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I am submitting herewith a dissertation written by Michael Charysh entitled "Essays in Microeconomics." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Economics.

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Essays in Microeconomics

A Dissertation Presented for the

Doctor of Philosophy

Degree

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Michael Charysh

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For my family, friends, and all those who helped along the way

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Abstract

The first chapter evaluates the effect of the passage of the Campus Save Act (as part of the Violence Against Women Act (VAWA) Reauthorization in 2013) on reported incidents of crime on college campuses in the United States. This piece of legislation required colleges and universities to provide sexual assault awareness training and preventive education programs for all new students, faculty, and staff. I collect survey data from colleges and universities on their historical training efforts and available resources from 2010 to 2020. While previous studies have examined the relationship between sexual violence and future earnings or labor market outcomes, this study is the first to explore the effect of preventive training programs on reported incidents of crime. I find that colleges and universities who made training programs mandatory rather than optional had a positive relationship with reported incidents of sexual crime on campus. However, during this time period, on average financial resources and staffing for Title IX offices did not increase.

The second chapter examines the effect of star ratings in a market with extremely well-informed consumers. Star ratings have been shown to be salient in markets when they can alleviate information imperfections, improve product quality, or make complicated information more usable in consumption choices. I examine the effect of star rating in the market for college football athletes. Existing studies have shown recruit quality has a positive effect on winning percentage as well as revenue generation. Using a regression discontinuity design, I am the first to study the effect of a marginal recruiting star as an indicator of future player outcomes and school

choice. Likewise, I study the effect of a marginal recruiting star on demand choices for college football coaches. My findings indicate star ratings, conditional on the composite index, do not serve as a good indicator of future performance nor do they influence consumer demand but instead serve as a mechanism to convey information to uninformed outside audiences.

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Chapter 1

On-Campus Efforts to Prevent Sexual Assault

1.1 Introduction

College aged women (18-24) are three times more likely to be sexually assaulted compared to women in the general population (Sinozich and Langton, 2014). Campus climate surveys have found approximately one in four female college students have experienced non-consensual and unwanted sexual contact during their collegiate careers (Cantor et al., 2015) . Sexual assault has lifetime consequences from both a physical and mental perspective. The Center for Disease Control (CDC) has estimated the lifetime cost of rape at $122,461 per survivor* and has found instances of sexual violence directly disrupts earning power and has a long-term effect on the economic well-being of survivors and their families.† Sexual violence is also associated with numerous mental health outcomes such as postraumatic stress disorder (Perkonigg et al., 2000; Breslau et al., 2004; Krebs et al., 2007), depression (Burnam et al., 1988; Kimerling and Calhoun, 1994; Elliott et al., 2004), and substance abuse (Kilpatrick et al., 1997; Kilpatrick et al., 1998; Acierno et al.,

*This figure considers medical costs, lost productivity, and criminal justice activities.
†https://www.cdc.gov/violenceprevention/sexualviolence/fastfact.html

2003) that may affect survivors employment and earnings (Loya, 2015). There has been added scrutiny and media attention given towards instances of sexual violence on college campuses.[‡] Despite the public interest, there has been a paucity of cross-institutional analyses of the scale and scope of activities undertaken by colleges and universities to combat sexual violence and the efficacy of those interventions. One key reason for that is data limitations: there is virtually no data comparing the actions undertaken by colleges and universities to prevent sexual violence. Without these data, any analysis connecting these efforts to outcomes is infeasible.

While colleges and universities are trying to find an answer on how to address sexual violence on campus, policymakers have also made it a priority. In 2013, Congress re-authorized the Violence Against Women Act (VAWA), changing both the requirements and the stakes for universities' efforts to address sexual violence on their campuses. Several aspects of the 2013 reauthorization of VAWA led to increased allocation of resources towards prevention and accountability for sexual assault and other forms of sexual violence on campus. First, colleges and universities were required to report sexual violence in a more detailed way than before the 2013 reauthorization. The inclusion of the Campus Sexual Violence Elimination (SaVE) Provision in VAWA 2013 made it illegal for colleges and Universities to not report sexual assaults, effectively sweeping them under the carpet. The SaVE Provision expanded reporting to include VAWA related offenses such as domestic violence, dating violence, and stalking. Previously, only forcible sex acts and instances of rape were required to be reported. Second, the SaVE Provision also mandated more stringent rights and protective measures for victims of sexual assault. Finally, and most relevant for this paper, colleges and universities were now required to offer campus wide sexual violence prevention and education programs for their incoming students. However, it was left up to each campus (or system) to determine if the required training would be optional, mandatory, or mandatory with an enforcement

[‡]Notable cases include Notre Dame 2010, University of Virginia 2014, and Stanford 2016.

mechanism (i.e., placing holds on registration for students who had not taken the training).

Given the high stakes consequences of sexual violence, one would hope universities would take an evidence-based approach in constructing the set of programs and interventions that would maximize impact subject to budget constraints, increase the budget to relax those constraints, or both. However, evidence-based approaches require data on the scale and scope of activities undertaken by universities' Title IX offices to build awareness and educate in the name of prevention - and those data have heretofore not existed. With that in mind, how will college administrators respond to changes from the Campus SaVE Act? From an economic perspective, we consider the administrator's problem as maximizing some institutional objective function. Administrators may have preferences over student educational outcomes, but also things like alumni donations and reputation effects. In the short run, allocating resources to preventing sexual violence means that those funds cannot be spent on other student supports in the short run. However, if successful, those efforts to prevent sexual violence can improve reputation effects and increase applications and alumni engagement in future years. By mandating greater transparency, the Campus SaVE act should increase the relative importance of funding prevention efforts to administrators. However, how administrators and Title IX office actually responded is an empirical question.

In this paper, I examine the extent to which universities increased resources allocated towards sexual assault prevention and education following the amendment of the Violence Against Women Act (VAWA) in 2013. I also examine how reported rape and other forms of reported sexual violence changed after VAWA, considering any increases in prevention efforts. I take the first step towards making prevention efforts evidence-based feasible by creating and fielding a survey of Title IX officers to construct a historical panel data-set containing several key variables including the training status of undergraduate students regarding sexual assault prevention and how outcomes of adjudication of sexual offences are reported pre/post VAWA 2013. I

also collect data on supplemental activities such as: campus events, campus signage, wallet information cards, and social media posts. These activities in combination with formal training are designed to reinforce consent messaging and further educate victims about their rights. Additionally, I collected operational budgetary data from Title IX offices (excluding salaries) and the number of full time staff of the office responsible for fulfilling the mandatory education requirement from the SaVE act.

Results from this survey indicate that Title IX offices and staff increased their preventive efforts to fulfill the new requirements of the SaVE act. However, college and university officials generally did not increase funding to these offices for the duration of the sample. At the beginning of the sample in 2010, 23.4 percent of colleges and universities had mandatory sexual assault awareness training for their undergraduate students. This number increased to 89 percent by the end of the sample in 2020. There is also evidence colleges and universities began to offer more supplemental activities outside of training to reinforce consent messaging and further educate victims of their rights. From 2010 to 2020, the percentage of colleges and universities using designated campus events for general sexual assault awareness increased from 23 percent to 92 percent. A similar pattern emerged for the use of campus signage (17 percent to 84 percent), wallet information cards (9 percent to 58 percent), and social media (5 percent to 64 percent). Over half of these new adoptions took place during the VAWA compliance window between 2013 and 2015. The majority of colleges and universities at some point in time chose to make undergraduate sexual assault training mandatory and simultaneously began or increased the use of supplemental activities.

