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The Value of College Athletics in the Labor Market: Results from a Resume Audit Field Experiment

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Abstract

Employers may favor applicants who played college sports if athletics participation contributes to leadership, conscientiousness, discipline, and other traits that are desirable for labor-market productivity. We conduct a resume audit to estimate the causal effect of listing collegiate athletics on employer callbacks and test for subgroup effects by ethnicity, gender, and sport type. We applied to more than 450 jobs on a large, well-known job board. For each job listing we submitted two fictitious resumes, one of which was randomly assigned to include collegiate varsity athletics. Overall, listing a college sport does not produce a statistically significant change in the likelihood of receiving a callback or interview request. However, among non-white applicants, athletes are 3.2 percentage points less likely to receive an interview request ($p = .04$) relative to non-athletes. We find no statistically significant differences among males or females.

Keywords: college athletics, employment, resume audit, experimental design, disparate impact

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The Value of College Athletics in the Labor Market:
Results from a Resume Audit Field Experiment

Athletics are prominent in American high schools and colleges. In 2018, the number of participants in high school sports increased for the 29th consecutive year, up to a record-high of nearly eight million (National Federation of State High School Associations, 2018). As of 2020, there were more than 460,000 college-athletes nationwide (National Collegiate Athletic Association, 2020). Employers may favor applicants who played college sports if athletics participation contributes to leadership, conscientiousness, discipline, and other traits considered desirable for labor-market productivity. Indeed, there is evidence that employers value interpersonal skills, self-motivation, and problem solving ability (Baird & Parayitam, 2019; Chaflin et al., 2015; National Association of Colleges and Employers, 2020). Observational studies suggest a positive relationship between sports and later-life outcomes, but much of this research is hampered by limited internal validity. To our knowledge, there have been no experimental evaluations of the relationship between college athletics and job market outcomes.

In this study, we conduct a resume audit to estimate the causal effect of listing collegiate athletics on employer callbacks. Resume audits are frequently used to estimate differences in employer preferences regarding applicants' demographic traits or work history (Bertrand & Mullainathan, 2004; Lahey, 2008; Ghayad, 2013; Kroft et al., 2013; Deming et al., 2016; Cheng & Florick, 2020). We generate fictitious resumes by randomly assigning some to include college athletics and compare the callback rates of resumes with and without athletics. We applied to more than 450 jobs listed on a large, well-known job board. For each job listing, we submitted two fictitious resumes (one resume pair). Within each resume pair, one resume was randomly assigned to include experience in collegiate varsity athletics. Other parts of the resume such as

gender, race, degree field, and postsecondary institution were held constant within pairs.

Remaining parts of the resume such as work experience and other extracurricular involvement were extracted from actual resumes and randomly assigned to our fictitious resumes.

The results from this study may be most valuable to a student who is on the margin of participating in collegiate athletics. Will one's labor market prospects be limited, unaffected, or improved by listing this experience on a resume? Overall, we find that listing sports participation does not significantly change whether an applicant receives a callback or interview request. Among males and females, there were no meaningful differences in callback rates for athletes relative to non-athletes. We did, however, observe a statistically significant decrease in the likelihood that non-white applicants receive callbacks when their resumes include sports.

In the next section, we review the literature on the effects of athletics on later-life outcomes, with a focus on labor market outcomes. We then detail our methods and explain our experimental design. Finally, we present results and conclude with a discussion our findings.

Background and Prior Research

Modern debate among education policy researchers about the effect of athletics on later-life outcomes was initiated by Coleman (1961), a sports pessimist who viewed athletics and academic pursuits as a zero-sum game (Hauser & Lueptow, 1978). It is possible that athletics may come with opportunity costs. Some observers, concerned about United States' middling standing in international achievement, speculate that funds currently spent on athletics should instead be used to enhance traditional academic expenditures (Ripley, 2013). An analysis of public Division I colleges and universities found that athletic departments spend three to six times more on the average athlete relative to the average non-athlete student (Desrochers, 2013).

