

## Varsity Sports Participation, College Selectivity, and First Job in Investment Banking or Management Consulting in the US

I present evidence on the relationship between varsity sports participation, college selectivity, and the likelihood of a first job after graduation in investment banking or management consulting in general and at the most prestigious investment banking and management consulting firms in particular. The research is motivated by Rivera's findings that elite firms in investment banking, management consulting, and law in the US hire from the most selective colleges and universities, usually the top five, and weigh participation in intercollegiate sports associated with high socioeconomic status over academic achievement. I use LinkedIn data to look at the first job after graduation for Ivy League varsity athletes in selected sports, 2000-2014, with strong academics as evidenced by an All Academic Ivy League designation. I do the same for Harvard University athletes in selected sports, 2007-2014. I also record the US News ranking of the undergraduate colleges and the varsity sports participation of investment bank analysts on LinkedIn at the top investment banks in the United States in 2017. I find a small proportion of investment banking analysts at top firms have been college athletes and the majority of these analysts come from undergraduate colleges outside the top 15 ranked undergraduate colleges and universities in the US. There is evidence that investment bank analysts that were college athletes were more likely to be participants in Rivera's high status sports than in sports she classifies as more open to participants across the socioeconomic spectrum.

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## Introduction and Review of Literature

In this paper I investigate Rivera's (2011, 2015a, 2015b) hypothesis that participation in high socioeconomic status varsity sports at elite colleges and universities is associated with first employment in front office positions at top tier investment banking and management consulting firms. Rivera studied the hiring process for entry-level workers in client contact positions at 24 top-tier investment banking, management consulting, and law firms in the US.<sup>1</sup> She reports these firms pay two times or more the starting salaries of other firms in their industry or in other industries for entry-level front office positions.<sup>2</sup> She concludes that the way these employers define and evaluate merit favors applicants from elite social economic backgrounds and contributes to the passing of privilege from one generation to the next. She argues that children of the elite dominate access to the best primary and secondary schools and the most prestigious universities in the US, and then go on to garner the best jobs at the best firms in the country. She writes (2011) top employers "favor candidates from the super elite universities"<sup>3</sup> and, furthermore, in choosing from these candidates, they weigh success in "high status resource intensive extracurricular activities that resonate with white upper-middle-class culture"<sup>4</sup> over academic achievement. The super elite were Harvard, Princeton, Yale, Stanford, and sometimes the Wharton School of the University of Pennsylvania. She writes (2015b) that the

employers she studied had a core list of schools that number from 3 to 5, and a list of target schools that included 5 to 15 additional colleges and universities. Recruiting is concentrated at the core schools. Varsity college athletic careers can be particularly important extracurriculars, and careers in “lacrosse, field hockey, tennis, squash, or crew were valued over sports more widely accessible or associated with more diverse players such as football, basketball, and soccer.”<sup>5</sup> The resume screeners from the elite firms she studied used the following criteria to choose graduates for job interviews: 77% school prestige, 75% extracurricular activities, 65% grades, 60% prestige of previous employment, 25% standardized test scores.<sup>6</sup> Rivera also points out that federal and state antidiscrimination laws may have led to an increase in the use of extracurricular activities as a screen in hiring by elite firms. This is because these firms may wish to maintain an elite culture within in terms of socioeconomic status while at the same increasing diversity by race and gender.

Rivera advances several explanations for why top firms in investment banking, management consulting, and law may favor a high status work force. These firms deal with clients that are also of high socioeconomic status and it may be easier to develop lasting and profitable relationships when like are dealing with like. Also, the social circles of new hires and their families can be a source for new business. In addition, an employee base largely from elite colleges may enable firms to charge higher fees to the extent clients are impressed with these credentials. And cohesion and esprit de core within the firm may be enhanced if employees have similar backgrounds and interests. Rivera reports however, that there is a lack of evidence that the hiring practices of elite

firms are profit maximizing, in part because elite firms themselves do not carefully study the efficacy of their recruiting techniques. She does cite evidence that employee turnover, which would increase firm costs, may be positively correlated with socioeconomic status of the employee.<sup>7</sup>

Rivera reports the following levels of satisfaction with the efficacy of the firm's hiring procedures from the firm recruiters in her study: consulting 72.5%, banking 67.5%, law 32.5%. In terms of their opinion of the equity of their firm's hiring procedures, 52.5% of the recruiters in consulting were supportive, as were 47.5% and 45.0% in banking and in law.<sup>8</sup> Rivera thinks that these elite firms could reduce their bias in favor of the privileged without loss of profits if extracurricular activities were excluded from resumes evaluated by hiring committees and more emphasis placed on grades (Rivera, 2015b).

Rivera's conclusion that there is a substantial wage premium associated with graduation from selective colleges fits with the literature. Previous research shows substantial college selectivity premiums (with selectivity measured by national ranking or difficulty of admission) after controlling for student characteristics such as high school academic performance, SATs, family socioeconomic status, and college academic performance. In most of this literature, there is also some attempt to control for unobservable influences on earnings that may also be correlated with student characteristics. In addition, there is evidence that varsity sports participation boosts this premium.

Hershbein's (2013) analysis of national cohorts going back to the 1960s shows about 15% higher earnings in the first job after graduation for low GPA students at selective colleges compared to less selective and a 7% premium for average GPA students. These premiums are larger for more recent cohorts. His results show no significant premium for the high GPA students at selective colleges, however. This finding may indicate that many firms have acted on Rivera's hiring prescription in the case of high academic achievers -- if employers discount the college ranking of these students, they may discount their extracurriculars as well. Andrews et al. (2012) find an overall 17% premium for white males, 23 – 31 years of age, attending the flagship universities of Texas at Austin and Texas A&M in comparison to other four-year colleges in the state. The premium varied substantially by race and ethnicity and by university. Hoekstra (2009) finds a 20% earnings premium for white males, 28 – 33 years of age attending a flagship state university by comparing the earnings of those just below the admission cut off to those just above. Lang and Siniver (2011) find an initial earnings premium for graduates from a top Israeli University as compared graduates from a less prestigious university, student characteristics and some university characteristics constant, but the earnings advantage disappears with labor market experience. Hoxsby (2009) reviews older work in this area.