While I find that Title IX offices responded strongly to the requirements of VAWA, the evidence on university-level resource allocations (operating budget and staffing) is much weaker. When asked to provide an estimate of the annual operating budget used to fulfill the education requirement, colleges and universities were given options ranging from \$0 to \$100,000 in \$25,000 increments. Throughout the entire sample, every year the majority of colleges and universities fell into the lowest operational budgetary category listed, \$0 to \$25,000. In full disclosure, measurement error may

be a key factor in this non-result. The budgetary data collected from the survey is more sparse compared to the training data provided. Only 19 colleges and universities provided annual operating budgetary information (excluding salaries) for the entire duration of the sample, but only two universities out of 19 reported an increase in their annual operating budget from 2010 to 2020, the other 13 college and universities reported no change in budget year over year. Overall, 56 out of 64 colleges and universities provided at least two years of annual operating budgetary figures. Four colleges and universities reported seeing a budgetary increase and one university reported a budgetary decrease during 2010 to 2020. Ninety percent of colleges and universities that reported budgetary data for more than one year reported no change in annual operating budget over those years.

Colleges and universities were also asked to provide figures for the number of full-time equivalent employees (FTE) working in the office responsible for undergraduate sexual assault prevention education from 2010 to 2020. 53 out of 64 colleges and universities provided the number of FTEs working in their Title IX office for at least two years. Just under half of colleges and universities reported there was no change to their staffing numbers from 2010 to 2020. Approximately 35 percent of colleges and universities reported experiencing a staffing increase without a decrease at some point during the sample, while 10 percent of the colleges and universities reported that they experienced both a staff increase and decrease at some point during the sample.

While reported assaults and other violence against women did not decrease, VAWA 2013 and the Campus SaVE Provision may have helped break a trend of increasing sexual violence. Mean and median values for reported forcible sex acts per 1000 faculty, students, and staff increased during 2010 to 2013. After VAWA, however, offenses such as domestic violence, dating violence, and stalking, did not exhibit an increasing trend in mean and median values of offenses per 1000 students from 2014 to 2020. A similar pattern emerges when considering rates of reported rape per 1000 students faculty, students, and staff. Overall, while there is no evidence that mean

and median values of sex crimes decreased after Campus SaVE Act, those provisions may have helped curb an upward trend.

This study contributes to the literature on sexual violence on college campuses by examining how policy changes incentivize efforts to reduce sexual violence. Additionally, this study is also the first to directly examine the relationship between prevention efforts and the incidence of reported sexual assaults on college campuses. Previous work has highlighted the issue of sexual assault being the most widely under-reported crime in America and a lack of direction on the part of institutions in informing students of the reporting and adjudication process (Karjane et al., 2015). Richards (2019) and Richards et al. (2021) build on this notion by studying the response of colleges and universities to reports of sexual misconduct. Using data from colleges and universities in New York from 2018, their study found that most incidents reported to Title IX coordinators did not initiate the college's or universities' conduct process. This was at request by either the reporting individual or college/university itself. These findings coincide with the descriptive evidence in this study when considering the lack of transparency in outcomes of adjudication on college campuses prior to VAWA 2013.

While the economics literature has not focused on this specific subset of the population, college aged students, evidence has shown the impact of sexual trauma on potential earnings and labor market outcomes. Sabia et al. (2013) use data from the National Longitudinal Study of Adolescent Health (Add. Health) to study the effect of sexual violence on female labor force participation and wages. The authors find sexual violence is associated with a 6.6 percent decline in female labor force participation and a 5.1 percent decline in wages. Rees and Sabia (2013) likewise use Add. Health data to study the effect of experiencing forced intercourse during adolescence. Their findings indicate forced intercourse may hinder human capital accumulation through interruption in schooling. Existing studies have also examined which potential factors may effect the incidence of sexual assault on college campuses as well as the impact of Title IX investigations on university level outcomes. Lindo et al. (2018) studies

the degree to which certain events may intensify partying behavior and a potential increase in sexual assault. Estimates indicate Division I football games increase daily reports of rape by roughly 28 percent. Lindo et al. (2019) examine the effect of equal-access requirements of federal law to remediate sexual assault on college campuses. The authors examine the effects of Title IX investigations on university outcomes such as applications, enrollment, degree completion, and donations. Their findings indicate that applications and enrollment increase in response to Title IX investigations and there is little evidence of effects on degree completion and donations.

Most importantly, if Title IX offices are to make the maximum impact with limited resources, evidence on which practices/efforts are most effective (and cost effective) is vital. Without data, evidence-based best practices are impossible. The most important contribution of this study is therefore starting that data collection process, however, due to small sample sizes and imperfect identification, preliminary results on the efficacy of specific programs should be interpreted with caution. Specifically, in the post-VAWA period from 2014 to 2020, mandatory training programs are associated with increased reporting rates of dating violence but no significant change in reported instances of rape and stalking. While we have no reason to suspect that VAWA increased the underlying rate of these crimes, we could attribute the effect to increased reporting levels. However, as reporting is a key step for victims accessing resources and support, I view this pattern as a potential positive in that more victims are able to get access to intermediate measures such as medical care, counseling, protective orders, and housing relocation. Similarly, when considering the effect of supplemental activities, social media posts had a negative relationship with the number of reported instances of domestic violence while wallet info cards had a positive relationship with reported instances of stalking. The majority of the supplemental activities had no association with the reported outcomes of interest. While there is descriptive evidence to show colleges and universities were willing to adopt mandatory undergraduate sexual assault awareness training, this has not translated into increased staffing and funding resources for Title IX offices.

Overall, these results imply that current efforts to prevent sexual violence are not sufficient. While post-VAWA efforts may have increased awareness in some dimensions, there remains considerable work to positively affect prevention. Doing so will likely require a much greater outlay of resources and campus-wide emphasis than what has happened to date. The Campus SaVE act exerted economic pressure on multiple fronts to increase resources to prevent sexual violence on college campuses. While that pressure has lead to increased reporting of trauma and increased availability of supports for survivors, it will probably take additional economic pressure to further increase prevention efforts.

The remainder of the paper is organized as follows. Section II provides a background on the history of the Violence Against Women Act as well as notable changes stemming from its 2013 re-authorization. Section III outlines data collection while section IV details results and methodology. Section V provides a discussion of the empirical findings and VI concludes.

1.2 VAWA History & Institutional Details

Decades of growing unease regarding a rise in the violent crime rate in the United States and a focus on women as victims lead to the enactment of the Violence Against Women Act (VAWA) (Sacco, 2019). Congress passed VAWA in 1994 in order to provide a comprehensive approach to violence against women by introducing provisions to hold offenders accountable and provide victims with services to mitigate the effects of sexual violence.[§] While states had statutes defining rape and other sexual crimes, VAWA overhauled the criminal justice response to violence against women in several ways. Federal penalties for repeat sex offenders were strengthened and a federal "rape shield law" was created.[¶] Victims were no longer forced to bear

[§] https://obamawhitehouse.archives.gov/sites/default/files/docs/vawa_factsheet.pdf

[¶] Rape shield laws are intended to offenders from using victims' past sexual conduct against them during a rape trial.

the expense of their own rape examinations or services for a protection order. Orders of protection are now enforced in all state, tribal, and territorial jurisdictions within the United States. Additionally, VAWA funds train over 500,000 law enforcement officers, prosecutors, judges, and other personnel every year to understand the realities of domestic and sexual violence.[‖] With respect to victims, VAWA established the National Domestic Violence Hotline and has focused attention on legal relief for underserved communities. Federal legal definitions were established for many sex crimes including domestic violence, dating violence, sexual assault, and stalking. Funding grants for colleges and universities also became available with the intent of reducing sex crimes on college campuses. VAWA has undergone many re-authorizations in Congress since its inception due to funding expiration as well as amendments to the original law.