On other hand, advocates of athletics argue that participating in sports may lead to greater lifetime earnings (Long & Caudill, 1991), educational achievement (Hanks & Eckland, 1976) and expectations (Snyder & Spreitzer, 1977). Recent observers (Greene, 2013) argue that athletics contribute to social capital and, as such, Coleman's perceived trade-off between athletics and academics may be overstated. Moreover, employers may place value on intangible characteristics developed through sports participation (Bauer-Wolf, 2019). Indeed, some observational studies suggest that collegiate student-athletes exhibit higher levels of interpersonal and leadership skills that may be rewarded in the labor-market (Barratt & Frederick, 2011).

Labor Market Outcomes

Adolescents and young adults who participate in sports may benefit from environmental or genetic factors that are associated with more favorable labor-market outcomes, irrespective of sports participation. Selection bias is an inherent problem since individuals cannot be randomly assigned to sports. Researchers typically employ quasi-experimental or correlational methods to examine the influence of athletics participation on later-life outcomes.

To date, the use of instrumental variables has been the most rigorous approach to estimate the effect of athletics on labor-market outcomes (Yeung, 2015). Unlike much of the correlational research, which suggests a positive relationship between sports and outcomes, instrumental variables estimations generally suggest null effects. Analyzing the 1980 cohort from the High School and Beyond Survey, Eide & Ronan (2001) used students' height at age 16 as an instrument for the otherwise endogenous decision to participate in sports. The authors estimated no statistically significant relationship between high school sports and earnings for men and women of all races, with the exception of black males for whom the relationship was positive.

Another instrumental variables analysis of males in the National Longitudinal Survey of Youth found statistically significant effects of athletic participation on educational attainment but not for weekly wages (Barron et al., 2000). Furthermore, Stevenson (2010) used variation in boys' athletic participation prior to passage of Title IX to instrument for the change in girls' athletic participation. This study of the National Longitudinal Survey of Youth concluded that increased athletic opportunity for women was associated with an increase in labor force participation. However, no relationship was identified between sports and hourly wages.

Descriptive research generally suggests a positive association between athletics and earnings, but these studies cannot account for possible positive selection among students who play sports. Several studies indicated that male athletes earned higher wages than male non-athletes (Ewing, 1995; Curtis et al., 1999; Baron et al., 2000). One analysis found that former college athletes earn more, on average, but the wage advantage was skewed such that the median non-athlete earned more than the median athlete (Henderson et al., 2006). A nationally representative Gallup survey (2016), commissioned by the NCAA, found that 65 percent of former athletes reported being employed full-time compared to 63 percent of non-athletes. Among those who were employed full-time, former athletes were 4 percentage points more likely to report being "engaged" in the workplace than non-athletes. Similarly, an analysis of high schoolers eight years after graduation found that athletes were more likely to be employed and earn higher incomes than non-athletes (Carlson et al., 2005).

Attainment and Achievement

Correlational evidence suggests benefits of sports participation on achievement. After controlling for poverty levels and student demographics, Bowen and Greene (2012) found Ohio high schools that offer more sports have students with higher test scores and graduation rates. A

meta-analysis by the Centers for Disease Control (2010) reviewed 251 associations between physical activity and academic performance, finding that more than half of the associations were positive, less than two percent were negative, and the remainder were null. Other observational studies suggest a positive association between athletics and academic achievement (Soltz, 1986; Holland & Andre, 1987; McCormick & Tinsley, 1987; Marsh, 1993; Broh, 2002; Eccles et al., 2003; Lipscomb, 2006; Troutman & Dufur, 2007). More rigorous methods call into question the effects of sports participation on attainment and achievement. For example, Reese and Sabia (2010) use height as an instrument in their analysis of the National Longitudinal Study of Adolescent Health. The authors estimated null effects of high school sports participation on academic achievement. In this paper, we use a different approach, namely a resume audit experiment, to investigate the value of sports participation. We describe our methods in the next section.

Methods

Setting for Resume Audit

Between March 2020 to February 2021, we submitted resumes to job postings for employment opportunities within a 25-mile radius of four large metropolitan areas in the Northeast and Midwest (New York City, Philadelphia, Pittsburgh, and Milwaukee) that had both a concentration of collegiate sports programs and job openings. Using a large, popular online job board, we applied for any entry-level positions that sought candidates who recently completed their bachelor's degree.