The research of Dale and Krueger (2013) is a notable exception to the college selectivity-earnings literature in that they find no returns to college admissions selectivity after controlling for the number of colleges students apply to and the SATs of these

colleges as measures of unobserved ambition or other intangibles that might impact earnings. Hershbein (2013) speculates that returns to college selectivity do not show up in their research because the sample is confined to largely elite institutions.<sup>9</sup>

Another notable finding from Dale and Krueger is that the returns to varsity athletic participation are robust and on the order of a ten percent annual earnings premium in models with and without controls for unobservables and with controls for school SAT score, students SAT score, gender, race and ethnicity, high school GPA, and parent's income. The varsity athletic effect is similar for both male and female participants.<sup>10</sup> Also of interest in the Dale and Krueger research is the high earnings of graduates in their samples from elite schools, necessary evidence for Rivera's research to be of interest. One sample about 30 years from graduation averaged \$187,000 in annual earnings and another sample about 18 years from graduation averaged \$140,000. Both of these figures are in 2007 dollars and both figures are for employed persons earning at least \$14,000 (\$2007). The median earnings of full-time workers in the United States, 25 years and over, with at least a bachelor's degree were \$75,908 for men and \$55,943 for women in 2014.<sup>11</sup>

## Methods

In this research, I present evidence on the relationship between varsity sports participation in the Ivy League and the likelihood of a first job after graduation in investment banking or management consulting in general and at the most prestigious investment banking and management consulting firms in particular. I use LinkedIn data

to look at the first job after graduation for Ivy League varsity athletes in selected sports, 2000-2014, with strong academics as evidenced by an all academic Ivy League designation. I do the same for Harvard University athletes in selected sports, 2007-2014. I also record the undergraduate college and its US News ranking and the varsity sports participation of investment bank analysts at the top 10 investment banks in the United States in 2017. Investment bank analyst is the top entry-level front office position at these banks. I also consider the undergraduate college ranking of Goldman Sachs employees that were promoted to managing director in 2015. Thus I address two questions at the core of Rivera's conclusions from her research. How prevalent is intercollegiate varsity sports participation among the hires for entry-level front office positions at top investment banks in the United States? And how selective are the colleges from which the analysts come?

I emphasize Harvard University in the research because it is often ranked number one in the US in college ranking surveys,<sup>12</sup> because the Harvard University Crimson's surveys of graduating seniors provides information on employment in finance and management consulting after graduation, and because a Harvard degree has been termed a stepping stone to a wall street investment banking career.<sup>13</sup> With respect to the percent of graduating seniors *with employment* that had jobs after graduation in finance or consulting, the Harvard Crimson Surveys of graduating seniors shows these annual figures for 2007 – 2014: 47, 39, 20, 31, 22, 32, 31, and 34 percent.<sup>14</sup>

Harvard also offers a large number of varsity sports, far more than most other colleges, including the large enrollment athletic powerhouses. At Harvard, 37 varsity sports were offered in 2016.<sup>15</sup> These were (roster size in parentheses): men's baseball

(32), men's basketball (20), women's basketball (14), men's heavyweight crew (49), men's lightweight crew (35), women's heavyweight crew (52), women's lightweight crew (38), men's cross country (16) women's cross country (10), men's fencing (11), women's fencing (12), field hockey (24), football (120), men's golf (eight), women's golf (seven), men's ice hockey (30), women's ice hockey (21), men's lacrosse (42), women's lacrosse (30), women's rugby (24), sailing (11), skiing (26), men's soccer (28), women's soccer (26), women's softball (24), men's squash (17), women's squash (13), men's swimming and diving (34), women's swimming and diving (36), men's tennis (13), women's tennis (12), men's track and field (52), women's track and field (52), men's volleyball (13), women's volleyball (15), men's water polo (16), women's water polo (13), and men's wrestling (27). In contrast, the four schools that played in the 2016 NCAA national championship football semifinals, Alabama, Michigan State, Clemson, and Oklahoma, supported 21, 25, 19, and 19 men's and women's varsity athletic teams, respectively.<sup>16</sup>

Harvard graduates are also high earners. The median earnings of Harvard graduates for select classes centered around 1970, 1980, and 1990, averaged \$90,000 for the women and \$163,000 for the men in 2005. For full time, full year workers, male and female median earnings were \$188,000 and \$113,000 (Goldin and Katz, 2008). Median starting salaries for 2015 Harvard graduates at first job after graduation were a bit over \$70,000 for the men and a bit under \$60,000 for the women.<sup>17</sup> Athletes recruited to the Ivy League meet high academic standards. The average of the academic index of athletes on a team must be within one standard deviation of the average of the academic index for the student body. At Harvard in 2013, a standard

deviation below the average academic index was an average of 680 per section on the SAT (95th percentile) and a 3.7 unweighted high school GPA (Admin 2013).

I record the first job after graduation of athletes at Harvard in golf, tennis, crew, hockey, lacrosse, squash, soccer, baseball, basketball, and softball for the graduating classes of 2007 – 2014. Rivera has mentioned the first six sports, except for golf,<sup>18</sup> as enclaves of the elite and the last four sports as open to participants across the socioeconomic spectrum. I also present similar data on the first job after graduation for all academic Ivy League athletes, 2000 – 2014. The all academic designation is given to 240 athletes per year in the Ivy League that are important contributors to their respective athletic teams and also are strong performers in the classroom. The eight schools in the Ivy League- Harvard, Yale, Princeton, Columbia, Dartmouth, Penn, Cornell, and Brown-are all ranked in the top 15 national universities by US News and all support a large number of varsity sports. Harvard varsity athletes in each sport are identified from historical rosters archived at team web sites.<sup>19</sup> First job after graduation was taken from LinkedIn in 2016. LinkedIn is a social network site aimed at professionals. It began in 2003 and presently has about 100 million users in the United States.<sup>20</sup> Sixty three percent of the 959 Harvard varsity athletes and 63% of the 1061 all academic honorees studied here studied here are LinkedIn members. Based on data from the 2013 Princeton graduating class, a 63% LinkedIn membership rate appears to be a good ballpark figure for Ivy League graduates. In March 2017 graduates in economics, history, and psychology at Princeton in 2013 were checked for LinkedIn membership. About 25% of Princeton graduates are in these three majors. Eighty percent of the 128 economics majors were LinkedIn members, 55 percent of the 60

history majors were, and 49 percent of the 67 psychology majors were on LinkedIn.<sup>21</sup>