In the context of higher education, the most notable revision to VAWA occurred when the law was reauthorized in 2013. Colleges and universities were required to offer undergraduate sexual violence prevention education under the Campus Sexual Violence Act (SaVE) Provision. Prior to the SaVE Provision, colleges and universities were not required at the federal or state level to educate undergraduate students on sexual assault awareness, prevention, victims rights, consent, or other issues. While many institutions made training available, in most cases it was suggested rather than mandated that students attend. The SaVE Provision also served to increase transparency on the instance and adjudication of sexual violence on college campuses. By requiring colleges and universities to disclose the prevalence of assaults on their campuses, the SaVE Provision provided incentives in the form of reputation effects to to emphasize preventive education and further educate victims of their rights. This legislation also impacted the existing VAWA law in two other main areas: reporting requirements and new student discipline requirements. VAWA's SaVE act expanded reporting requirements and definitions for colleges and universities. Under the Clery

[‖] https://obamawhitehouse.archives.gov/sites/default/files/docs/vawa_factsheet.pdf

Act, institutions are required to report instances of various criminal offenses including forcible and non-forcible sex offenses. The SaVE Act expanded reporting and required colleges and universities to report instances of domestic violence, dating violence, and stalking**. Institutions were required to make this change in reporting official by October 1, 2014.

The SaVE Provision improved and standardized universities' treatment and support of victims of sexual violence. Prior to the SaVE Provision being signed into law, the Clery Act required institutions to inform students of procedures victims should follow, including but not limited to the preservation of of evidence and to whom offenses should be reported. The SaVE act made it a requirement for institutional policy to include information on victims' option (but not requirement) to involve local law enforcement and campus authorities. The SaVE Provision also required institutions to inform reporters about their rights as victims and options regarding judicial no-contact, restraining, and protective orders. The SaVE Provision in VAWA prescribed explicit standards for universities investigating and conducting disciplinary proceedings with respect to domestic violence, dating violence, sexual assault, and stalking cases. Standards now included but were not limited to: a statement of the standard of evidence used, training for officials conducting investigations, identification of sanctions or protective measures following adjudication, the inclusion of an advisor in disciplinary proceedings, simultaneous written notification to all parties, and protection of confidentiality following outcomes of adjudication. In summary, the VAWA Reauthorization Act impacted universities and colleges in three main areas: reporting, student discipline procedures, and adopting institutional policies to address and prevent campus sexual violence. However, while VAWA 2013 required institutions to offer preventive education for new students and new faculty, it was at the discretion of the college or university to determine the manner in which these education and training programs would be implemented. After the 2013 reauthorization, colleges and universities had two sets of decisions to make. First,

**Definitions of each crime can be found in the Appendix.

colleges and universities had to decide how much of their university budget to allocate for undergraduate preventive sexual education. Second, colleges and universities had to decide how these allocated funds were used. For example, they were required to have some mode of preventive training but could also look to supplement that with campus events, campus signage, social media outreach, etc. Colleges and universities were required to be compliant with these three main changes as of October 1, 2014. VAWA has undergone several re-authorizations since 2013 to ensure it remained funded and was most recently reauthorized in 2022. However, the efficacy of the heterogeneous scale and scope of various programs or training efforts taking place on college campuses as a result of the SaVE Provision has not been examined to date.

The third main change from The SaVE Provision was the new requirement to educate students and employees on sexual violence. New students and new employees were now *required* to be offered primary prevention and awareness programs promoting the awareness of rape, acquaintance rape, domestic violence, dating violence, sexual assault, and stalking. Prior to this legislative change, the Office of Civil Rights (OCR) only *recommended* institutions implement preventive education programs (US Dept. of Education). The SaVE Provision mandated that training programs include the following: a statement that the institution prohibits those offenses and the definition of those offenses in the applicable jurisdiction, the definition of consent, safe and positive options for bystander intervention, recognition of signs of abusive behavior and how to avoid potential attacks, and ongoing prevention and awareness campaigns for students and faculty on all of the above.

1.3 Data Collection

The data for this study comes from two sources. Crime data at the campus level are taken from publicly available sources compiled from Annual Security Reports (ASRs) through the Clery Act. These annual security reports include statistics for violent and non-violent criminal offenses, sex crimes, and VAWA defined crimes.

To obtain data on universities' prevention and education efforts, I designed and distributed a survey to Title IX officers. Prior to this effort, there has been no data comparing prevention and education programs by Title IX offices across college campuses. The survey instrument also collects primary panel data on the scale and scope of university activities intended to address sexual assault, showing how preventive education programs and awareness efforts have changed since VAWA 2013. A copy of the survey can be found in the Appendix.

The office responsible for conducting undergraduate sexual assault prevention and awareness training varies between colleges and universities. Colleges and universities may have a dedicated Office of Title IX or run their preventive training efforts through the Office of Equity and Diversity (OED). However, all colleges and universities must appoint a designated Title IX officer for their institution. In most cases this is called "Title IX Coordinator". Designated Title IX officers for colleges and universities were contacted via telephone and email for participation in this study. In the case a designated Title IX officer was not available, I consulted with the college or university to find the person most suited to answer the survey (Deputy Title IX Coordinator, Coordinator for Education and Prevention, etc.). Participants were sent and submitted the survey electronically.

Respondents were asked to answer a series of questions regarding the training and education efforts at their institution from 2010 to 2020. The first section of the survey focused on the current and historical training efforts for sexual assault prevention and education for undergraduate students at colleges and universities. Following the legislative change to VAWA in 2013, respondents were asked how their institution met the VAWA requirement for sexual assault and education on campus for undergraduate students. There were three possible choices for this question: made available, mandatory but not enforced, and mandatory and enforced. The study defines mandatory and enforced as the institution placing some type of restriction on students who do not complete the mandatory training. For example, a hold may be placed on their registration for the applicable semester.

To establish a pre-VAWA baseline, the survey also asked respondents about their sexual assault prevention and education training policy for undergraduate students *prior* to VAWA 2013. There were three possible responses: mandatory training, optional training, or training was not offered. In addition to asking about training prior to VAWA 2013, respondents were asked how outcomes of adjudication from formal university investigations were disclosed. Possible answers included: not reported, reported only to the campus community, or made publicly available. Similarly, the survey asks about the status of training for faculty and staff regarding Title IX policies at their institution including mandatory reporter and sexual harassment training. The possible answers were the same. Respondents were then asked how long their typical training session lasts for undergraduate students and faculty, respectively. Possible answer ranged from 15 to 120 minutes.

