athletic.net.

To overcome this and link the high school and collegiate records, the following process is applied:

- 1) Obtain the name, team name, and hometown of the athlete.
- 2) Search Athletic.net by name for matching athletes
- 3) Obtain the name, team name, and location for the matching collegiate athlete with the same name and who is active in the years following the senior year of the high school record.
- 4) Search using a search engine for the track and field data for the name for the college team by name.
- 5) Once the record is found, verify that collegiate record has a full name matching the high school record, participated in the year following the senior year of the athlete at the collegiate level. Also, verify that the athlete's hometown matches what was obtained from the high school record.

- 6) Search engine results may also turn up college records for other sports (e.g., football), explaining why the high school athlete may have chosen not to go to participate in university level track and field.

Table 1. Ranked Athlete Data Record Fields

Field Name	Field Meaning
Rank	Rank of the athlete for 200-meter event for the year, out of all high school seniors
Age	Age of the athlete for the year of ranking
Grade	Grade of the athlete (e.g., “12” for Senior)
Athlete	Name of the athlete
AthleteLink	Link on Athletic.net to the athlete’s profile including event records
RankYear	The year they were ranked
WentToDivITF	Indicates whether they went to Division I track and field in the following year. If they did go to DI track and field in a following year, or do DII, this does not count for a “Yes.”

Table 2. Athlete Event Record Fields

Field Name	Field Meaning
AthleteLink	This works as an identifier of the record.
Event	The name of the event (e.g., “200-meter”)
Placement	The athletes relative finish time versus competitors
Time	The time for the event (in seconds)
Date	The date of the event
MeetName	The name of the meet in which the event occurred
MeetCode	A code which indicates further information about the meet. E.g., “V F” for “varsity”
EventYear	The year in which the event occurred
SeasonName	Indicates if the event was “outdoor” or “indoor”
SchoolLevel	Indicates “HighSchool” vs “Collegiate”

SchoolName	The name of the school whose team the athlete was associated with
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To examine and compare the 2019 vs. 2020 data, one useful analysis is to fit a curve to the 200-meter individual scores of senior students for that year. The dataset consists of all times from their senior year for a sampling of top high school senior athletes in 2019 and 2020, for men and woman (the same athletes analyzed in the section above with logistic regression). This is done by:

- 1) Convert the data and time of the event to an integer. Then divide this by $1000000000*60*60*24$ (the number of nanoseconds per day).
- 2) Use Python statsmodel glm function to generate a linear model with the date time integer as the explanatory variable and the event time in seconds as the response variable.
- 3) Obtain the intercept, and coefficient value for the model, along with the p-value for the coefficient.

This set of steps was performed individually against the top 200-meter athletes from four groups; 2019 Men, 2019 Women, 2020 Men, and 2020 Women. The results appear in section 4.1.

3.3 Build a Model to Predict If Graduating HS Seniors Goes to DI Track and Field Based on HS Track and Field Times

The first question this study tries to answer is what impact COVID-19 had on student athletes who high school Seniors in were 2020, when the season was ended early. Was Spring 2020 high school track and field playing out like a normal season prior to COVID-19? And how did COVID-19 impact the top scores of the Senior athletes from Spring 2020 who were trying to attract coaches' attention? To examine this question, the event data for top high school senior athletes in 200-meters events from 2019 and 2020 was scraped from athletics.net web site.

The next question addressed with this data was whether the Spring 2020 high school recruitment to DI track and field was different from the 2019 season. To answer this question, for each of the Senior athletes who got top 200-meters scores, the DI track and field recruitment outcome of that student was determined. Web searches were performed manually to determine whether the student went on to join a DI track and field team the year after their graduation. Then a logistic regression model was built based on the student athlete's best times in the 100-meters, 200-meters, and 400-meters events to predict whether the athlete goes on to DI track and field. The purpose of this model building was to mathematically establish the relationship between the athlete's times and whether they went to DI track and field.

Scrapping Data for Top 200-meters HS Athletes for 2019 and 2020

To examine the impact of COVID-19 on recruitment to NCAA Division I track and field, this study scrapes data from Athletic.net for the top high school students in the 200-meters event. The top seniors for 2019 and 2020 for 200-meters are identified based on the reporting in the Athletic.net site. Then the times for these athletes at the

high school level are scraped, and finally the matriculation status of the athlete to NCAA Division I is determined based on the steps in 3.1. Because the determination of the NCAA Division I matriculation outcome is a manual process, the sample is limited.

Athletic.net provides team rosters for both high school and college track and field teams by year and gender. These records in turn link to individual student athlete records, with athlete scores and times by team, year, and event type. Unfortunately, these rosters do not show the student grade (Freshmen, Sophomore, Junior, Senior).

Table 3. Number of Athletes by Year and Gender

	Year	
	2019	2020
Male	165	130
Female	99	100

The athletes are the top ranked high-school athletes for 200-meters. Some of these athletes lack any results for 100 and 400-meter event.

Table 4. Missing data by field.

Field	Count Missing			
	2019 Male	2019 Female	2020 Male	2020 Female
Best 100-meters time	13	6	19	7
Best 200-meters time	0	0	0	0
Best 400-meters time	54	35	48	51

Modeling DI Track and Field Recruitment using Logistic Regression

Two approaches are taken to model creation – each time using logistic regression. The students in the data sample had the fastest times in the 200-meter event, but it is possible their 100-meter and 400-meter times were considered by coaches when deciding whether to recruit them onto DI Track and Field teams. The first model uses the best 100-meter, 200-meter and 400-meter times for the athletes. The second set of models takes the opposite approach by creating 3 separate models, each using the top time for the student from one of the 3 events.

Logistic Regression Approach 1

- 1) Determine the fastest 100-meters, 200-meters, and 400-meters times for each athlete.

- 2) Create a linear model to predict the 100-meters score based on the 200-meters score, using available data in the data set. Impute the value of the 200-meters time based on this model.
- 3) Impute the 100-meters scores using this linear model where necessary.
- 4) Create a linear model to predict the 400-meter score based on the 200-meter score. Impute the 400-meters time based on this model.
- 5) Impute the 400-meter score using this linear model where necessary.
- 6) Create a logistical regression model based on the top 100-meters, 200-meters and 400-meters times of the athlete. Create a separate model for 2019 and 2020 data.
- 7) Use 3-fold cross validation to develop the model and obtain results – accuracy, precision, recall using scikit-learn LogisticRegression model.
- 8) Use statsmodel.formula.api package’s glm to create a logistic regression model using all data, and obtain intercept, coefficients, Z-value, p-statistic, pseudo-R-squared values. The model uses the athlete’s top times as the explanatory variable and the DI track and field recruitment outcome as the response variable.

Logistic Regression Approach 2

- 1) Determine the lowest 200-meters time for each athlete.
- 2) Develop a logistic regression model based on 200-meters event time. Create separate models also for 2019 and 2020 data.
- 3) Use 3-fold cross validation to develop the model and evaluate results – accuracy, precision recall using scikit-learn LogisticRegression model.
- 4) Use statsmodel.formula.api package’s glm to create a logistic regression model using all data, and obtain intercept, coefficients, Z-value, p-statistic, pseudo-R-squared values. The model uses the athlete’s top time for 200-meters time as the explanatory variable and the DI track and field recruitment outcome as the response variable.