All job postings sought candidates with four-year degrees in a business-related field, such as business administration, organizational management, marketing, logistics, financial management, accounting, data analytics, and information technology. In these job postings,

employers sought candidates to fill positions such as administrative assistants, sales representatives, marketing specialists, customer service representatives, and account managers. We focus on business-related fields because they are among the most popular majors selected by college student-athletes (Foster & Huml, 2017; Schneider et al., 2010). About half of the job postings listed annual salaries, the median of which was about \$40,000.

Resume Construction and Experimental Design

In our experiment, we submitted pairs of fictitious resumes to the same job opening. Each resume was crafted to represent an individual who completed a bachelor's degree within the past year. We randomly populated each resume with a name, contact information, educational background, prior professional work experience, skills, and extracurricular activities, following the approach used by past researchers (Deming et al., 2016; Lahey & Beasley, 2009). Within each pair, we also randomly assigned one resume to list participation in collegiate athletics to study its causal effect on receiving a callback from a potential employer. We discuss these components in turn.

Collegiate Sports Experience. To estimate the causal effect of participating in collegiate sports, we constructed one resume that identified the fictitious job candidate as a student athlete and a corresponding resume that made no mention of participation in collegiate sports. We randomly determined which of the two resumes would indicate collegiate sports experience and listed it next to information about the candidate's educational background, contact information, and name. We attempted to raise the salience of collegiate sports experience near the top of the resume. Given the existing evidence and theoretical benefits of athletic participation, we hypothesize that resumes listing college athletics will be more likely to receive callbacks.

On all resumes that included experience with collegiate sports, we listed participation in either soccer, track and field, or cross-country running. As we discuss below, we selected institutions that do not participate at the NCAA Division I level. We made these decisions to lower the chances that employers would recognize fictitious resumes. Listing participation in a major Division I sport might induce employers to look up rosters, and a simple check would harm the candidate's chances of receiving a callback. We attempted to avoid this problem by listing participation in less popular sports like soccer, track and field, or cross-country running at non-Division I postsecondary institutions.

Furthermore, we selected these sports to test our hypothesis that participation in team and individual sports might signal different skills to employers. We use soccer to test the effects of participation in team sports on receiving a callback. Track and cross-country running are used to examine potential effects of participating in an individual sport. We hypothesize that participation in a team sport like soccer signals greater interpersonal skills that may be valued on the job market (Chaflin et al., 2015). As such, we expect higher callback rates for soccer players relative to track or cross-country athletes.

We sent out 918 resumes (459 pairs). Table 1 disaggregates the resumes we submitted by sport type, gender, and ethnicity.

<<Table 1 Here>>

Candidate characteristics. Because race and gender might influence callbacks and interviews, we followed standard practice of prior resume audit experiments and held race and gender constant within resume pairs but allowed them to vary across pairs (Bertrand & Mullainathan, 2004; Deming et al., 2016). In other words, for a given job posting, we randomly selected a gender (i.e., male or female) and race (i.e., White, Black, Hispanic, or Asian)

combination. We then randomly generated two names that fit that gender and race profile based on lists of the most popular names of children born in the year 2000—the population who would be completing their four-year degrees at the time of our experiment. Holding gender and race fixed across both resumes sent to each job posting ensures any differences in callback rates are not attributable to differences in these demographic characteristics.

Disparate Effects. We hypothesize there could be disparate effects of sports participation on employment opportunities by gender and race. Both positive and negative stereotypes about college athletes are likely to be gender and racially coded. Athletic programs for women may be less emphasized than athletic programs for men and therefore be viewed as less likely to be distracting from academic success. However, according to some surveys, employers do not report valuing sports participation differently for men or women (Chaflin et al., 2015).

Prospective employers may see non-white athletes as negatively fitting stereotypes of unearned academic accomplishments even while possessing high levels of athletic talents (Eastman & Billings, 2001). On the other hand, employers may still positively interpret sports participation among non-white and white individuals alike as signaling leadership, self-discipline, and other desirable traits. Given limited past research on these issues, we do not have strong priors about the direction of these disparate effects but would be inclined to think that negative effects may predominate.