In addition to formal training sessions for undergraduate students, colleges and universities conduct additional programs and events to reinforce consent messaging and further educate victims of their rights. In order to capture this data, the survey asked respondents "Aside from your website and written materials, between 2010 and 2020, what other activities does your office engage in to further educate victims of their rights?" Respondents were given four categories of possible supplemental activities and programs: campus events, campus signage, wallet or information cards, and social media posts. The second section of the survey also collected data on the operational details of the office responsible for sexual assault prevention and education efforts. Respondents were asked to estimate the fraction of their incoming class that had participated in sexual assault awareness training for 2010 to 2020. Possible responses ranged from 0 to 100 percent. Additionally, respondents were asked about their annual operational budget. The annual operational budget was defined as the budget used for promotional materials, training, and other methods used to reinforce consent messaging and sexual assault awareness on campus. Salaries for employees are excluded from this figure. The survey also asks colleges and universities to provide the number of full time employees in the Title IX office for the entire time period.

The third and final section of the survey asks the respondent to provide the annual Title IX report for the college or university if available.[††] When the annual report was not available, the respondent was asked to provide total number of reported sexual assaults and stalking incidents reported to the Title IX office during the reporting period. Sexual assault was defined as any action directed against another person without the consent of the victim, including instances where the victim is incapable of giving consent. This definition includes rape, fondling, incest, and statutory rape.

The second data source for this study are annual security reports required by the Clery Act. The Clery Act is a federal statute intended to increase transparency on crime policy and statistics for all colleges and universities who participate in federal financial aid programs. These institutions are required to keep records and disclose crimes on their campuses and are subject to fines from the US Department of Education if they fail to do so (US Dept of Ed.). The annual security report must include statistics of campus crime which are categorized into four distinct categories: criminal offenses, hate crimes, VAWA offenses, and arrests and referrals for disciplinary action. Specific crimes and offenses for each category can be found in the Appendix. VAWA 2013 created a structural break in the way reported sexual offenses were categorized. Prior to the passing of VAWA 2013, annual security reports had two crimes listed for sexual offenses - forcible and non-forcible sex acts. Starting in 2014, domestic violence, dating violence, and stalking were added as VAWA offenses and sexual assault (broadly defined) was added as a criminal offense. The ASRs list four categories for sexual assault including rape, fondling, incest, and statutory rape. Therefore, comparing outcomes on college campuses before and after the SaVE act is challenging. The definitions for forcible and non-forcible sex acts are more narrow in scope than the newer reporting options that were offered in the period following the passage of the SaVE Act. It is possible that certain sexual crimes such as dating violence or stalking went unreported during 2010-2013 because there was no means for

[††]The survey instructed the respondent not to provide data from annual security reports from the Clery Act.

colleges and universities *to* report them. For this reason, I do not compare outcomes for the pre and post periods of VAWA 2013.

Crime reporting required by the Clery Act is not strictly limited to events that occur on campus or within campus buildings and residences. Colleges and universities must provide crime statistics for the following geographical areas: on-campus (anywhere), on-campus student housing, public property within campus bounds, public property immediately adjacent to the campus, and non-campus buildings and property owned or controlled by the organization that are used for educational purposes and frequently used by students but not a part of the core campus, or those owned or controlled by a student organization officially recognized by the institution. Please note crimes and offenses reported in ASRs are bound by geography and do not identify if an individual is part of the campus community. Likewise, only individuals affiliated with an institution are subject to its respective policy on sexual assault and preventive education efforts. For this reason, the study only includes offenses and crimes reported under the on-campus category.

Title IX officers from 64 colleges and universities took part in this study with the requirement that each institution had an enrollment of at least 1000 undergraduate students. In the period preceding the SaVE act (2010-2013), most colleges and universities did offer some type of sexual assault awareness training for undergraduate students. As seen in Figure 1.1 the preferred method amongst colleges and universities was optional training while 27 percent of colleges and universities in the sample did not offer training. The sample suggests there was very little transparency amongst colleges and universities when it came to reporting outcomes of adjudication to the general public or campus community. Seventy three percent of the colleges and universities who responded to this question did not report outcomes of adjudication to any audience. As of 2015, colleges and universities were required to be in compliance with the sexual violence prevention and education requirement from the SaVE act. The sample suggests from that point on, a mandatory requirement for undergraduate students to undergo this training was the most popular option for colleges and

universities to employ. As shown in Figure 1.2, by the end of the sample, 57 of 64 (89 percent) colleges and universities had some type of mandatory training requirement. A similar pattern exists with colleges and universities choosing to use supplemental activities to reinforce consent messaging and further educate victims of their rights. At the end of the sample, almost all participating colleges and universities were choosing to use campus events and campus signage to supplement their formal training requirement.

1.4 Results

1.4.1 Summary Statistics

A total of 64 colleges and universities responded to the survey, including 32 private and 32 public colleges and universities, respectively. This number includes 5 flagship universities, one senior military college, and one Historically Black College/University (HBCU). Over 600 colleges and universities were contacted via email and telephone and roughly 38 percent of them agreed to receive a copy the survey. The overall response rate for completed surveys was 10 percent. The average overall student population was 10,985 and this number increases to 12,941 with the inclusion of all full time faculty and staff. Colleges and universities were required to have at least 1000 enrolled undergraduate students in order to be considered for participation and only four-year colleges and universities were considered.[‡‡] On average, the share of female students was greater than 50 percent. Reported crime rates per 1000 faculty, students, and staff are listed in Table 1. Of the three defined VAWA crimes (Domestic Violence, Dating Violence, Stalking), stalking on average was the most frequent VAWA defined crime committed with a rate of 0.457 reported stalking incidents per 1000 persons. Dating violence followed at 0.357 reported incidents per 1000 persons and domestic violence was on average third at a reported rate of 0.145 incidents per 1000 persons. In

[‡‡]One institution fell below this threshold for a period of the sample.

addition to VAWA defined crimes, Table 1 shows the crime rates per 1000 persons for reported incidents of rape, statutory rape, fondling, incest, non-forcible sex acts, and forcible sex acts. Between 2010 and 2013, reported forcible sex acts per 1000 persons on average was 0.321. Rape on average was reported at higher rate than all three VAWA define crimes at 0.615 incidents per 1000 faculty, students, and staff. Table 5 in the Appendix shows the results from comparisons in sample means for respondents and partial and non-respondents for reported forcible sex acts and reported VAWA offenses. Thirty six colleges and universities were classified as partial respondents while 505 colleges and universities were classified as non-respondents. On average, respondents had lower rates of reported forcible sex acts, rape, and VAWA offenses with the exception of reported stalking. While the difference in sample means are not statistically significant, there appears to be some evidence of advantageous selection with respect to the respondents.

Prior to the 2013 VAWA Reauthorization Act, colleges and universities were encouraged to offer sexual assault awareness training and preventive education programs designed to educate victims of their rights, but had no formal obligation to do so. The survey asked colleges and universities to provide the status of their training programs if they existed prior to VAWA 2013. Figure 1.1 shows the number of colleges and universities according to the status of their training programs from 2010 to 2013. 35 percent of colleges and universities offered mandatory training, 40 percent of colleges and universities offered optional training, and 25 percent of colleges and universities did not offer any training from 2010 to 2013. Roughly 75 percent of the sample offered some type of training prior to the passing of VAWA 2013.