The 2013 Princeton graduates were examined because they were available online and because Ivy League graduation lists are not made available by the universities.<sup>22</sup>

## Results

In table 1 the after graduation activities of Harvard University athletes from the classes of 2007 – 2014 that were LinkedIn members in 2016 are broken down by selected sports according to first employment in investment banking or management consulting, graduate school attendance, or other activity. The weighted average<sup>23</sup> of the proportions of Harvard male athletes on LinkedIn whose first activity after graduation was employment in investment banking or management consulting for the ten sports tabulated in table 1 is .37. These proportions in descending order are: golf .74 (IB=.67, MC=.07); baseball .48 (IB=.32, MC=.16); soccer .47 (IB=.33, MC=.14); squash .45 (IB=.31, MC=.14); tennis .38 (IB=.25, MC=.13); heavyweight crew .33 (IB=.24, MC=.09); lacrosse .30 (IB=.24, MC=.06); basketball .27 (IB=.21, MC=.06), lightweight crew .24 (IB=.09, MC=.15), hockey .15 (IB=.15, MC=0). The weighted average of the proportions of Harvard female athletes on LinkedIn whose first activity after graduation was employment in investment banking or management consulting for the ten sports tabulated in table 1 is .29. These proportions in descending order are: tennis .67 (IB=.50, MC=.17); softball .48 (IB=.15, MC=.33); squash .35 (IB=.35, MC=0); lacrosse .29 (IB=.23, MC=.06), soccer .30 (IB=.21, MC=.09); golf .27 (IB=0, MC=.27); heavyweight crew .27 (IB=.09, MC=.18); Hockey .26 (IB=.10, MC=.16); lightweight crew .24 (IB=.08, MC=.16); basketball .15 (IB=.08, MC=.08). There is no relationship in

these rank orderings for male and female varsity athletes between employment in investment banking/management consulting and participation in Rivera's "higher status sports (golf, tennis, lacrosse, hockey, crew, squash)" as compared to "lower status sports (baseball, softball, soccer, basketball)." The Spearman rank order correlation coefficients between proportion in investment banking and management consulting and a variable that takes a "one" for the higher status sports and a "two" for lower status sports are .26 and .03. Note the "rhos" are positive, not negative.

The average percentage of all Harvard students with employment that went into investment banking or management consulting right after graduation in this period is 32, according to the eight Harvard Crimson Surveys  $((47+39+ 20+ 31+ 22+ 32+31+34)/8)$ . This roughly approximates the average of the male and female Harvard athletes that reported a first job in investment banking or management consulting on LinkedIn (37 and 29). The Harvard Crimson proportions are for those who knew their first employer at the time of the survey, before they graduated in the spring. The LinkedIn proportions are for those who were LinkedIn members, most of whom were employed. It is difficult to say how comparable the two groups are. If it is assumed that all athletes who started in investment banking or management consulting are LinkedIn members, the proportion of roster athletes in these fields by sport for men are : golf .65, baseball .27, soccer .38, squash .33, tennis .22, heavyweight crew .17, lacrosse .21, basketball .15, lightweight crew .14, hockey .10. For women the proportions are: tennis .44, softball .24, squash .22, lacrosse 18, soccer .19, golf .23, heavyweight crew .16, Hockey .20, lightweight crew .14, and basketball .09. The weighted average of these numbers for

the men are .23 and for the women .19. These would be lower bound estimates of the proportion of Harvard University athletes in these selected sports that went into investment banking and management consulting.<sup>24</sup> Recall from note 15 that about 15% of all Harvard undergraduates are varsity athletes.

In table 2 the after graduation activities of All Ivy League Academic honorees from the classes of 2000 – 2014 that were LinkedIn members in 2016 are broken down for selected sports according to employment in investment banking, employment in management consulting, graduate school attendance, or other activity. Honorees were designated in eight of the ten sports that were tabulated for Harvard in table 1. The weighted average of the eight proportions of the male honorees on LinkedIn with first activity after graduation being employment in investment banking or management consulting is .37. The proportions in descending order are: squash .62 (IB=.49, MC=.13); golf .56 (IB=.56, MC=0); lacrosse .48 (IB=.47, MC=.02); basketball .29 (IB=.27, MC=.02); tennis .26 (IB=.19, MC=.07); soccer .22 (IB=.13, MC=.09); baseball .19 (IB=.11, MC=.08). For female honorees in these sports, the average of the proportions is .20 and the proportions in descending order are: squash .35 (IB=.25, MC=.10); lacrosse .30 (IB=.24, MC=.06); golf .29 (IB=.14, MC=.14); tennis .25 (IB=.25, MC=0); soccer .10 (IB=.08, MC=.02); softball .09 (IB=.09, MC=0); basketball .03 (IB=0, MC=.03). There is a closer relationship for the All Academic Ivy League honorees between employment proportions in investment banking and management consulting and participation in Rivera's elite socioeconomic status varsity sports as compared to the less elite sports. The Spearman *rhos* are negative, -.72 and -.87, and the *p* values

are .07 and .01, following the procedure used with the data in table 1. Note that the all academic comparisons are only for very good student-athletes (academic achievement is held constant), while the Harvard data is for all varsity athletes.