3.4 Collegiate Track and Field Team Grade Composition

After focusing on the Senior athlete in the prior section, this section shifts focus to look at the impacts of COVID-19 on overall DI Track and Field Rosters. If 2020 Spring high school Seniors were less likely to be recruited to DI Track and Field, we may expect a decrease in freshmen in the following year. To examine this question, roster data is gathered from two sources and analyzed.

Roster Data from Athletics.net

Athletic.net provides team rosters for both high school and college track and field teams by year and gender. These rosters do not show the student grade (freshmen, Sophomore, Junior, Senior). To get the grade of the student each year, it is possible to link to the student's times and scores while participating for a given team. This can be linked back to the roster by the student identifier in the roster.

Process to get grade composition for NCAA Division I teams using Athletic.net:

- 1) Scrape the team roster for the outdoor season from Athletic.net for many NCAA Division I teams by year from 2018 to 2023.
- 2) The roster includes the athlete's ID, in a link. Using this link scrape the individual event records for each athlete on the team.
- 3) Join the team roster, year data with the athletic event records for the athlete using the merge function in the pandas library. The join is done based on the AthleteLink value, which contains an athlete Id and is present on both the roster and used to pull the athlete's event data.
- 4) Use pandas group by function and value counts function to get a count of occurrences of records by year by grade level.
- 5) Use pandas pivot function to produce a stacked bar chart of the number of students in each grade by year.

The following chart shows the number of athlete records that were scraped from the Athletic.net web site for each year. The x-axis is the year of the event, and the y-axis is the number of records scraped. The year here corresponds to the year when the athletic events occurred – so 2020 is for the team for Spring 2020. There was a decrease in event count for 2020 and 2021.

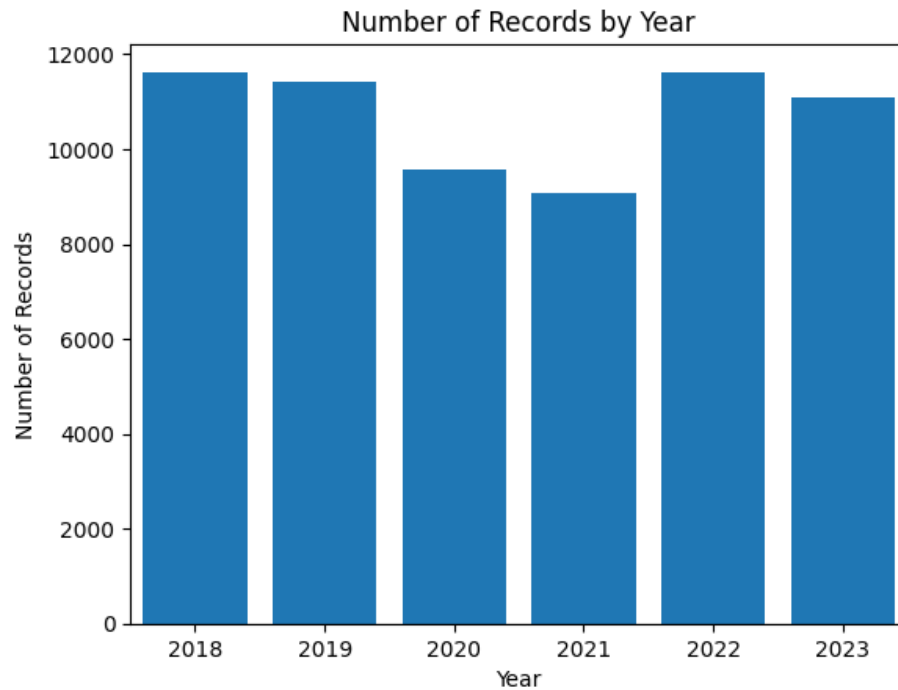


Figure 1. Athletic.net - Number of records per year used for team composition analysis (grade)

Roster Data from TFRRS.org

In addition to using Athletic.net for roster data, this study also utilizes the website TFRRS.org. TFRRS.org provides roster, team, and individual athlete event data, but it has an advantage in that the roster data includes the grade level of athletes directly in the roster without a need to link to the athlete's event records. This site provided an alternative source of NCAA Division I team roster data which is likely more accurate than Athletic.net because it was simpler to acquire. Meets upload data to TFRRS.org rather than being individuals as with Athletic.net. Process to collect roster data from TFRRS.org:

- 1) Collect the list of NCAA Division I teams and their links, for both men and women, from TFRRS.org (<https://www.tfrrs.org/leagues/49.html>)
- 2) For each team, for each gender M and F, for each year from 2017 to 2023, collect the roster for the team – athlete name, athlete link, athlete grade.

The following chart shows the number of athletes per year that were scraped from rosters from TFRRS.org. The x-axis is the year, and the y-axis is the number of

records scraped. There was a decrease in the availability of roster data in 2020. This lack of rosters is due to whole teams' rosters not being available in 2020. Only 263 teams have a roster available on TFRRS.org in 2020 versus between 343 and 358 for the other years.

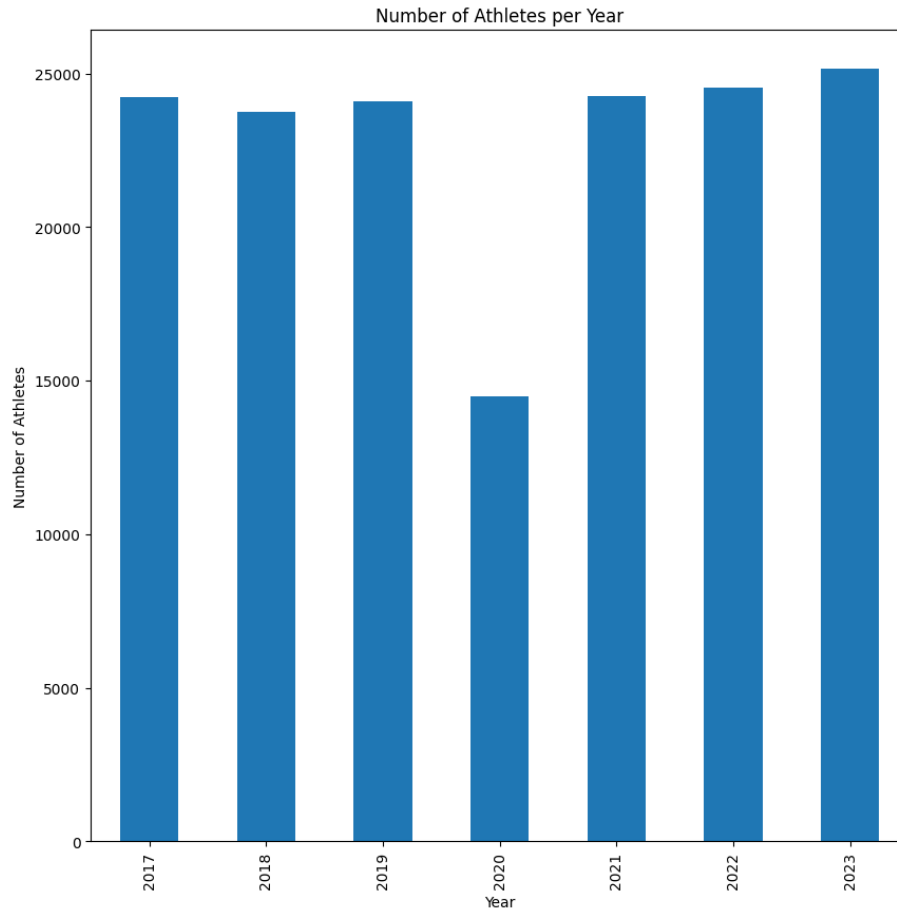


Figure 2. TFRRS.org - Number of records per year used for team composition analysis (grade)

4 Results

4.1 High School Athlete Statistics by Year

The scores for the 50 athletes with the fastest race times for 200-meters allow us to see the impact of the abbreviated 2020 season on high school level track and field athletes. The average fastest time for the male athletes was half a second slower in 2020 than 2019. And the average fastest time for female athletes was 0.6 slower in 2020 than 2019.