Following VAWA 2013, colleges and universities were required by federal law to provide preventive training and educational programs for sexual assault prevention, but those programs were not required to be mandatory. Therefore, after VAWA 2013, campus policies on sexual assault prevention training could fall into one of three categories: optional, mandatory but not enforced, and mandatory and enforced.

Two universities did not answer this question.

Figure 2 shows the training status for colleges and universities following the passing of VAWA in 2013. VAWA 2013 stipulated colleges and universities must be in compliance with the education requirement of the SaVE act by October 2014. Therefore, a college or university could have chosen to be in compliance with this education requirement starting in either 2013, 2014, or 2015. Based on the responses I gathered from the survey, roughly 35 percent of colleges and universities were not compliant with the education requirement until 2015. Over time, the number of colleges and universities who made their training requirement mandatory increased while the number of colleges and universities who just made training "available" decreased.

From 2010 to 2013, colleges and universities had only two options for reporting sex related crimes - forcible and non-forcible sex acts. Table 1.2 shows the median values for reported forcible sex acts by training type for 2010 to 2013 per 1000 faculty, students, and staff. Colleges and universities with mandatory or optional training had a higher rate of reported forcible sex acts at the median during this time period. The median number of forcible sex acts for colleges and universities with mandatory training increased slightly year over year, while colleges and universities with optional or no training slightly decreased from 2010 to 2013. Very few colleges and universities reported changing their training status from optional to mandatory during this time period. It is difficult to believe training worsens the issue of sexual crime on campus. However, one explanation for an increase in reported crimes is a possible woodwork effect occurring amongst victims. If training empowers victims to come forward, the reported number of incidents may increase even if the true incidence rate does not. This may be especially true if victims were unaware of intermediary measures available to them through their Title IX office. Figure 1 in the Appendix shows the binned sample means for college and universities that switched and did not switch their training status. Colleges and universities who switched the status of their program saw a rather sharp increase in the average rate of reported forcible sex acts. Once the education requirement was stipulated, many of the schools with the highest rate of forcible sex acts opted to make training mandatory

Table 1.1: Sample Summary Statistics

Variable	Mean	SD	Minimum	Maximum	Observations
Men	4,954.516	5,957.448	345	31,741	704
Women	6,030.614	6,568.851	383	40,140	704
Total	12,941.87	14,442.04	1,105	77,566	704
Reported Forcible Sex Acts	.321	.475	0	3.66	256
Reported Non-Forcible Sex Acts	.004	.03	0	.334	256
Reported Rape	.615	1.40	0	25.447	448
Reported Statutory Rape	.003	.027	0	.415	448
Reported Fondling	.272	.535	0	5.486	448
Reported Incest	.001	.02	0	.418	448
Reported Domestic Violence	.145	.294	0	2.388	448
Reported Dating Violence	.357	.55	0	3.943	448
Reported Stalking	.457	1.01	0	12.2	448

Crime rates are reported as a rate per 1000 faculty, students, and staff.