In tables 3-6, the numbers of Harvard University varsity athletes and all Ivy academic honorees in these data whose first activity after graduation was employment at a top 10 investment banking firm or a top 10 management consulting firm are presented. The results in these tables are more directly related to Rivera's work, which emphasizes entry level hiring practices at elite investment banking and management consulting firms (and law firms). Small numbers of the Harvard athletes and all academic honorees that were LinkedIn members in 2016 were employed by these firms in their first jobs. Of the top 10 investment banking and management consulting firms, Goldman Sachs hired the most: 16 of the Harvard athletes and 19 of the academic honorees in selected sports.<sup>25</sup> The total hires in investment banking by the top 10 firms of the Harvard athletes was 52 and the total for the all Ivy academic athletes was 45. Thus, about 100<sup>26</sup> of the approximately 2000 athletes studied here were hired out of college by a top 10 investment banking firm for front office employment. The pattern of hires fits Rivera's dichotomy of elite sports versus the more accessible. Forty-four of the Harvard hires were in crew, hockey, lacrosse, squash, golf, and tennis and eight of the hires were in soccer, baseball, softball, and basketball. One point six times as many athletes were in the first group of varsity sports as in the second-595 versus 364. Increasing the eight hires in the second group to 13 ( $8 \times 1.6$ ) enables a comparison of hires between the groups that is adjusted for number of participants and leaves us with

3.4 times as many participant adjusted hires from the first group as compared to the second. For the all Ivy academic honorees, 31 hires were from tennis, lacrosse, golf, squash and 14 were from baseball, softball, soccer, basketball. There were 480 athletes in the first group and 581 in the second. The 14 hires in the second group should be reduced to 11 to give a comparison of hires between the groups that adjusts for number of participants. Thus, there were 2.8 times as many participant adjusted hires from the first group as compared to the second.

Missing from the discussion so far is how prevalent graduates from the Ivy League or other elite colleges are in front office hiring at elite investment banking and management consulting firms, with or without varsity sports participation. I examine the issue by concentrating on the hiring patterns at top 10 investment banks in the New York metropolitan area. Table 7 shows the average and median undergraduate college rankings<sup>27</sup> of the investment banking analysts in the New York metropolitan area on LinkedIn at these banks in March 2017 and their self-reported intercollegiate sports participation. LinkedIn “professional” membership allowed 1000 investment bank employees in the New York metropolitan area to be examined for each firm. About one in every 10 investment banking employees is an investment banking analyst, the top entry-level front office investment banking position. Thus, the data collected for investment bank analysts summarized in table 7 are from samples because four of the nine investment banks have more than 1000 investment bank employees in the New York metropolitan area and because not all investment bank analysts will be LinkedIn members. In addition, college rankings from US News were

used only for colleges in the “national university” category. The average ranking values are based on these numbers with undergraduate colleges not in the national university category ignored. In calculating the median, colleges not in the national university category were assumed to rank below the median. To highlight these data issues, consider the data in table 7 for the top 3 investment banks. The 21 private equity analysts<sup>28</sup> at Blackstone, collected from the first 1000 of the 1455 New York City area Blackstone employees, went to 12 different colleges. The average US News rank was 16 for national universities and the median 8, using the calculation techniques described above. Three colleges were not in the US News national university category. These were the Canadian universities, Queens and Western, and the University of Puget Sound. There were 3727 Goldman Sachs investment bank employees in the New York City area in March 2017 that were LinkedIn members. There were 130 investment bank analysts in the first 1000 Goldman Sachs investment bank employees. They attended 71 different colleges. The average US News rank was 33 for national universities and the median 36 using the calculation techniques described above.<sup>29</sup> There were 1,268 Morgan Stanley investment bank employees in the New York City area in March 2017 that were LinkedIn members. There were 69 investment bank analysts in the first 1000 of the 1268 on LinkedIn. The average of the US News undergraduate college ranking was 21 and the median 20 using the calculation techniques described above. The 69 analysts came from 38 different colleges.<sup>30</sup>

The unweighted average of the average college rankings for the nine top investment banks in table 7 is 30 and the unweighted average of the medians is 29.

The number of investment bank analysts per undergraduate college by bank can be calculated by dividing the column two figures in table 7 by the column 6 figures. The average of the nine values generated in this way is 1.6. This means every 100 investment banking analysts from the top investment banks in the New York City area will come from roughly 60 different colleges. The average of the nine varsity sports participation percentages is 6.4%. For the 104 Ivy League graduates that were investment banking analysts in these firms, 11 reported varsity sports participation. Given some underreporting it would appear that Ivy League varsity athletes are represented here at about the same rate they appear in the student body (about 15%).<sup>31</sup> Thus varsity sports participation appears to be the exception, not the rule, among analysts at top investment banks in the New York metropolitan area.<sup>32</sup>

Finally, I look at the college and university credentials of Goldman Sachs employees promoted to Managing Director in 2015. Goldman promoted 425 of its employees to this position. Approximately 2000 of Goldman's 37,000 employees in 2015 had this title. Their total compensation with bonus can reach \$1 million.<sup>33</sup> This promotion typically comes after about 15 years of experience in the financial services industry for top candidates. Three hundred twenty-nine of these individuals were on LinkedIn in July 2016. One hundred eighty-five of them were based in the United States. Their average US News undergraduate national university ranking was 29 and the median 30, using the calculation techniques described above. Their college varsity sports participation was not considered.

To sum up, Rivera's conclusions about hiring in elite investment banking, management consulting, and law firms seem overdrawn in the case of investment banking. A small proportion of investment banking analysts at top firms have been college athletes in recent years and the majority of analysts come from undergraduate colleges outside the top five or 15 undergraduate colleges and universities. There is evidence that investment bank analysts at the top firms that were college varsity athletes are more likely to be in Rivera's high status sports than in the sports she considers more open to participants across the socioeconomic spectrum.

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<sup>1</sup> The 24 industry-leading firms were concentrated in Manhattan and consisted of seven investment banks, six management consulting firms, and 11 law firms. She interviewed 120 people at these firms in 2006 – 2008 that were involved in the hiring of new employees. She asked 90 people that screened resumes at these firms to evaluate nine mock resumes that she constructed. For nine months, she closely interacted with members of the recruiting department of one of the firms. She also interviewed 32 job candidates.