Table 5. Mean Top 200 Meter Score for the Top 50 Students by Gender

	Year	
	2019	2020
Male	21.0	21.5
Female	23.8	24.4

The percentage of the top students that went to the NCAA DI track and field by year also is informative. The male recruitment dropped from 54% to 42%, while recruitment of females dropped from 83% to 64%. During data collection it was observed that many of the male athletes who did not go to DI track and field instead went to collegiate American football.

Table 6. Percentage of top 100 athletes who were recruited to DI Track and Field

	Year	
	2019	2020
Male	54%	42%
Female	83%	64%

The follow diagrams show the times for 200-meter events for the top ranked 200-meter HS male Seniors from 2019. The x-axis is the date when the race event occurred while the y-axis gives the amount time it took the athlete to complete the race event (lower is better). The blue events are indoor, and the green events are outdoor. The red line shows the linear trend line. For 2020 the events continue through June. As the trend line shows, average race time decreases over the season.

200 Meter Performance for Top Ranked 2019 Male Seniors

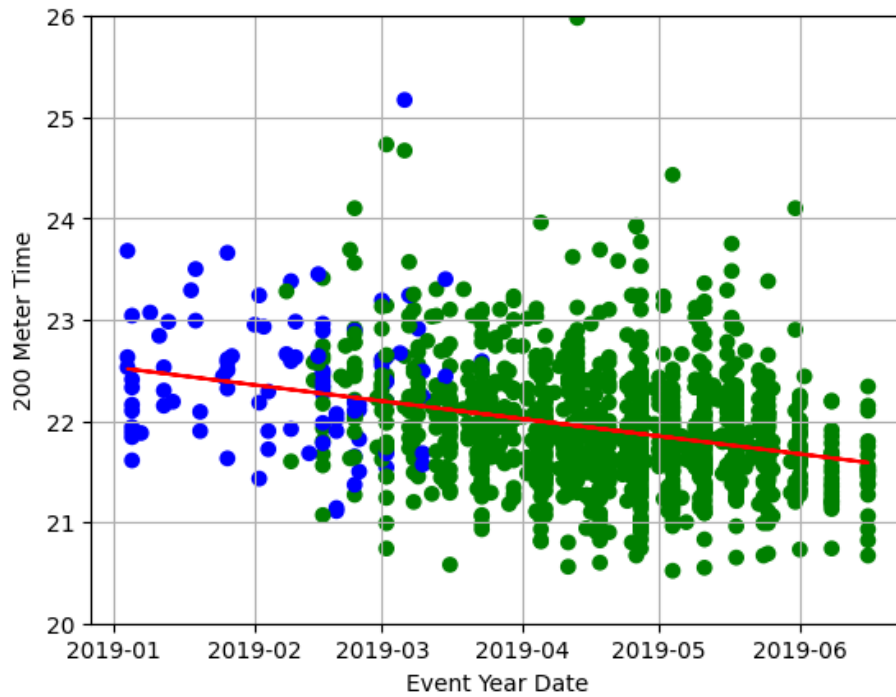


Figure 3. 2019 Top Ranked Male 200-meters - HS Seniors, Times for 2019

The race times for the 2019 female athletes show the same trends, with race times being reported from January to June, and trending towards lower times over the course of the season.

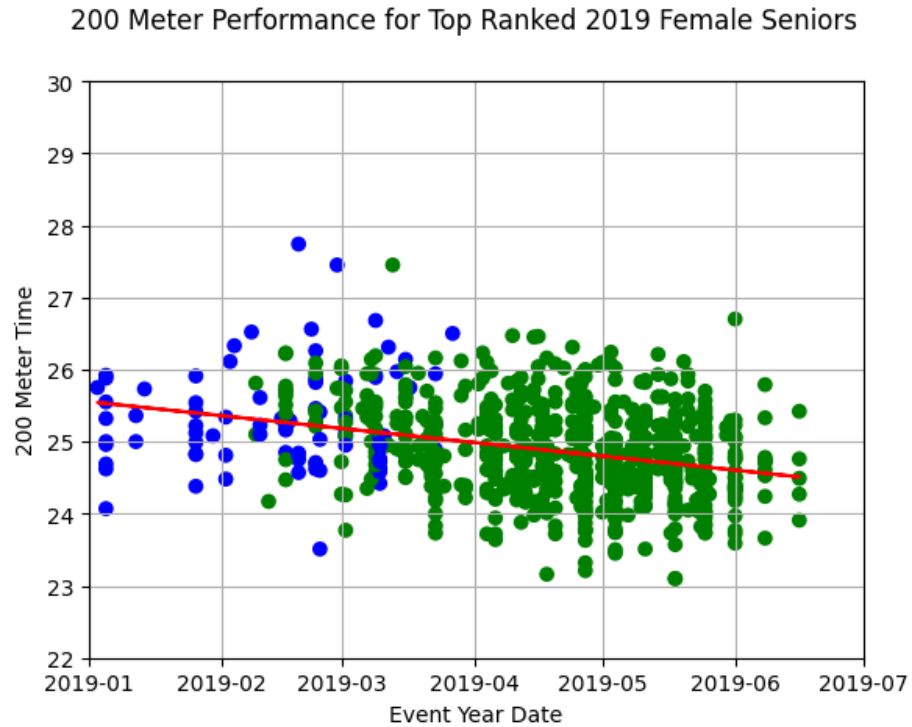


Figure 4. 2019 Top Ranked Female 200-meters - HS Seniors, Times for 2019

The following chart shows the times for 200-meter events for the top ranked 200-meter HS male Seniors from 2020, with the same X and Y scales as were used for 2019. The events stop in mid-March as the season comes to an early end. It is also observed that the number of indoor events (blue) is lower in 2020.