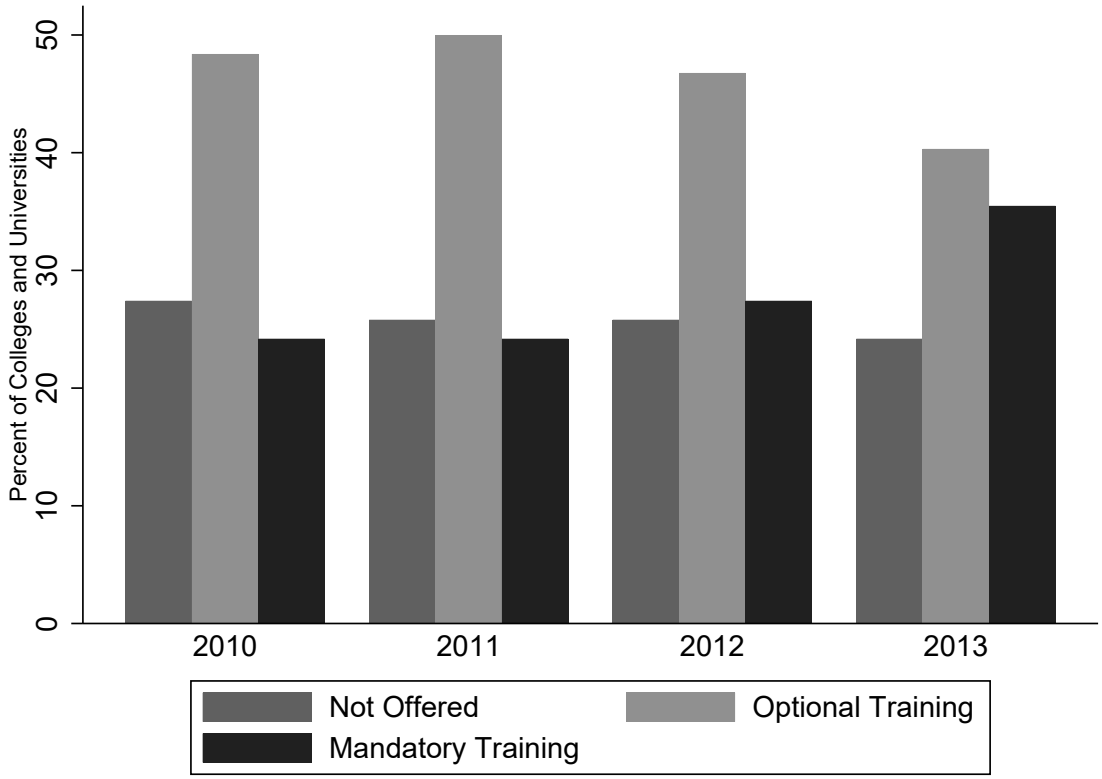

Figure 1.1: Training Status by Year for 2010-2013

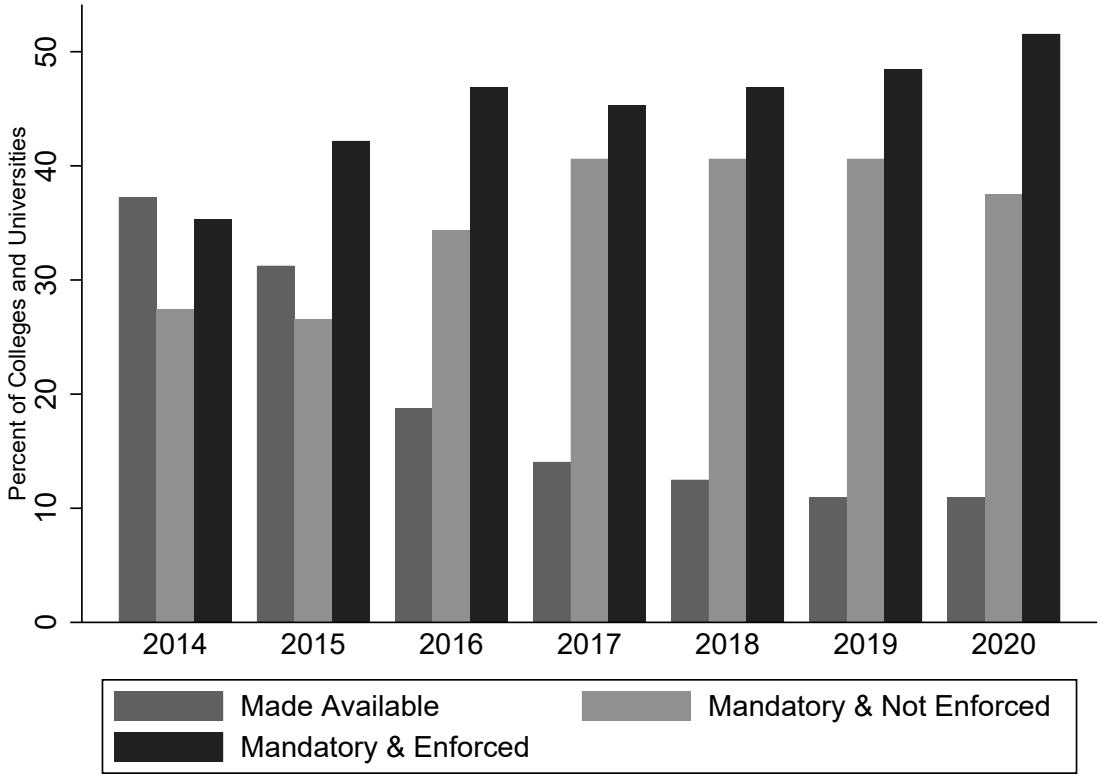

Figure 1.2: Training Status by Year for 2014-2020

for incoming undergraduate students. However, overall there is insufficient evidence to suggest higher rates of reported forcible sex acts lead to more stringent training requirements when colleges and universities were required to be compliant with the training requirement in 2015. Estimates from a multinomial regression where training status is the dependent variable and the rate of average reported forcible sex acts is the explanatory variable can be found in Table 9.

Table 1.2 also shows the median number of reported forcible sex acts per 1000 faculty, students, and staff based on how their college or university chose to report outcomes of adjudication for 2010 to 2013. Colleges and universities that reported outcomes of adjudication to their campus community at the median had a lower rate of reported forcible sex acts than those colleges and universities that did not report outcomes of adjudication. However, colleges and universities who reported outcomes of adjudication to the general public had a higher rate of reported forcible sex crimes at the median relative to those institutions that reported only to the campus community or did not report. Table 3 shows the median rates of reported forcible sex acts when considering how colleges and universities reported outcomes of adjudication in combination with their training status. Prior to VAWA 2013, colleges and universities that had mandatory training programs for undergraduate students and reported outcomes of adjudication to the campus community at the median had the lowest rate of forcible sex crimes at 0.14 per 1000 faculty, students, and staff. At the median, when training programs were optional or mandatory and outcomes of adjudication were reported to the campus community, the reported rate of forcible sex crimes was lower than when outcomes were not reported or made publicly available.

Prior to the 2013 reauthorization, colleges and universities had no formal guidance or legislative requirement on how they reported outcomes of adjudication from formal university investigations regarding sex offenses to the campus community. However, in the absence of such a mandate, universities' revealed preference for transparency may inform about the level of importance with which they treat sexual violence. The survey gave respondents three choices on how their college or university reported

outcomes of adjudication from 2010 to 2013: not reported, reported only to the campus community, and reported to the general public. I find that 16 percent of colleges and universities reported outcomes of adjudication to only the campus community, and 11 percent reported outcomes of adjudication to the general public. Roughly 73 percent of colleges and universities in the sample who answered this question did not report outcomes of adjudication to any audience. It is therefore highly likely that in the absence of the SaVE Provision, that colleges and universities would still not be reporting outcomes of adjudication to the campus community or general public.

Starting in 2014, ASRs included VAWA offenses in their report and also re-categorized sex offenses. Sex crimes were no longer reported as forcible or non-forcible sex acts but instead as rape, fondling, incest, and statutory rape. Figure 1.3 provides median as well as first and third quartile values for the rate of various reported crimes per 1000 faculty, students, and staff based on the training status of the college or university from 2014 to 2020. At the median, colleges and universities that had mandatory training requirements had a lower rate of reported domestic violence per 1000 faculty, students, and staff than colleges and universities who simply made training available. However, this does not hold for instances of reported dating violence, stalking, and rape, as colleges and universities who did mandate training had a higher rate per 1000 faculty, students, and staff for those offenses. When comparing if the difference between median values is statistically significant, there is mixed evidence.

In addition to their website and written materials, Title IX or OED offices may choose to engage in other forms of preventive education on campus. Figures 1.4, 1.5, 1.6, and 1.6 show the number of college and universities who offered additional forms of sexual assault prevention awareness and consent messaging. Respondents were given four choices that included campus events, campus signage, personal wallet cards, and social media messaging. During the period prior to VAWA 2013, the two most popular forms of campus prevention efforts were campus events and

Table 1.2: Median Values for Reported Forcible Sex Acts by Training and Reporting Status

Year	Mandatory	Optional	Not Offered	Campus Community	General Public	Not Reported
2010	0.248	0.173	0.091	0.119	0.486	0.140
2011	0.139	0.139	0.103	0.071	0.234	0.095
2012	0.203	0.17	0.06	0.139	0.278	0.163
2013	0.306	0.217	0.301	0.318	0.280	0.321
Total	0.220	0.186	0.127	0.131	0.286	0.187

Note: Reported forcible sex acts are reported as rate per 1000 faculty, students, and staff.

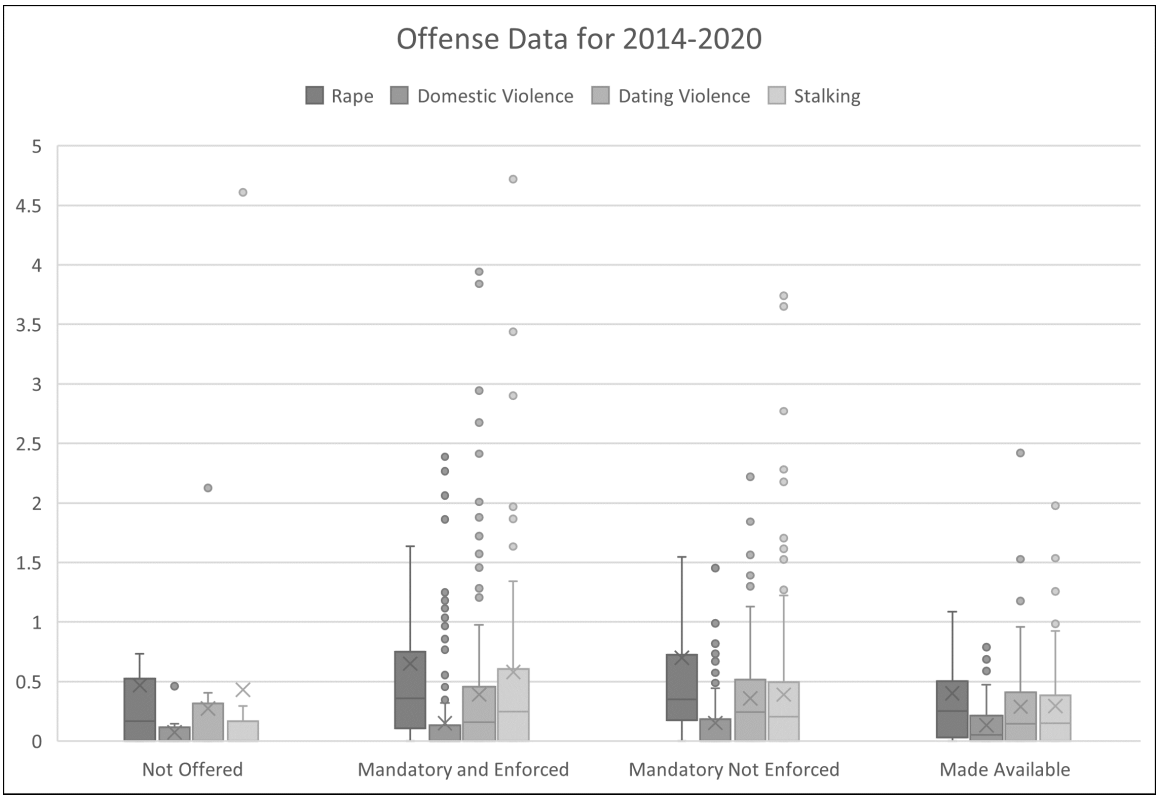

Figure 1.3: Offense Data Per 1000 Faculty, Students, and Staff by Training Status