Contact Information. We generated email addresses and phone numbers for each resume. We regularly checked these email and voicemail accounts for callbacks by employers. Both email and voicemail messages were coded as callbacks. As is conventional practice in resume audits, we did not respond to any callbacks. To generate addresses, we listed units in

large apartment complexes near the postsecondary institution named as the degree-granting institution on the resume.

Educational Background. Every resume listed completion of a bachelor's degree program in a business-related field at the end of an academic term in 2020. No resume listed the completion of a post-baccalaureate degree. We identified 30 postsecondary institutions for our fictitious resumes (Appendix A). These institutions were selected because they had non-Division I college athletics programs in soccer, track and field, or cross-country running. These institutions were also geographically located near the job markets for the setting of our experiment, and each institution offered degree programs in a business-related field. Like gender and race, we held the institution and degree fixed within each resume pair to rule out the possibility that callbacks from the same job posting were the result of differences in employer preferences for degree or institution.

Work Experience. We followed the practice of prior resume audits to populate our fictitious resumes with work experience (Deming et al., 2016). Specifically, we began by using the same job board to which we were submitting resumes to obtain nearly 1000 resumes of real individuals who completed a bachelor's degree program in a business-related field from the postsecondary institutions in our study setting during the spring of 2020. We collected up to the three most recent work experiences listed in each of these actual resumes.

When crafting fictitious resumes, we randomly selected a work history from the resume of a real individual who attended the same postsecondary institution and degree. With the random selection of work histories, callbacks are unlikely to be driven by differences in work histories across pairs in the aggregate.

Skills. We likewise populated fictitious resumes with skills that were listed on real resumes that we sampled. For example, individuals listed competencies in a variety of computer software or foreign languages. We randomly selected lists of skills from the sampled resumes and added them to the fictitious resumes. Again, this approach reduces the possibility that overall differences in callback rates within resume pairs are attributable to differences in listed skills.

Extracurricular Activities and Awards. It is common for genuine resumes to list participation in extracurricular activities, membership in student groups, volunteering, and awards. As with skills and work experience, we randomly selected these items and populated our fictitious resumes with this content. Sometimes, resumes from which we sampled listed participation in collegiate sports; in these cases, we never used this content to populate our fictitious resumes.

Analytic Strategy

We estimate differences in callback rates using a regression framework:

$$\text{Callback}_i = \beta_0 + \beta_1 \text{Sports}_i + \omega_j + \varepsilon_i$$

where Sports_i is a dummy variable indicating whether resume i listed college athletics experience, ω_j is a vector of job listing fixed effects, and ε_i is the error term. For ease of presentation, we describe results based on linear probability models; results are not substantively different based on logistic models. In a series of additional exploratory analyses, we estimate models that include interactions of Sports_i with indicators for race and gender to examine whether there are subgroup effects for white, nonwhite, male, and female individuals.

We operationalize our dependent variable Callback_i in two ways. We first use a binary indicator of whether the particular resume received a callback from a prospective employer. We consider a callback to be any phone message or email left by the employer desiring information

about the job candidate. The second dependent variable is a binary indicator of whether the callback specifically requested an interview. The independent variable of interest is Sports, the binary indicator of whether the resume included collegiate athletics. No further control variables are required to estimate the effect of listing collegiate athletics because we held race, gender, educational background, and degree program constant within pairs and randomized all of the content in each resume.

Results

General Results

We first present overall results comparing callback and interview request rates for resumes with and without collegiate sports experience. As is evident in Figure 1, there are no meaningful differences in callback or interview request rates between these two groups. Slightly more than 24 percent of resumes that do not list collegiate sports received a callback, whereas nearly 23 percent of resumes that list collegiate sports received a callback ($p = .24$). Approximately 15 percent of resumes that did not include sports received a callback specifically requesting an interview, which is 1.7 percent points greater than resumes that did list sports ($p = .17$). The full set of regression coefficient estimates for these results and all subsequent results are in Table 2.

<<Figure 1 Here>>

<<Table 2 Here>>

In Figure 2, we display callback and interview requests rates by sport type. There are no statistically significant differences in the likelihood an applicant receives a callback or interview request among those who list soccer compared to those who list track or cross country. In absolute terms, callback and interview requests rates are marginally higher for soccer resumes

relative to track and cross country, but the results are neither statistically significant nor substantively large.