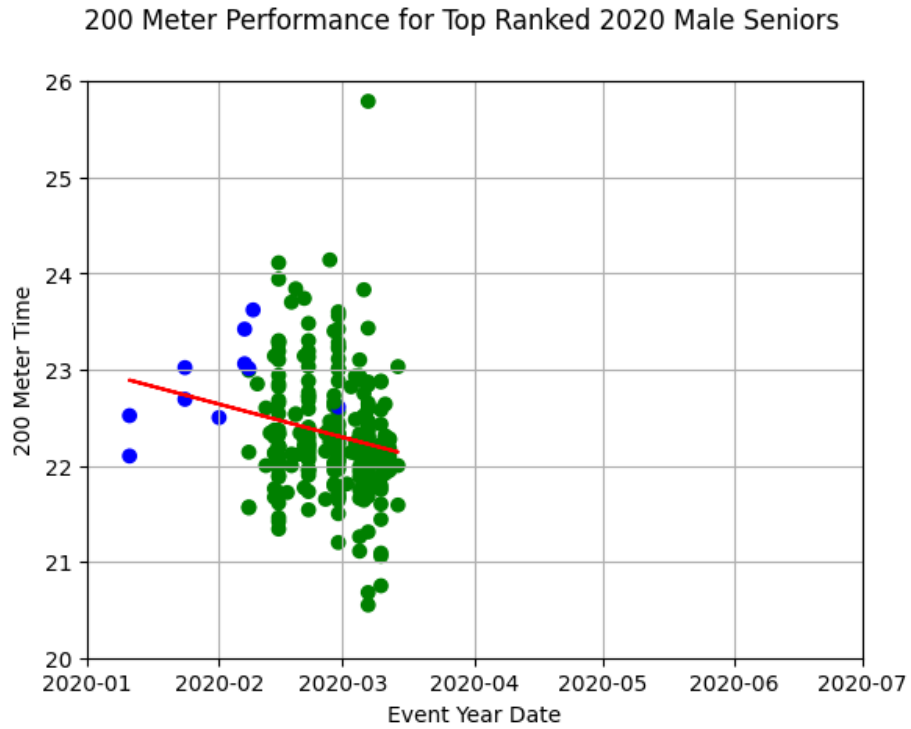


Figure 5. 2020 Top Ranked Male 200-meters - HS Seniors, Times for 2020

The following chart shows the race times for the top 200-meters high school female Seniors in 2019, showing the same abrupt end to track meets in March 2020 due to COVID-19. Again, there are also fewer indoor events (blue).

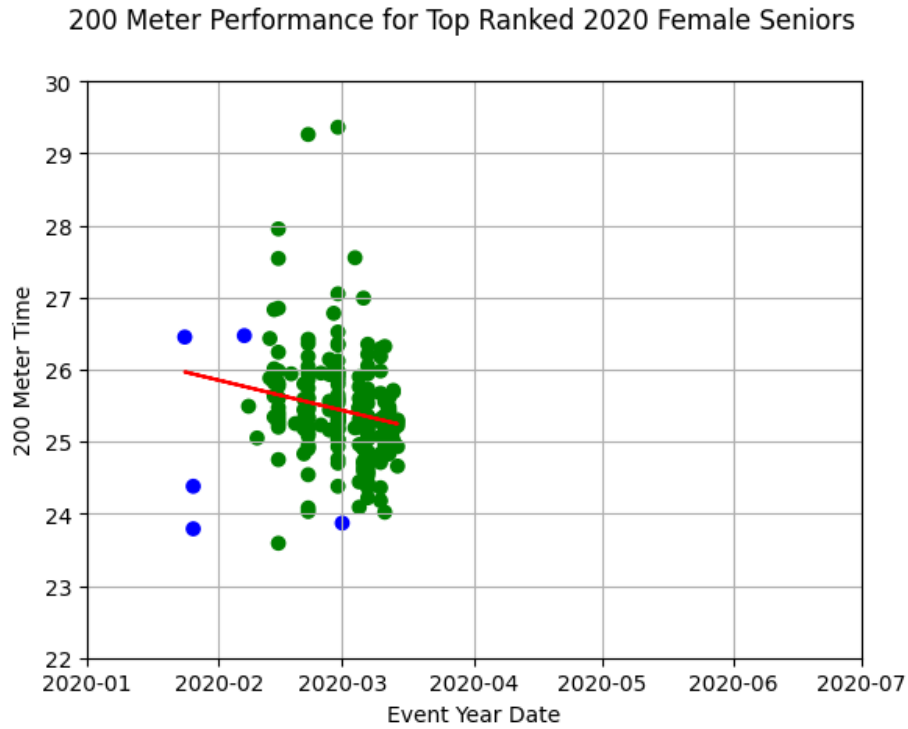


Figure 6. 2020 Top Ranked Female 200-meters - HS Seniors, Times for 2020

Looking at the trend lines for these charts, the slope for the 2019 males and females is in both cases lower amplitude than the value in 2020.

Table 7. Linear fit using GLM to 2019 and 2020 Senior Student 200-meters Time Data for Senior Year

Year	Gender	Total Obs.	Intercept	Slope (EventDateTimeInt)	P-value (EventDateTimeInt)
2019	M	1353	124.18	-0.006	0.000
2020	M	302	239.86	-0.011	0.002
2019	F	708	138.1	-0.006	0.000
2020	F	216	289.3	-0.014	0.007

4.2 Logistical Regression Model for Predicting High School Recruitment to DI Track and Field

This section of the study looks at the impact of COVID-19 on recruitment to DI track and field. Up to this point, the study found that high school seniors in 2020 had slower average fastest race times than the previous year. Students already in college in 2020 also gained an extra year of eligibility, and possibly had their student plans impacted as schools went online or otherwise were disrupted. College recruiters had to choose between 2020 high school seniors vs. athletes on the college team who may have gained an additional year of eligibility and may not have been able to compete for the full 2020 season at the collegiate level. To analyze this situation, the recruitment outcome for the top ranked 200-meters 2019 and 2020 high school athletes is determined – did they go to DI track and field or not? Then a logistical regression classification model is trained to predict if they will be recruited to DI track and field based on their fastest times for 100, 200, 400-meters events or their 200-meter time alone. The multi-event models are not reported here in detail as the 200-meters event was most effective in prediction.

In evaluating the different models, this study looks at the accuracy, precision, recall, F1-score, support, and the pseudo-R-squared score. The precision indicates the ratio of the true positives to the combination of true positives and false positives. Whereas the recall indicates the ratio of the true positives to the true positives and false negatives. The F1 score indicates the harmonic mean of the precision and recall and can be used as an overall measure of the effectiveness of a classification model. For F1 score, the maximum value of 1 indicates good precision and recall while a low value indicates the model has some performance issues (Goutte et al. 2005). The support of the model indicates the number of observations in the dataset that match the classification. Finally, the pseudo-R-squared score can be used to measure the goodness of fit of a logistic regression model (the statsmodel package in python uses Cox and Snell pseudo-R-squared approach specifically) (Smith et al. 2013).

The classification report shows the results from doing 3-fold cross validation using linear models built using only the athlete’s best 200-meters time in a logistic regression model to classify the student as either 0-not going to DI track and field or 1-going. The accuracy is very low at 58%, only slightly above making a guess. The parameter for 200-meters fastest time got a p value of 0.02. The p value of $0.02 < 0.05$, therefore we reject the null hypothesis as there is enough evidence that there is a relationship between the dependent variable “200-meters” and the response variable - DI recruitment outcome.