signage. Campus events and signage increased year over year in the sample and saw a sharp increase starting in 2015 when colleges and universities had to be VAWA compliant. The number of colleges and universities employing these two prevention efforts roughly both quadrupled from 2013 to 2018. Wallet cards and social media posts were relatively less popular than campus events and campus signage throughout the entirety of the sample. However, a similar pattern for usage adoption from colleges and universities emerges. From 2013 to 2018, the number of colleges and universities using wallet information cards and social media tripled. Many colleges and universities chose to adopt supplementary activities for the first time during the sample. The majority of adoptions for campus events and campus signage took place during the VAWA compliance window from 2013 to 2015 with 60 percent of colleges and universities adopting campus events and 63% adopting campus signage. Although not as popular as campus events and campus signage, 45 percent of new adoptions for wallet information cards and 31 percent of new adoptions for social media took place during the compliance window. Overall, 56 percent of colleges and universities chose to adopt at least one supplemental activity for the first time during the VAWA compliance window.

With the added training requirement from the SaVE Act, I asked colleges and universities to provide an estimate on the percentage of their incoming undergraduate freshmen class that had undergone sexual assault and prevention awareness training. Figure 1.8 shows colleges and universities on average estimated 71 percent of their freshmen class to have undergone training in 2012 and by 2015, the first year in which all colleges and universities are required to be compliant with the education requirement, this number increased to 83 percent. Likewise, I asked colleges and universities to provide detail on the number of full time employees working in the office responsible for training and prevention efforts as well as the office's annual operating budget with the exclusion of salaries. On average, the number of full time employees rose from the period preceding VAWA 2013 to the period afterwards in which the educational requirement was implemented. The number of colleges and

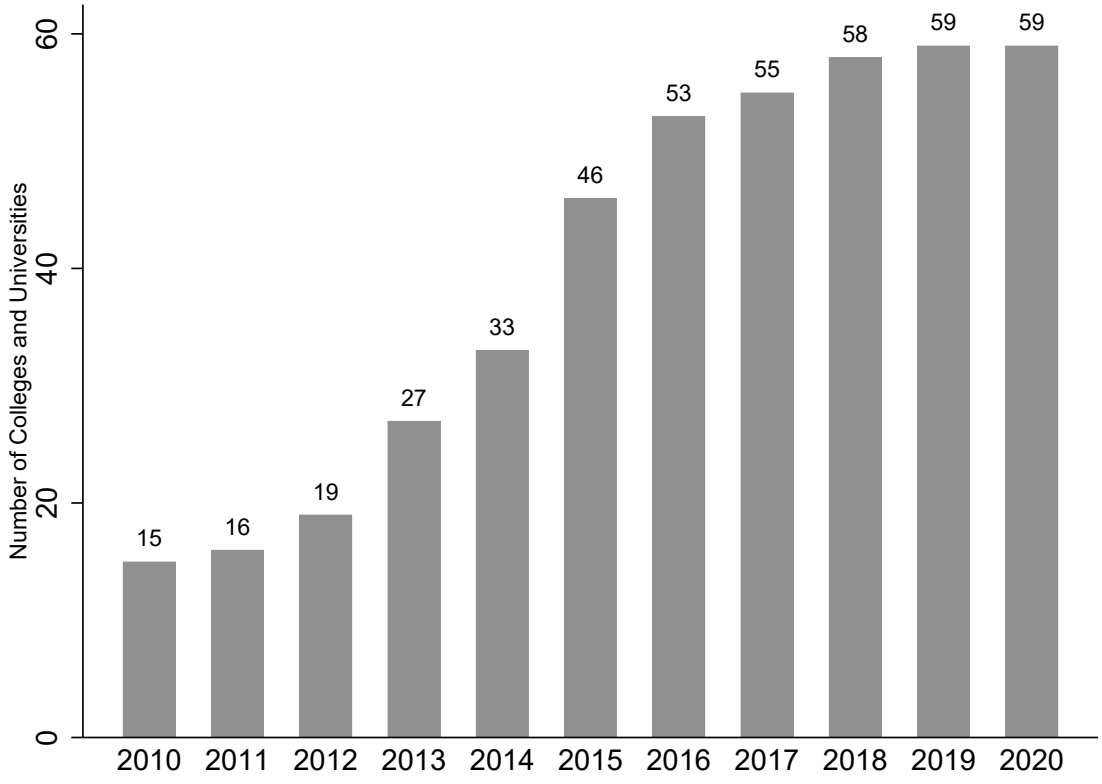

Figure 1.4: Campus Events by Year (N = 64)