<<Figure 2 Here>>

Subgroup Results

Although the overall results suggest null effects of sports participation on receiving a callback from employers, we find some statistically significant differences in callback rates within subgroups. As illustrated in Figure 3, 23.6 percent of nonwhite applicants who do not list sports receive callbacks, while only 20.7 percent of nonwhite applicants who list sports receive callbacks. This apparent 3 percentage point penalty for sports participation is marginally statistically significant ($p = .07$). There is a similar finding among nonwhites for interview requests. Some 15.3 percent of nonwhite, non-sport playing applicants received requests for interviews compared to only 12.1 percent of nonwhite, sport playing applicants (Figure 4). This difference is nearly twice the magnitude as the overall estimate of sports participation on interview requests, and it is statistically significant at the 95 percent confidence level ($p = .04$).

Among white applicants, the likelihood for a callback or interview request increases, in absolute terms, when listing sports on a resume. But these increases are neither statistically significant nor substantively large. The callback rate and interview request rate for white applicants are both 1.4 percentage points higher for resumes that list sports relative to resumes that do not list sports.

Both males and females see small, non-statistically significant decreases in the likelihood of receiving both types of callbacks when listing collegiate sports on their resumes. In absolute terms, the penalty for listing sports is larger for females than males. Males who list sports see a 0.9 percent decrease in the likelihood of receiving any callback and a 0.8 percent decrease in

receiving an interview request. Females see a 2.1 percent decrease in receiving any callback ($p = .24$) and a 2.5 percent decrease in receiving an interview request ($p = .15$).

<<Figure 3 Here>>

<<Figure 4 Here>>

Discussion and Conclusion

We conduct a resume audit to examine the effects of collegiate sports experience on one type of labor market outcome. Overall, we find that sports participation does not have a significant effect on whether an applicant receives a callback or interview request. Moreover, employers in our sample did not prefer one type of sport over another. Thus, our hypotheses that sports participation would lead to higher callback rates—and that team sports like soccer would drive the advantage more than individual sports like track or cross country—were not supported.

These findings are inconsistent with studies that document a self-reported preference among employers for athletes presumably because they possess traits such as teamwork, leadership, or conscientiousness, that are conducive to labor-market success (Barratt & Frederick, 2011; Baird & Parayitam, 2019; Chaflin et al., 2015). On one hand, our diverging results may be attributable to the unique circumstances in which we conducted our experiment (e.g., job markets in the Northeast United States, majors in business-related fields, job applications during the Covid-19 pandemic). On the other hand, by conducting an experiment to create an exogenous source of variation in collegiate sports participation as well as by relying on the revealed behavior of employers, we offer new evidence that calls into question the conventional view about collegiate athletics.

We also observe statistically significant decreases in the likelihood that non-white applicants receive callbacks and interview requests when they list sports on their resumes. Given

that resumes within pairs submitted to each vacancy were identical with respect to race, gender, educational background, and degree program, it seems likely that race was determinative in the likelihood of callbacks. It is possible that other randomized content in the resume—such as work experience, skills, and extracurricular activities—were driving the difference in callback rates. But in the aggregate, it is unlikely these randomized resume elements systemically disadvantaged non-white applicants. Thus, our hypothesis that employers may think differently about sports participation for non-whites is supported and is consistent with some research that documents different perceptions of white and non-white athletes. Specifically, white male athletes tend to be described by their hard work and mental skills, while black male athletes tended to be described for being athletic and other physical attributes (Eastman & Billings, 2001). This potential systematic bias is worth more investigation.

We acknowledge some limitations in this study. First, as is common in resume audits, we only observe whether applicants receive callbacks. Our study was not designed to measure outcomes such as whether a job was offered, whether earnings were affected, or how long one remains in a job once hired. Each of these outcomes may be more salient measures of labor market success. The callback, however, is a crucial first step toward labor market productivity. Collegiate sports participation may be rewarded at other downstream stages of the job application process, such as the interview. In fact, it is conceivable that collegiate sport experience may instill qualities that make employees more productive workers in ways that are not evident on a resume but become apparent once assuming a job. Moreover, sports may contribute to social capital in ways that are not captured by our field experiment.