The pseudo-R-Squared for the 2019 model is 0.06. The Cox Snell pseudo-R-squared quantifies the improvement over the null model. The low value of 0.06 indicates that the model is not providing a substantial improvement over the null model. While the low p value for the 200-meters fastest time parameter tells us this parameter has a relationship to the recruitment outcome, this low Cox & Snell pseudo-R-squared value suggests that the model itself is not good at predicting the outcome.

Table 8. Classification Report for 2019 Males, 200-Meters Only

	precision	recall	F1-score	support
0	0.59	0.88	0.71	95
1	0.52	0.17	0.26	70

Accuracy			0.58	165
Maco avg	0.56	0.53	0.48	165
Weight avg	0.56	0.58	0.52	165

Table 9. Model Parameters – 2019 Males, 200-Meters only

Parameter	Value	Std Error	Z Statistic	P > z
Intercept	40.58	13.217	3.070	0.002
200-Meters	-1.92	0.619	-3.093	0.002

Pseudo-R-Squared (CS) - 0.06

The 2020 model is the same as the 2019 model but specifically for 2020 male athletes and data. Like the 2019 model, the accuracy is still low at 61% while based on the $p = 0.004 < 0.05$ for the 200-meters parameter. Therefore, we reject the null hypothesis as the p value suggests there is a relationship. This model has a pseudo-R-squared of 0.03 suggesting that the model is not highly predictive.

Table 10. Classification Report for 2020 Males, 200-Meters Only

	precision	recall	F1-score	support
0	0.62	0.93	0.74	80
1	0.45	0.10	0.16	50
Accuracy			0.61	130
Maco avg	0.54	0.51	0.45	130
Weight avg	0.56	0.61	0.52	130

Table 11. Model Parameters – 2020 Males, 200-Meters Only

Parameter	Value	Std Error	Z Statistic	P > z
Intercept	22.022	10.92	2.02	0.04
200-Meters	-1.03	0.5	-2.06	0.04

Pseudo-R-Squared (CS) - 0.03

Next the results of the logistic regression model trained on the female best times and recruitment data are presented. The models get accuracy of 83% for 2019 and 63% for 2020. Based on the p value = 0.05 for 2019 and 0.04 for 2020, the best time for 200-meters is on the borderline but we can reject the null hypothesis in favor of the alternative hypothesis, suggesting there is a relationship between the dependent variable “200-meters” and the response variable – DI recruitment outcome. The models for female athlete in 2019 is categorizing all athletes as 1 – going to DI track and field. For 2020, the model is only predicting 5 athletes as 0 – not going to DI. So, the model is mostly getting its high accuracy based on the uneven data distribution between 0’s and 1’s - predicting all the data the same way. This is reflected in the low values for the pseudo-squared – 0.3 for 2019 and 0.8 for 2020. We can clearly see the poor predictive ability of the 2019 female model by looking at the 0 values for precision and recall for the 0 class (not recruited) athletes. The model is not predicting any of the non-recruited athletes successfully. For 2020, the results are similar, with only 0.40 precision and 0.06 recall for the non-recruited athletes.

Table 12. Classification Report – 2019 Females, 200-Meters Only

	precision	recall	F1-score	support
0	0.00	0.00	0.00	17
1	0.83	1.00	0.91	82
Accuracy			0.83	99
Maco avg	0.41	0.50	0.45	99
Weight avg	0.69	0.83	0.75	99

Table 13. Model Parameters – 2019 Females, 200-Meters Only

Parameter	Value	Std Error	Z Statistic	P > z
Intercept	37.61	22.31	1.69	0.09
200-Meters	-1.49	0.92	-1.62	0.105

Pseudo-R-Squared: 0.03

Table 14. Classification Report – 2020 Females, 200-Meters Only

	precision	recall	F1-score	support
0	0.40	0.06	0.10	36
1	0.64	0.95	0.77	64
Accuracy			0.63	100

Maco avg	0.55	0.63	0.53	100
Weight avg	0.61	0.63	0.57	100

Table 15. Model Parameters – 2020 Females, 200-Meters Only

Parameter	Value	Std Error	Z Statistic	P > z
Intercept	20.88	10.47	1.99	0.05
200-Meters	-0.82	0.42	-1.94	0.05

Pseudo-R-Squared (CS): 0.08

The following chart summarizes the models, including the models that use the 100, 200, and 400-meters events best times as parameters. The accuracy is higher on the female athletes because most of the athletes went to DI track and field, and the model mostly predicts that all athletes go to DI. The highest pseudo-R squared is 0.12 for the 2020 females. The pseudo-R squared indicates that the models offer only a slight improvement over the null model.

The F1 scores of the models vary between 0.164 and 0.828. The models trained against male data received the lower F1 scores, probably because the results were nearly evenly split between recruited and not-recruited results. The model trained against the female athlete data got higher F1 scores, probably because the female athlete more likely to be recruited (unbalanced dataset). For the female athletes, the models were mostly predicting that all athletes would be recruited. This generates high precision and recall for the recruited athletes, and high resulting F1 scores, but fails to accurately predict outcomes for the non-recruited athletes.

Table 16. Summary of Model Performance

Model	Gender	Year	Accuracy	F1 score	Precision	Recall	Pseudo-R Squared
LR All Events	M	2019	57%	0.31	0.49	0.23	0.08
LR All Events	M	2020	62%	0.169	0.556	0.1	0.04
LR 200 Meters Only	M	2019	58%	0.258	0.522	0.171	0.06
LR 200	M	2020	61%	0.164	0.455	0.100	0.03

Meters Only							
LR All Event	F	2019	82%	0.900	0.827	0.988	0.07
LR All Event	F	2020	64%	0.753	0.671	0.859	0.12
LR 200 Meters Only	F	2019	83%	0.906	0.828	1.00	0.03
LR 200 Meters Only	F	2020	63%	0.767	0.642	0.953	0.04

4.3 Trends in Grade Composition for Division I Track

Athletic.net Roster Data

In addition to looking at high school recruitment directly, by looking at the top ranked athletes, this study examines the student composition of the Division I track and field teams. This study reviews the student grade composition from 2013 to 2023 using data from Athletic.net and TFRS.org. The study also tracks the turnover in students through the years, to better show the impact of COVID-19.

Do team rosters have a similar population of athletes by grade, year over year? If COVID-19 negatively recruitment of high school students in 2021, this will be visible in the composition of their rosters. The turnover metrics, if broken down by grade, will also help identify repeat students. Finally, the grade distributions will also identify where graduate students may show increased participation due to the extra year of eligibility.

The following chart shows the grade composition of the students in DI track and field outdoor teams from 2018 to 2023 based on data scraped from Athletic.net. The x-axis shows the year, corresponding to the year of the outdoor season. The y-axis shows the percentage of the team that is in each grade. In many cases, the team rosters contained no data for 2020. But if navigated to directly (the approach used for scraping), the roster URL would show the same roster as the prior year. For this reason, the 2020 data is suspect and best ignored. The 2021 data does show a clear trend of increasing freshmen participation on the DI track and field team.