<sup>2</sup> Rivera (2011), page 73.

<sup>3</sup> Rivera (2011), page 78.

<sup>4</sup> Rivera (2011), page 71. There is a large body of research that shows participation in extracurricular activities in high school and before leads to or is correlated with educational attainment and subsequent earnings and that this participation is as strong a predictor of these outcomes as high school test scores. See Snellman, et al., 2015, for a review and analysis.

<sup>5</sup> Rivera (2011), page 83. In the part of her research that uses mock resumes for job applicants she chose crew, squash, skiing, rugby, and lacrosse to indicate high socioeconomic status for the applicant and running as a sport neutral with respect to socioeconomic status (Rivera (2015a), page 301 – 305). In Rivera (2015a, p. 7), she identifies court tennis, polo, and squash as high status sports that require lengthy and expensive training and are conducted at exclusive locations. She identifies pickup basketball and soccer as sports with low barriers to entry and simpler rules.

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<sup>6</sup> Rivera (2011), page 77.

<sup>7</sup> Goldman Sachs, in fact, recently announced a change in their recruitment strategy for entry-level front office positions in an attempt to reduce employee turnover and find candidates more committed to the financial services industry. Goldman is now using video technology for first interviews of candidates at a much wider range of schools than they have recruited at in the past (Gellman, 2016).

<sup>8</sup> Rivera (2015) p. 283.

<sup>9</sup>These were Barnard College, Bryn Mawr College, Columbia University, Duke University, Emory University, Georgetown University, Kenyon College, Miami University of Ohio, Morehouse College, Northwestern University, Oberlin College, Penn State University, Princeton University, Smith College, Stanford University, Swarthmore College, Tufts University, Tulane University, University of Michigan, University of Pennsylvania, Vanderbilt University, Washington University, Wellesley College, Wesleyan University, Williams College, Xavier University, and Yale University

<sup>10</sup> Their reported results do not provide separate gender effects but the authors indicated similar effects for males and females in personal correspondence.

<sup>11</sup> United States Census Bureau, Historical Income Tables, Table P – 24, at <https://www.census.gov/hhes/www/income/data/historical/people/>

<sup>12</sup> Either Harvard or Princeton has been ranked the top national university in the annual US News and World Report rankings since 2001

([http://web.mit.edu/ir/rankings/USNews\\_UG\\_Rankings\\_1998-2016.pdf](http://web.mit.edu/ir/rankings/USNews_UG_Rankings_1998-2016.pdf)).

<sup>13</sup> Rampell (2011).

<sup>14</sup> <http://features.thecrimson.com/2015/senior-survey/> . The Harvard Crimson did not respond to requests for the proportion of all graduates with employment.

<sup>15</sup> These roster spots total 1023, 15 percent of Harvard's student body of 6696 in 2016.

<sup>16</sup> Data from the university websites: <https://www.ua.edu/athletics/>; [www.msuspartans.com/](http://www.msuspartans.com/); [www.clemson.com/](http://www.clemson.com/); [www.soonersports.com](http://www.soonersports.com)

<sup>17</sup> <http://features.thecrimson.com/2015/senior-survey/>

<sup>18</sup> Golf is a surprising omission, given the country club background of most college golfers and the evidence that golf may help with corporate compensation and deal making (Hogarth and Kolev, 2010). Also, "Think of a golf round as a six-hour sales call (Newman, 2016)." Squash could be king on Wall Street, however, given its minimal space and time requirements. Forbes magazine termed it the preferred sport on Wall Street (LaRoche 2013). Daniel Flynn (2014) concurs, "Whereas basketball reins in Harlem, squash plays as the sport of tycoons at the other end of Manhattan. Wall Street love squash." Lacrosse is also touted as a route to a Wall St. career. "...the sales and trading desks of Goldman Sachs, Morgan Stanley, and other Wall Street firms are stocked with former (lacrosse) All-Americans Wachter (2012)." Also, see Soshnick (2013).

<sup>19</sup> Available through <http://www.gocrimson.com>.

<sup>20</sup> <https://en.wikipedia.org/wiki/LinkedIn>. There are about 150 million full and part-time employees in the United States.

<sup>21</sup> Eighteen percent of the economics majors reported participation in a varsity sport as did 16% and 13% of the history and psychology majors. Recall from note 15 that about 15% of Harvard students are necessary to fill varsity sport rosters.

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<sup>22</sup><https://www.princeton.edu/mediakits/2013/graduation/commencement/2013-Commencement-program.pdf>

<sup>23</sup>The weight is the number of varsity athletes on LinkedIn by sport.

<sup>24</sup> Using the procedure described above, the Spearman's *rho* remains positive for the men and is negative and statistically insignificant for the women.

<sup>25</sup> Goldman is also one of the largest of the investment banking firms. Total employment at these firms in 2016 was: Goldman Sachs, 33,000; Blackstone, 2,200; Morgan Stanley, 56,000; Evercore, 1,000; Greenhill, 234; Centerview, 260; Houlihan, 981; Credit Suisse; 48,000; Perella, 450; J.P. Morgan Chase 236,000. Some retail banking services are offered at Goldman, Morgan Stanley, and Credit Suisse. The J.P. Morgan Chase figures include employees at the Chase Bank division. Total employment at the management consulting firms was: McKinsey, 11,000; First Boston, 6,200; Bain, 5,700; Deloitte 210,000; Booz Hamilton, 22,000; KPMG, 190,000; Ernst & Young, 231,000; AT Kearney, 2,300; Price Waterhouse, 223,000; Accenture, 394,000. The five firms with large employment figures are full service accounting firms with management consulting divisions.

<sup>26</sup> There will be double counting, 2007 – 2014, to the extent Harvard athletes are also all Ivy academic athletes.

<sup>27</sup> US News college rankings at: <https://www.usnews.com/best-colleges>

<sup>28</sup> Blackstone does not have the rank of Investment Bank Analyst. Their top analyst rank is Private Equity Analyst. Blackstone has 1455 employees in the New York area on LinkedIn. The 21 private equity analysts were taken from the first 1000 of these on LinkedIn in March 2017.