Second, because we limited our resumes to include only certain types of sports at particular institutions and applied to entry-level openings in business fields, our study is limited

in external validity. Whether employers value participation in higher profile, Division I sports at other institutions is possible, but we cannot empirically speak to that conjecture.

Finally, we note that the study was conducted during the Covid-19 pandemic. The global pandemic conceivably depressed callback rates across the board, although it seems unlikely this would systematically increase or decrease the desirability of collegiate athletics to potential employers. Despite these limitations, our study is the first to investigate the causal effect of listing sports participation on labor market outcomes. We encourage further research to explore the effect of different types of sports participation within different labor markets. Given our subgroup findings, we are interested to learn whether the penalty for sports participation among nonwhites extends to other settings. This research could be of particular value to athletes on the margin who are deciding whether or not it is worthwhile to continue participating in athletics beyond high school, and whether it is worthwhile to include athletic participation on their resumes.

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Table 1: Counts of Resume Pairs by Location, Duration, and Demographic Characteristics

	Observations	%
Total Resumes	918	100%
Total Sport Participation	459	50%
No Sport Participation	459	50%
By Sport Type		
Soccer	225	49%
Track/Cross Country	234	51%
By Gender		
Female	472	51%
Male	446	49%
By Ethnicity		
White	290	32%
Black	202	22%
Hispanic	214	23%
Asian	212	23%

Table 2: Regression Results

<i>Panel A</i>	(1)	(2)	(3)	(4)
<i>Dependent Variable: Any Callback</i>				
Sport	-0.015 (0.013)			
Sport White		0.014 (0.023)		
Sport NonWhite		-0.029* (0.016)		
Sport Female			-0.021 (.018)	
Sport Male			-0.009 (0.018)	
Soccer				-0.009 (0.018)
Track				-0.021 (0.018)
Control Group Mean for:				
Overall Sample	0.244			0.244
White		0.262		
Non White		0.236		
Female			0.267	
Male			0.220	

<i>Panel B</i>	(1)	(2)	(3)	(4)
<i>Dependent Variable: Interview Request</i>				
Sport	-0.017 (0.013)			
Sport White		0.014 (0.023)		
Sport NonWhite		-0.032** (0.015)		
Sport Female			-0.025 (.018)	
Sport Male			-0.009 (0.018)	
Soccer				-0.013 (0.018)
Track				-0.021 (0.018)
Control Group Mean for:				
Overall Sample	0.153			0.153
White		0.152		
Non White		0.153		
Female			0.161	
Male			0.143	

Notes. All models include fixed effects indicating a pair of resumes sent to a specific job opening. In columns 2 and 3, the reference group is non-sport version of the same subgroup. Standard errors are presented in parenthesis. N=918. ** p<0.05, * p<0.1

Figure 1: Callback and Interview Request Rates, with and without Collegiate Athletics