There was a larger percentage of freshmen in 2021 (37.3%) vs. 27% in 2019. This 2021 freshmen cohort remains large in subsequent years as well - 31.8% of the class was Sophomores in 2022 vs. 25.7% in 2019, and 29.8 % of the class is Juniors in 2023 vs. 23.5% in 2019. The Sophomore cohort in 2021 is smaller – only 12.6%. And this cohort remains small at 15% as Juniors in 2022, and 17.2% as Senior in 2023.

The percentage of “Returning Senior” students is small for all the year; 0.0001%

in 2021, 0.0002% in 2022, and 0.002 % in 2023. While overall this group increased in size, it has negligible impact on overall grade composition.

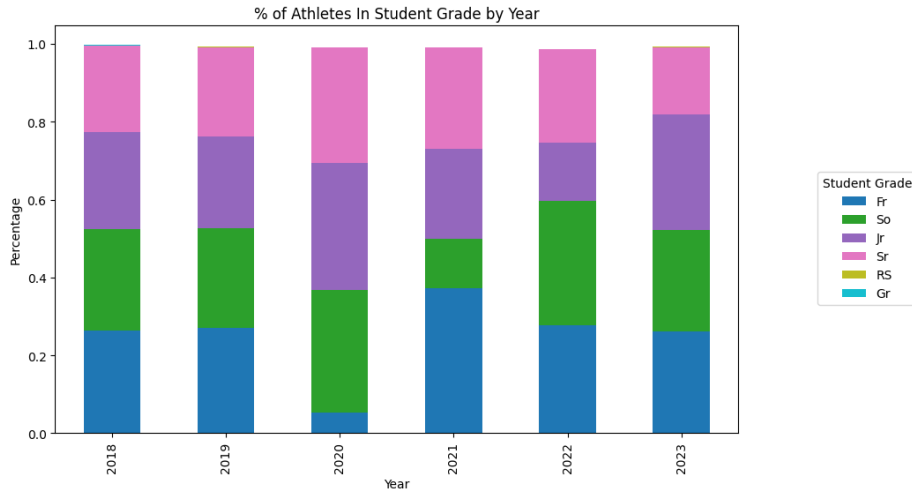


Figure 7. Athletic.net - Grade Composition for NCAA DI Teams by Team (Male and Female) Based on Athletic.net data for 2018-2023

TFRRS.org Roster Data

The following 3 charts show the grade composition of the students in Division I track and field outdoor teams from 2018 to 2023, based on data scraped from Athletic.net. The x-axis shows the year, corresponding to the year of the outdoor season (e.g., 2020 is March 2020). The y-axis shows the percentage of the team that is in each grade. The first chart shows grade composition for men and women combined while the next two charts show the data for men or women only.

Looking instead at the TFRRS.org data (reference), the ratios between the different grades are much more uneven in 2017, 2018, and 2019 – the freshmen group is largest, and class size decreases up to senior group. There is less data in 2020 and it is not clear how reliable the data is - 14,490 records versus around 25k for other years. Looking at men, from 2017 to 2019, the freshmen group was about 30% of the total. In 2021 this number increased to 42.8%. This 2021 freshmen cohort continued to be large in 2022 with 30.5% vs. 21% in 2021. Finally in 2022, the Junior group is 26.1% vs 21.0% in 2022, and around 22-23% between 2017 and 2019. The same trend is seen as a large freshmen cohort in 2021 remains large as it matriculates to the next grades.

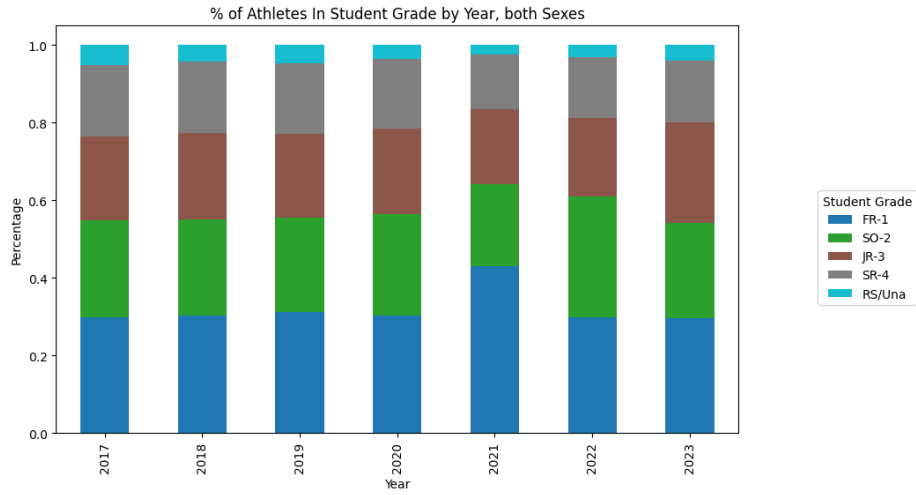


Figure 8. TFRRS.org - Grade Composition for NCAA DI Teams by Team, Both Sexes, Based on Athletic.net data for 2017-2023

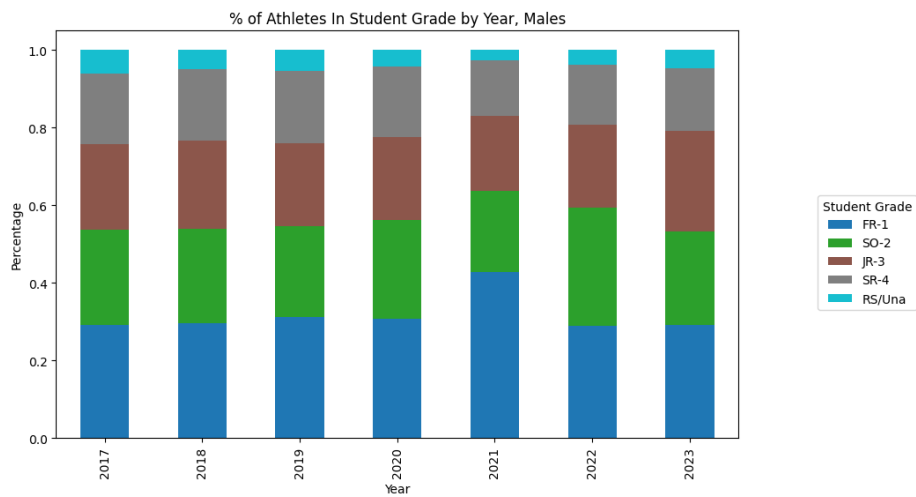


Figure 9. TFRRS.org - Grade Composition for NCAA DI Teams by Team, Male Only Based on Athletic.net data for 2017-2023