<sup>29</sup> Twenty four colleges were not in the US News national university category. These were: Colby, Baruch, Amherst, Bucknell, Claremont McKenna, Beijing Normal University, Calgary, Hamilton College, Haverford College, Kenyon College, Manhattanville, McGill, MMK College of Commerce, Netaji Subhas Institute of technology, Queens, Waterloo, Wheaton, Whitman, Williams, York, Tsinghua University, China, Guru Gobind Singh Indraprastha University, SUNY- Empire.

<sup>30</sup> Of the 38 colleges, the following were not in the US News national university category: Amherst College, Baruch College, William and Mary, Middleberry College, San Jose State, Trinity College – Hartford, University of Oxford, and Universidad Pontificia Comillas.

<sup>31</sup> Most of the analysts would be expected to report their varsity team memberships given these individuals are early in their careers, may well change firms after their analyst training, and varsity athletic participation is an indicator of discipline, commitment, and vigor. Fifty-one Harvard varsity athletes that graduated in 2013 and 2014 from the rosters examined in this research went into investment banking and were on LinkedIn. Fifteen, or 30%, did not report their varsity sports membership on LinkedIn.

<sup>32</sup> The three junior ranks in investment banking are analyst, senior analyst, and associate. There were 371 individuals at these ranks out of the first 1000 investment banking employees on LinkedIn at Goldman Sachs in March 2017. 7.3% reported a college varsity team membership. The average and median US News rankings of

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undergraduate colleges attended were 33 and 36, using the calculation procedures described above. See <https://sites.google.com/site/ivyvarsitysportsibmc>.

<sup>33</sup><https://www.bloomberg.com/News/articles/2015-11-12/goldman-sachs-names-425-managing-directors-in-biennial-promotion>

Table 1. First employer or other activity after graduation, Harvard varsity athletes, selected sports, classes of 2007-2014\*

		Linkedin	Investment	Management	Graduate	Other
Men	Total	Member	Banking	Consulting	School	
Heavyweight Crew	66	33	8	3	6	22
Lightweight Crew	59	33	3	5	5	25
Hockey	42	26	4	0	1	22
Lacrosse	75	55	13	3	4	39
Squash	40	29	9	4	4	16
Tennis	27	16	4	2	0	10
Soccer	53	43	14	6	4	19
Golf	17	15	10	1	1	3
Baseball	90	50	16	8	5	31
Basketball	59	33	7	2	1	23
Women						
Heavyweight Crew	75	46	8	4	8	34
Lightweight Crew	44	25	2	4	3	19
Hockey	40	31	3	5	3	23
Lacrosse	49	31	7	2	3	22
Squash	27	17	6	0	3	11
Tennis	18	12	6	2	0	4
Soccer	62	47	10	4	10	23
Golf	16	11	0	3	2	6
Softball	54	27	4	9	2	12
Basketball	46	26	2	2	0	22

Proportion of LinkedIn Members

Men	IB	MC	GS	Other	IB+MC
Heavyweight Crew	.24	.09	.18	.67	.33
Lightweight Crew	.09	.15	.15	.76	.24
Hockey	.15	.00	.04	.85	.15
Lacrosse	.24	.06	.07	.71	.30
Squash	.31	.14	.14	.55	.45

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Tennis	.25	.13	0	.63	.38
Soccer	.33	.14	.09	.44	.47
Golf	.67	.07	.07	.20	.74
Baseball	.32	.16	.10	.62	.48
Basketball	.21	.06	.03	.70	.27
Women					
Heavyweight Crew	.18	.09	.18	.74	.27
Lightweight Crew	.08	.16	.12	.76	.24
Hockey	.10	.16	.10	.74	.26
Lacrosse	.23	.06	.10	.71	.29
Squash	.35	.00	.18	.65	.35
Tennis	.50	.17	0	.33	.22
Soccer	.21	.09	.21	.49	.30
Golf	.00	.27	.18	.55	.27
Softball	.15	.33	.07	.44	.48
Basketball	.08	.08	0	.85	.15

\* Athletes identified from historical rosters archived at team web sites, available through <http://www.gocrimson.com>. Employment data for LinkedIn members in 2016. Source data at <https://sites.google.com/site/ivyvarsitysportsibmc/>.

Table 2. First employer or other activity after graduation, all Ivy League academic honorees, selected sports, classes of 2000-2014\*

Men	Total	Linkedin Member	Investment Banking	Management Consulting	Graduate School	Other
Golf	41	32	18	0	5	9
Tennis	70	42	8	3	10	31
Soccer	139	89	12	8	25	59
Baseball	90	64	7	5	25	52
Squash	51	39	19	5	5	10
Lacrosse	87	60	28	1	3	28
Basketball	74	45	12	1	17	33
Women						
Golf	30	21	3	3	5	10
Tennis	52	24	6	0	10	18
Soccer	123	76	7	0	32	69
Softball	86	48	4	1	21	43
Squash	65	40	10	4	6	20
Lacrosse	84	54	13	3	9	29
Basketball	69	32	0	1	17	29

Men	IB	Proportion of MC	Linkedin GS	Members Other	IB+MC
Golf	.56	0	.16	.28	.56
Tennis	.19	.07	.24	.74	.26
Soccer	.13	.09	.28	.66	.22
Baseball	.11	.08	.39	.81	.19
Squash	.49	.13	.13	.26	.62
Lacrosse	.47	.02	.05	.47	.48
Basketball	.27	.02	.38	.73	.29
Women					
Golf	.14	.14	.24	.48	.29
Tennis	.25	.00	.42	.75	.25
Soccer	.09	0	.42	.91	.09
Softball	.08	.02	.44	.90	.10

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Squash	.25	.10	.15	.50	.35
Lacrosse	.24	.06	.17	.54	.30
Basketball	0	.03	.53	.91	.03

\*Honorees from [http://www.ivyleaguesports.com/history/honors/academic\\_all-ivy/index](http://www.ivyleaguesports.com/history/honors/academic_all-ivy/index).  
Employment data for LinkedIn members in 2016. Source data at  
<https://sites.google.com/site/ivyvarsitysportsibmc/>.