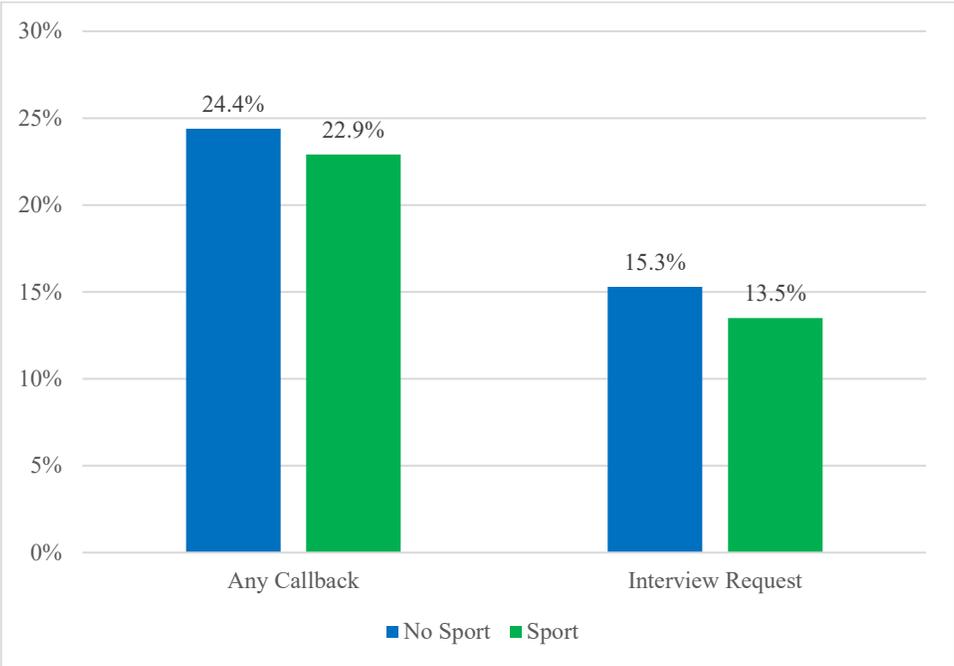


Figure 2: Callback and Interview Request Rates, by Sport Type

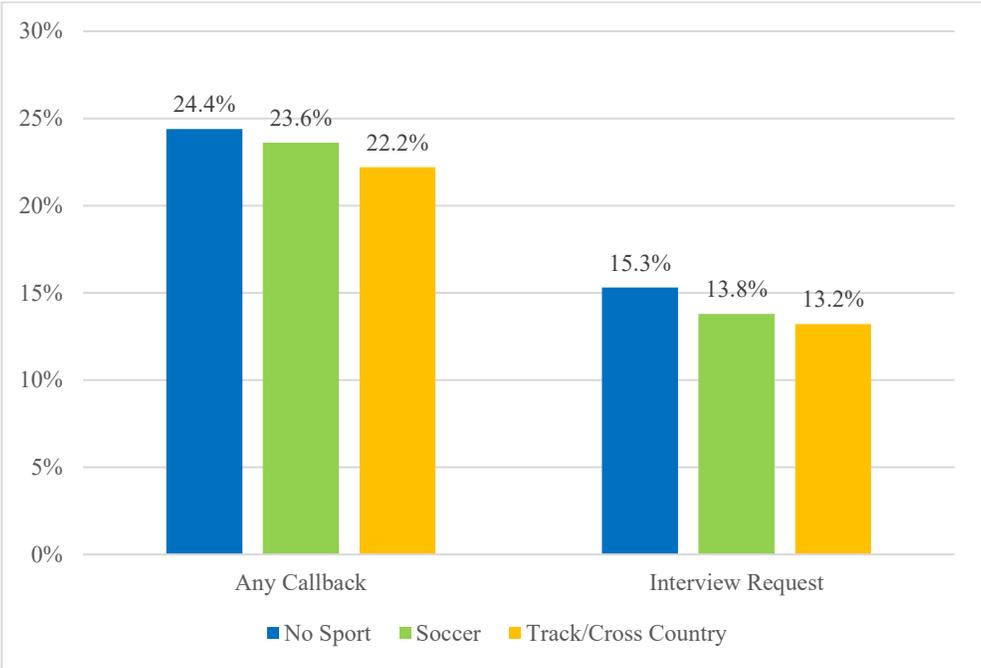


Figure 3: Callback Rates for Subgroups, with and without Collegiate Sports

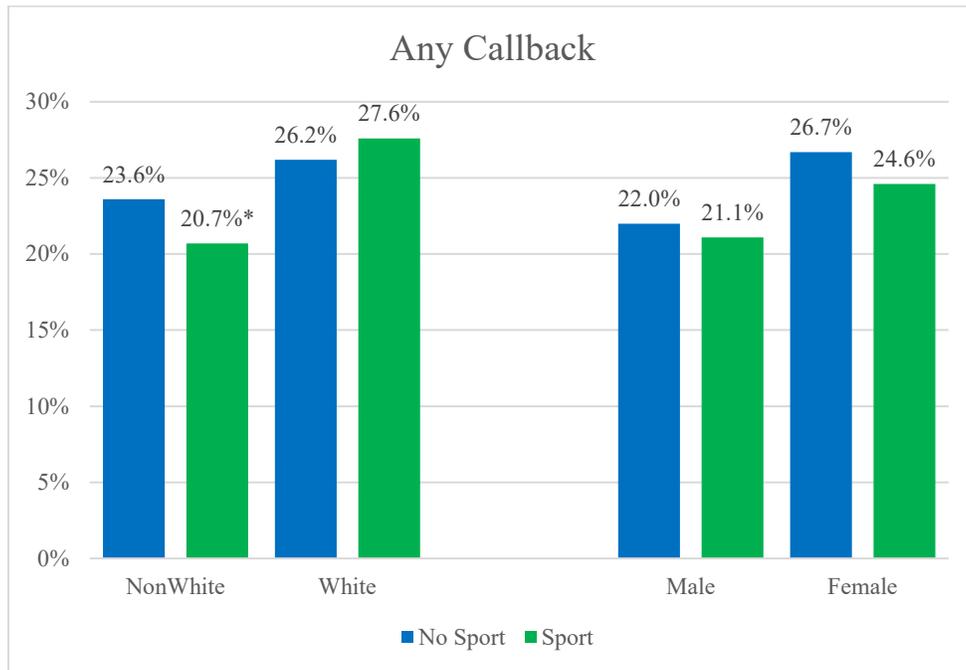
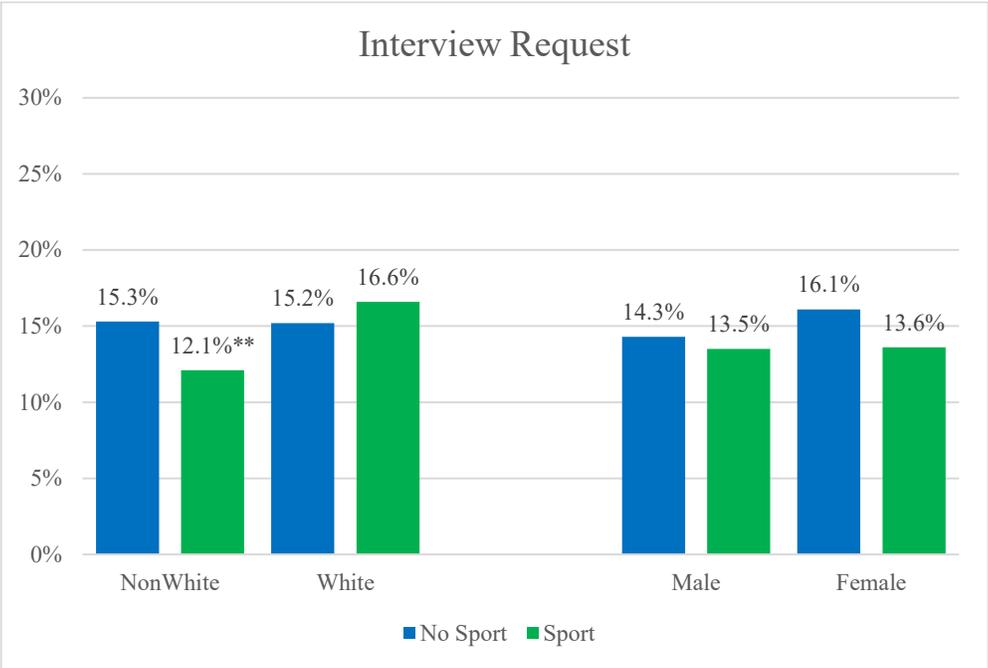


Figure 4: Interview Request Rates for Subgroups, with and without Collegiate Sports



Appendix A. Institutions Included in the Study

1. Arcadia University
2. Brooklyn College
3. Bryn Athyn College
4. Cabrini University
5. Carnegie Mellon University
6. Carroll University (Wisconsin)
7. Chatham University
8. College of Mount Saint Vincent
9. College of Staten Island, CUNY
10. Concordia University Wisconsin
11. Geneva College
12. Immaculata University
13. La Roche College
14. Lehman College
15. Manhattanville College
16. Medgar Evers College CUNY
17. Milwaukee School of Engineering
18. Neumann University
19. Penn State Berks College
20. Penn State University, Abington
21. Rosemont College
22. Saint Vincent College
23. St. Joseph's College (Brooklyn)
24. St. Joseph's College (Long Island)
25. SUNY College at Old Westbury
26. The City College of New York
27. Widener University
28. Wisconsin Lutheran College
29. Yeshiva University
30. York College (CUNY)