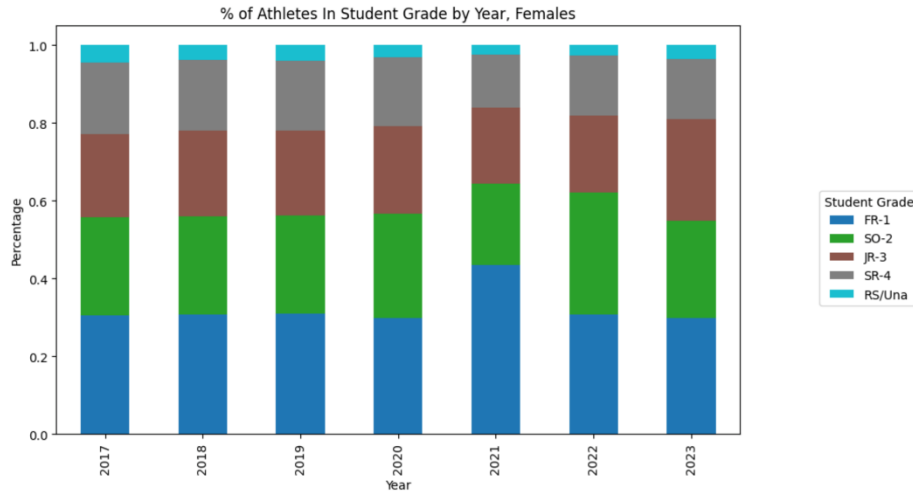


Figure 10. TFRRS.org - Grade Composition for NCAA DI Teams by Team, Females Only, Based on Athletic.net data for 2017-2023

Another interesting find that was discovered exploring TFRRS.org data is that athletes can be in a team's roster listed as freshmen for more than one year. The previous graph reflects a sudden spike in the number of freshmen in the class of 2021. That same larger group seems to move on over the years as a spike in Sophomores in 2022 and seniors in 2023. At a first glance, it might seem that teams recruited more high school seniors for their 2021 roster, but if we take a closer look at the composition of those teams, (see Figure 9 and Figure 10), we can notice that part of the reason for the spike of freshmen athletes in 2021 is due to 2020 freshmen athletes returning as freshmen the following year. Figure 9 shows that 2021 rosters have a higher number of second year freshmen compared to previous years (29.3% in 2021, vs approximately 5% for 2018, 2019, and 2020).

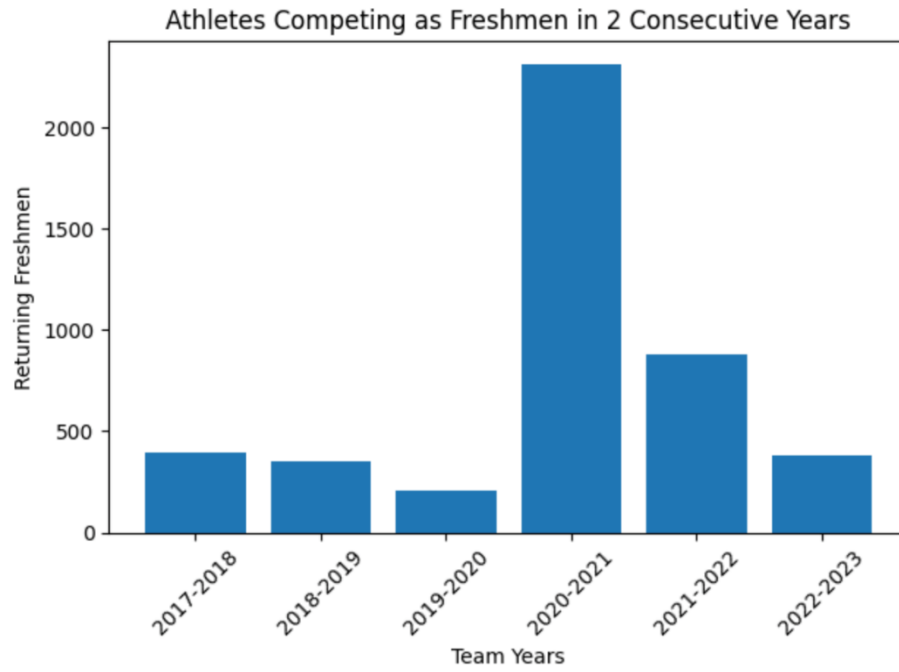


Figure 11. TFRRS.org - NCAA DI Returning Freshmen by Year, Both Sexes.
Based on TFRRS.org data for 2017-2023

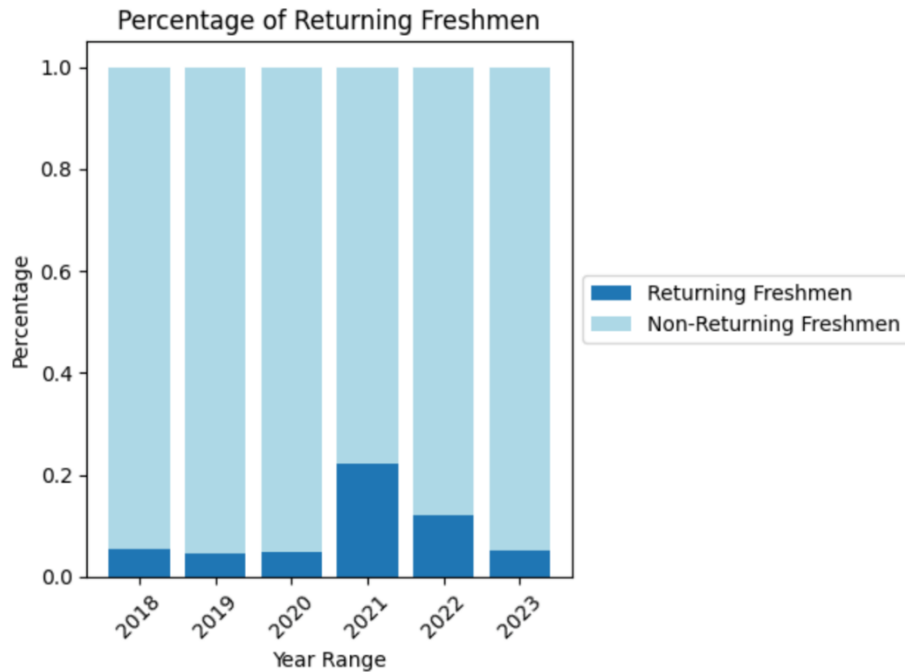


Figure 120. TFRRS.org - NCAA DI Composition of Freshmen class by Year, Both Sexes. Based on TFRRS.org data for 2017-2023

5 Discussion

5.1 Statistics for HS Seniors for 2019 vs. 2020

The sudden end of the season due to COVID-19 is evident in the end of event records for the top senior 200-Meters athletes in March 2020. The linear regression model fit to the 2019 and 2020 times shows a different slope value for both men and women. For men, the 2019 slope value is -0.006 whereas for 2020 it was -0.011 . On average, for the top athletes for 200-meters in 2020, their times were collectively improving much faster. Comparable results are seen for women.

What accounts for the difference in slopes? One thought was that the initial part of the year has faster increase in times. To investigate this, the data for 2019 up to March 15 was fitted with a line, which resulted in a slope parameter of -0.003 . So, even just looking at the beginning of 2019 vs 2020, the 2020 times were improving faster. Another difference between 2019 and 2020 is that there were less indoor events in 2020 and this slope difference may be related to that. It would be interesting to better understand if this paucity of indoor events is due to COVID-19 or something else.

On average, the top times for 200-meters for 2020 athletes were negatively impacted. For men, the DI recruiting standard for 200-meters is 20.84 to 21.49 seconds. In 2019, 109 athletes had top 200-meter times below the 20.84 cutoff. In 2020, only 10 athletes achieved a peak time below 21.49. Furthermore, in 2019 the

top score for 200-meters for the athletes' samples was 21.0 vs. 21.6 for 2020. Comparable results are seen for women – average best times were 23.8 seconds in 2019 vs. 24.4 in 2020.