Table 3. Number of athletes whose first activity after graduation was employment at a top 10 investment banking firm, selected sports, Harvard University athletes, 2007-2014\*

	Heavyweight Crew Men	Heavyweight CrewWomen	Lightweight Crew Men	Lightweight CrewWomen	Men's Hockey	Womens Hockey		
Blackstone Goldman Sachs Morgan Stanley Evercore Centerview Partners Houlihan Lokey Greenhill & Co., Inc. J.P. Morgan Perella Weinberg Credit Suisse	1 1 2 0 0 0 0 0 0 0 0 0 0 1	0 1 2 0 0 0 0 0 0 0 0 0 0 1	0 0 2 0 0 0 0 0 0 0 1 0 0 0	0 1 0 0 0 0 0 0 0 0 0 0 0 1	0 0 0 0 0 0 0 0 0 0 0 0 0 1	0 0 1 0 0 0 0 0 0 0 0 0 0 0 0	0 1 1 0 0 0 0 0 0 0 0 0 0 0 0	
	Men's Lacrosse	Women's Lacrosse	Men's Squash	Women's Squash	Men's Soccer	Women's Soccer	Men's Golf	
Blackstone Goldman Sachs Morgan Stanley Evercore Centerview Partners Houlihan Lokey Greenhill & Co., Inc. J.P. Morgan Perella Weinberg Credit Suisse	0 1 1 0 0 0 0 0 0 1 0 0 0	0 2 2 0 0 0 0 0 0 1 0 0 0	0 3 0 0 0 0 0 0 0 1 0 0 0	0 2 0 0 0 0 0 0 0 3 0 0 0	0 0 1 0 0 0 0 0 0 0 0 0 0	0 2 1 0 0 0 0 0 0 0 0 0 0	0 0 2 1 0 0 0 0 0 1 0 0 0 1	
	Baseball	Softball	Men's Basketball	Women's Basketball	Men's Tennis	Women's Tennis	Women's Golf	
Blackstone Goldman Sachs Morgan Stanley Evercore Centerview Partners	0 0 0 0 0 0	0 0 0 0 0 0	1 1 0 0 0 0	0 0 0 0 0 0	0 1 1 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	

Houlihan Lokey	0	0	0	0	0	0	0
Greenhill & Co., Inc.	0	0	0	0	0	0	0
J.P. Morgan Perella	0	0	0	0	0	1	0
Weinberg	0	0	0	0	0	0	0
Credit Suisse	1	0	0	0	1	2	0

\* Athletes identified from historical rosters archived at team web sites, available through <http://www.gocrimson.com>. Employment data for LinkedIn members in 2016.

Investment Bank rankings are Vault “best to work for” from their survey of 3500 bankers <http://www.vault.com/company-rankings/banking/vault-banking-50/?sRankID=251&rYear=2016>. Source data at <https://sites.google.com/site/ivyvarsitysportsibmc/>.

Table 4. Number of athletes whose first activity after graduation was employment at a top 10 investment banking firm, selected sports, all Ivy League academic honorees, 2000-2014\*

	Baseball	Softball	Men's Tennis	Women's Tennis	Men's Soccer	Women's Soccer	Men's Lacrosse	Women's Lacrosse
Blackstone	0	0	0	0	0	0	2	0
Goldman Sachs	1							
Morgan Stanley	1	0	1	1	2	0	4	1
Evercore		0	3	0	1	1	1	3
Centerview Partners	0	0	0	0	0	0	0	0
Houlihan Lokey	0	0	0	0	0	0	0	0
Greenhill & Co., Inc.	0		0	0	0	0	0	0
J.P. Morgan	1	0	1	0	0	1	0	1
Perella Weinberg	0	0	0	0	0	0	0	0
Credit Suisse	0	0	1	0	1	1	0	0

	Men's Golf	Women's Golf	Men's Squash	Women's Squash	Men's Basketball	Women's Basketball
Blackstone	0	0	0	0	0	0
Goldman Sachs	0	2	3	1	3	0
Morgan Stanley	0	0	0	1	1	0
Evercore	0	0	0	0	0	0
Centerview Partners	0	0	0	0	0	0
Houlihan Lokey	0	0	0	0	0	0
Greenhill & Co., Inc.	0	0	0	0	0	0
J.P. Morgan	2	0	0	2	0	0
Perella Weinberg	0	0	0	0	0	0
Credit Suisse	0	0	0	1	0	0

\*Honorees from [http://www.ivyleaguesports.com/history/honors/academic\\_all-ivy/index](http://www.ivyleaguesports.com/history/honors/academic_all-ivy/index). Employment data for LinkedIn members in 2016. Investment Bank rankings are Vault "best to work for," from <http://www.vault.com/company-rankings/banking/vault-banking-50/?sRankID=251&rYear=2016>. Source data at <https://sites.google.com/site/ivyvarsitysportsibmc/>.

Table 5. Number of athletes whose first activity after graduation was employment at a top 10 management consulting firm, selected sports, Harvard University athletes, 2007-2014\*

	Men's Golf	Heavyweight Crew Men	Heavyweight Crew Women	Lightweight Crew Men	Lightweight Crew Women	Men's Hockey
McKinsey & Company	0	0	0	0	0	0
Boston Consulting Group	0	0	0	0	0	1
Bain & Company	0	1	1	1	0	0
Deloitte Consulting LLP	0	0	0	0	0	0
Accenture	0	0	0	0	0	0
Booz Allen Hamilton	0	0	1	0	0	0
PriceWaterHouseCoopers	0	0	0	0	0	0
KPMG LLP	0	0	0	0	0	0
Ernst & Young LLP	0	0	0	0	0	0
A.T. Kearney	0	0	0	0	0	0