This study found a significant decrease in recruitment outcomes for the top 200-meter athletes in 2019 vs 2020. Men went from 54% recruited to 42%, and women went from 83% to 64%. This result suggests that overall athletes top ranked 200-meters athletes were less likely to be recruited in 2020 than in 2019.

5.2 Logistic Regression for HS Senior, 2019 vs. 2020

Logistic regression models were built using the top 100-Meters, 200-Meters, and 400-Meters times for 2019 and 2020 high school seniors, to predict NCAA Division I track and field participation the year after graduation. The accuracy of these models was low – for men, the top model got 62% accuracy – close to actual split in the data between recruitment results. For women, the accuracy results are higher, but this is simply because the models are mostly predicting that all the women will go to DI, and the percentage going is 64% or 83% depending on the year. The R squared values were low as well. This result shows that the times are not strong predictors of DI recruitment. It is not like there is a strict top score, and if the athlete scores this result, they are recruited.

There can be many explanations for why the top ranked athletes did not go to a NCAA Division I team. While researching the recruitment outcome for high school athletes, it was observed that many of the athletes who did not go to Division I track and field went instead to college and participated on football teams. Football coaches may recruit track and field athletes specifically (Korfirst, 2023). Another factor is academics - this study does not include the student's academic achievements and NCAA Division I has academic requirements which may not be achievable for some students who have good athletic performance. It would be interesting to look at some proxy of academic achievement, such as the mean SAT scores from the athlete's school. Finally, while the NCAA publishes guidelines for Division I, individual colleges and universities are free to implement their own standards. It would be interesting to cluster or group the colleges and universities to see if some schools are more selective than others.

This study found, at least for these top athletes for 200-meters, the athletes best race time was not a strong predictor of DI track and field recruitment. While the fastest times for athletes were significantly worse in 2020 than 2019, it is not clear why recruitment in 2020 decreased – there were other factors at play. Nevertheless, looking at these top athletes, the actual recruitment outcomes in 2020 were significantly worse than in 2019, pre-COVID.

5.3 Trends in Grade Composition for Division I Track, Covid Impact

The primary impact of COVID-19, based on grade compositional analysis, is a larger 2021 freshmen cohort that persists through the following years, to the detriment of the 2021 Sophomore cohort (who would normally have entered as freshmen in 2020). Approximately 20% of the freshmen in 2021 had been on the roster for their team in

2020 as freshmen as well. In 2021 the total freshmen composition is 43%. Subtracting the returning freshmen from the total, approximately 34% of athletes were new freshmen in 2021.

The lack of a substantial increase in the “Returning Senior” category suggests that the eligibility extension did not have an impact by keeping seniors on teams, but this too may reflect more that returning seniors were categorized as “Seniors” in 2021, instead of “Returning Seniors.” Other related categories like “Graduate” were also small.

There is an apparent contradiction in the results. There is a decrease in recruitment for when looking at top individual athletes for 200-meters high schools in 2020. But there is an increase in freshmen athletes on the DI track and field teams in 2021! As discussed, part of this was the bump in returning freshmen. It would be interesting to better understand what happened by discussing the results with coaches from DI track and field teams, to understand the roster changes anecdotally. It would also be interesting to look at athletes who specialize in other track and field events such as cross country – the recruitment outcomes may differ.

5.4 Limitations

There are many NCAA sports, and it is possible that individual sports were affected differently by COVID-19. It would be interesting to extend the research to other sports like swimming, that also have numeric score results that solely reflect the individual athlete and are not subject to a judge’s input.

Not all members of a DI teams receive scholarships, and there is the possibility that scholarships were not evenly distributed among grades. Maybe the distribution of scholarships between grades changed during the years impacted by COVID-19, and this study did not have data to detect this. This is worth further study if supporting data can be obtained.

Because it was necessary to do manual data collection to determine if a high school student went on to collegiate track and field, and what sort of program they got into to, it was necessary to limit the scope of the student athletes studied. It would be interesting to extend the data to the top 500 or 1000 ranked students to see if the relationship between score and recruitment is consistent, or just where recruitment tappers off . This study could easily be extended to other running events such as longer distance or cross county. It would also be interesting to look at data for other years, rather than just 2019 and 2020. If the data is extended to include athletes with much poorer best event times, then at some point that statistic should become predictive of DI recruitment.

In terms of predicting DI recruitment, it would be interesting to look at other factors that are known to be important, like academic achievement. Also, this study looked strictly at the best event times – the number of event times may be important. It is also possible that event times in junior year are significant, especially for top athletes who may be recruited earlier.

5.5 Ethics

In terms of privacy, the data used in this study is publicly available and the focus is more on trends than individual outcomes. As such, there are no direct privacy implications.

This study is concerned fundamentally with a question of fairness – when suddenly there is a lack of resources for college sports due to a pandemic, who gets less? Is the resulting partition fair? By analyzing the data of NCAA DI admissions and grade distribution on Division I teams, this paper offers insight into the impact of COVID-19 and the resulting NCAA policy changes on track and field athletes.

An effort was made to support college athletes by extending an additional year of eligibility. This was a noble intent that, like many well-intentioned actions favoring one group, may have inadvertently impacted another demographic – in this case, high school athletes on the cusp of graduation. The results in this study show that the impacts on high school student recruitment were complex – the top 200-meters athletes this study focused on saw decreased chances of being recruited to DI track and field. However, grade composition did not drop for incoming freshmen in 2021.

6. Conclusion

COVID-19 caused schools to prematurely end the high-school track and field season in March 2020. High school athletes for 200-meters got lower best scores in 2020 compared to 2019, probably due to not having a full season to train and compete. Division I colleges decreased recruitment of these sampled athletes in 2020 vs. 2019 (42% vs 54% for men, 64% vs. 83% for women). The models based on the top times were not strong predictors of student recruitment outcomes for the data sampled. But looking at this sample of top 200-meters high school seniors – there was a significant decrease in recruitment.

While there was a decrease in recruitment to DI track and field for the athletes sampled, the roster data for all DI track and field colleges showed an increase in the freshmen class composition in 2021, the year following the COVID-19 disruptions. This freshman class cohort of 2021 remained large as it moved on to sophomore and junior grades over the coming years. At the same time, much of the increase was accounted for by 2019 freshmen athletes that returned as freshmen in 2020. Overall, this study found an unclear picture about the impact of COVID-19 on DI track and field recruitment for high school seniors graduating in 2020. The recruitment percentages for the sampled 2020 high school athletes decreased compared to 2019, but grade composition analysis showed a constant or increasing incoming freshmen group on the collegiate side.

Acknowledgments.

We would like to thank Dr. Monnie McGee for her guidance and support throughout this project – taking the time to meet with us consistently, suggesting next steps and reviewing results. Thank you also to Dr Jacquelyn Cheun-Jensen for her feedback and review of this paper. Also thank you to Coach 'A' Havahla Haynes from SMU (Southern Methodist University) for providing insights into DI track and field.

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