	Men's Lacrosse	Women's Lacrosse	Men's Squash	Women's Hockey	Women's Squash	Women's Golf	Men's Soccer
McKinsey & Company	0	0	1	0	0	0	0
Boston Consulting Group	0	0	0	0	0	0	0
Bain & Company	1	0	1	1	0	0	2
Deloitte Consulting LLP	0	0	0	0	0	0	0
Accenture	0	0	0	0	0	0	0
Booz Allen Hamilton	0	0	0	0	0	0	0
PriceWaterHouseCoopers	0	0	0	0	0	0	0
KPMG LLP	0	0	0	0	0	0	0
Ernst & Young LLP	0	0	0	0	0	0	0
A.T. Kearney	0	0	0	0	0	0	0

	Men's Baseball	Women's Softball	Men's Basketball	Women's Basketball	Men's Tennis	Women's Tennis	Women's Soccer
McKinsey & Company	1	0	0	0	0	0	0
Boston Consulting Group	0	0	1	0	0	0	0
Bain & Company	1	0	0	0	1	1	0
Deloitte Consulting LLP	0	0	0	0	0	0	0
Accenture	0	0	0	0	0	0	0
Booz Allen Hamilton	0	0	0	0	0	0	0
PriceWaterHouseCoopers	0	0	0	0	0	0	0
KPMG LLP	0	0	0	0	0	0	0

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Ernst & Young LLP	0	0	0	0	0	0
A.T. Kearney	0	0	0	0	0	0

\* Athletes identified from historical rosters archived at team web sites, available through <http://www.gocrimson.com>. Employment data for LinkedIn members in 2016. Management Consulting rankings are "best to work for," from <http://www.vault.com/company-rankings/consulting/vault-consulting-50/?sRankID=248&rYear=2016>. Source data at <https://sites.google.com/site/ivyvarsitysportsibmc/>.

Table 6. Number of athletes whose first activity after graduation was employment at a top 10 management consulting firm, selected sports, all Ivy League academic honorees, 2000 – 2014\*

	Men's Basketball	Women's Basketball	Men's Soccer	Women's Soccer	Men's Tennis	Women's Tennis
McKinsey & Company	0	0	3	0	0	0
Boston Consulting Group	0	1	0	0	0	0
Bain & Company	0	0	1	0	0	0
Deloitte Consulting LLP	0	0	2	0	0	0
Accenture	0	0	1	0	0	0
Booz Allen Hamilton	0	0	0	0	0	0
PriceWaterHouseCoopers	0	0	0	0	0	0
KPMG LLP	0	0	0	0	0	0
Ernst & Young LLP	0	0	0	0	0	0
A.T. Kearney	0	0	0	0	0	0

  

	Baseball	Softball	Men's Squash	Women's Squash	Men's Golf	Women's Golf
McKinsey & Company	0	0	0	0	0	0
Boston Consulting Group	0	0	0	0	0	0
Bain & Company	1	0	1	0	0	1
Deloitte Consulting LLP	1	0	0	0	0	0
Accenture	0	0	0	1	0	0
Booz Allen Hamilton	0	1	0	0	0	0
PriceWaterHouseCoopers	0	0	0	0	0	0
KPMG LLP	0	0	0	0	0	0
Ernst & Young LLP	0	0	0	0	0	0
A.T. Kearney	0	0	0	0	0	0

  

	Men's Lacrosse	Women's Lecrosse
McKinsey & Company	0	0
Boston Consulting Group	0	0
Bain & Company	0	0
Deloitte Consulting LLP	0	1
Accenture	0	1
Booz Allen Hamilton	0	0
PriceWaterHouseCoopers	0	0
KPMG LLP	0	0
Ernst & Young LLP	0	0
A.T. Kearney	0	0

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\*Honorees from [http://www.ivyleaguesports.com/history/honors/academic\\_all-ivy/index](http://www.ivyleaguesports.com/history/honors/academic_all-ivy/index).  
Employment data for LinkedIn members in 2016. Management Consulting rankings  
are “best to work for,” from <http://www.vault.com/company-rankings/consulting/vault-consulting-50/?sRankID=248&rYear=2016>. Source data at <https://sites.google.com/site/ivyvarsitysportsibmc/>.

Table 7. Undergraduate college ranking and varsity sports participation of investment bank analysts in the New York City area at top investment banks, LinkedIn members, 2017

	Number	US News College ranking average & median	% varsity athletes	%LinkedIn	#colleges	n
Blackstone1	21	8 16	9.5	69	12	1455
Goldman Sachs	130	33 36	7.6	27	71	3727
Morgan Stanley	68	21 20	9	80	38	1268
Evercore	33	22 27	6	100	14	285
Centerview Partners	34	19 12	5.9	100	20	69
Houlihan Lokey	20	26 24	0	100	13	207
Greenhill and Co.	15	35 24	6.7	100	12	80
JP Morgan	94	40 56	4.3	60	58	1605
Perella Weinberg	14	41 24	7.1	100	14	64
Blackstone2	136	36 36	7.4	69	62	1455

Number refers to the number of investment bank analysts on LinkedIn out of the first 1000 bank employees in investment banking in the New York City area and on LinkedIn in March 2017. The total number of bank employees in investment banking and in the New York City area and on LinkedIn is given in the last column. If the number in the last column is less than 1000 and if all investment bank analysts were LinkedIn members, the first column number would include all investment bank analysts in the New York City area at that bank. Blackstone does not have the title, “investment banking analyst.” Their top analyst title is private equity analyst. The first row numbers (Blackstone1) refer to private equity analysts at Blackstone. The last row numbers (Blackstone2) refer to all other analysts at Blackstone. The 1455 number in the last column for Blackstone references all New York City area employees on LinkedIn. All other numbers in the last column reference number of employees in investment banking in the New York City area. #colleges refers to the number of undergraduate schools from which the analysts graduated. The average US News ranking refers only to undergraduate colleges in the US News national university category. The median ranking assumes colleges that are not in the national university category rank below the median. US News college rankings at: <https://www.usnews.com/best-colleges>. % varsity athletes as self-reported on LinkedIn.

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