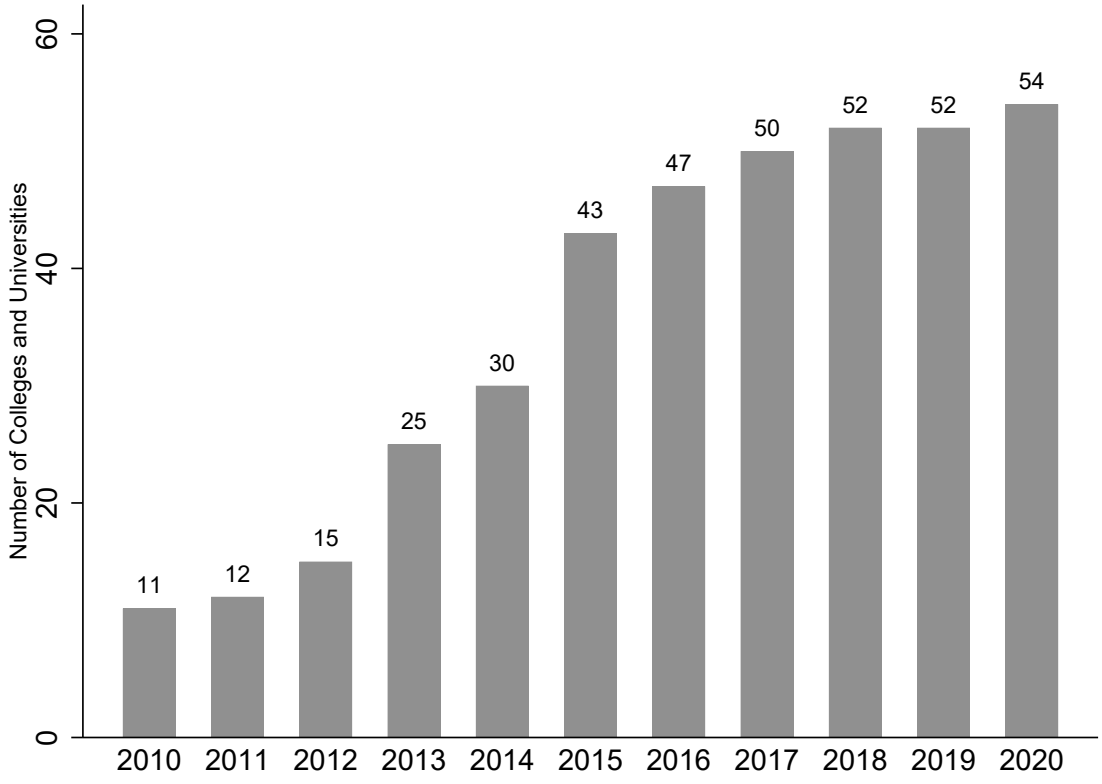

Figure 1.5: Campus Signage by Year (N = 64)

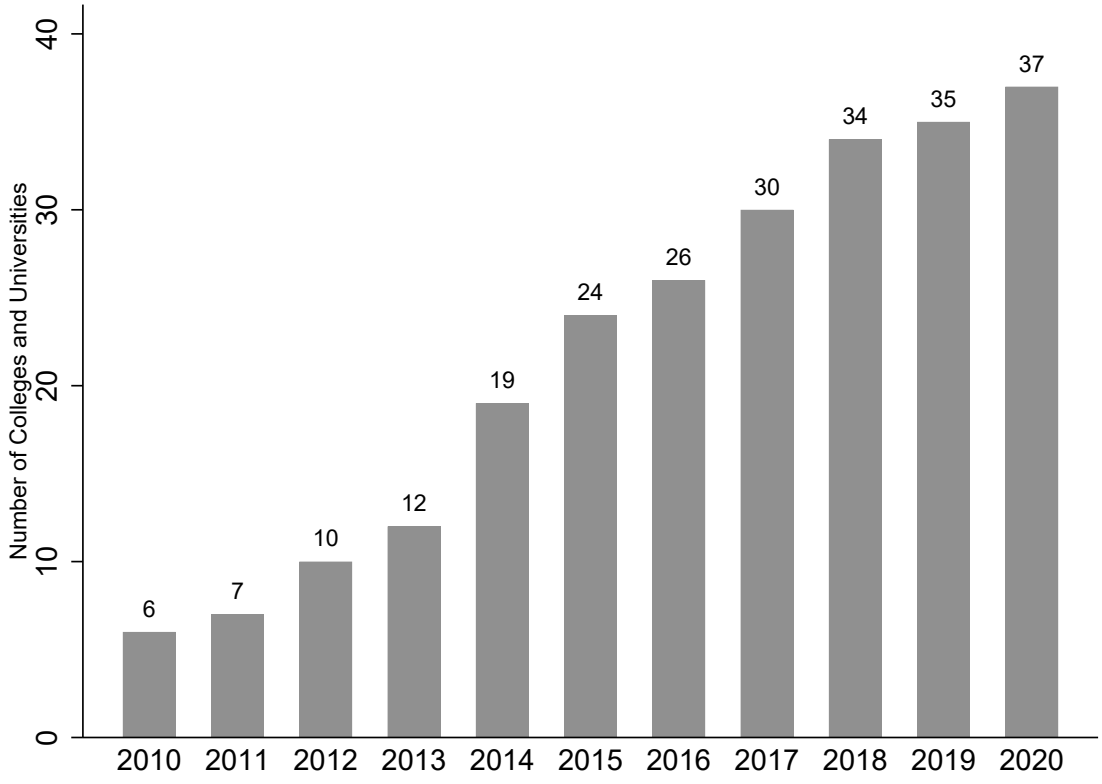

Figure 1.6: Wallet Info Cards by Year (N = 64)

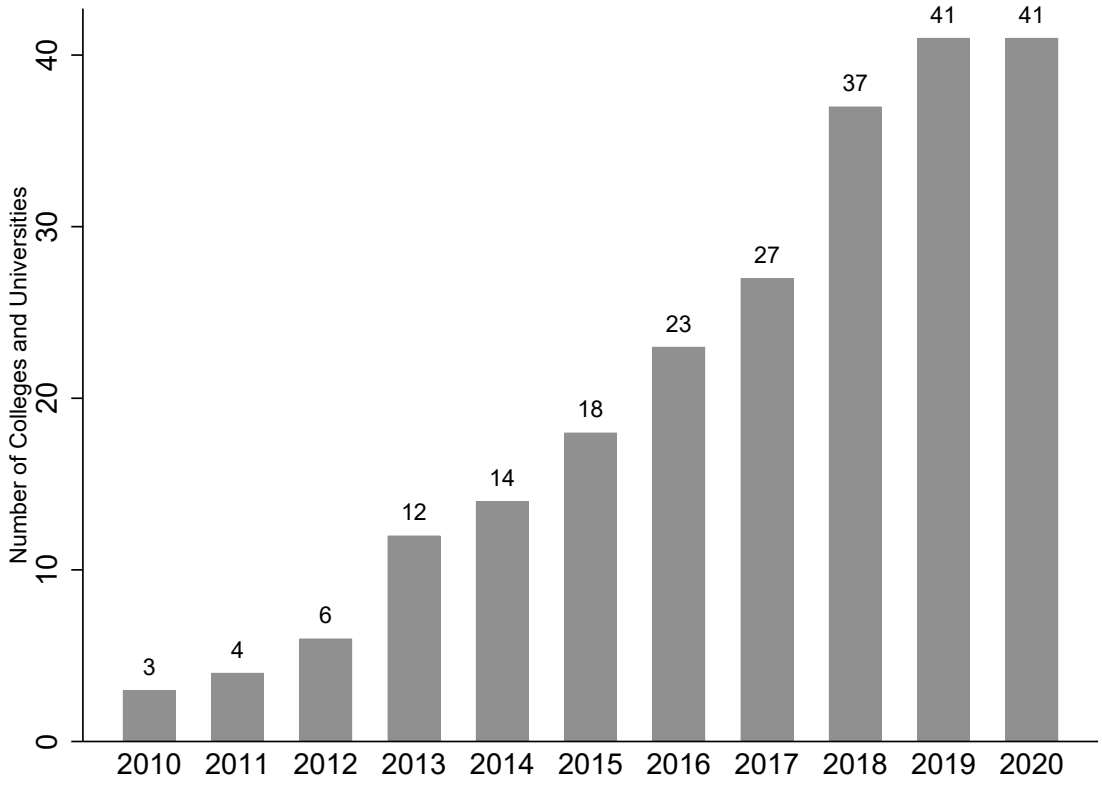

Figure 1.7: Social Media by Year (N = 64)

universities reporting budgetary funds for their offices also increased from the time prior to VAWA 2013 to the time period afterwards.

1.4.2 Regression Methods and Results

Because VAWA represents a structural break in feasible choices for training policies and the reporting of outcome variables, I separate the sample period into two subperiods, pre-VAWA 2013 (2010-2013) and post-VAWA 2013 (2014-2020). I examine the relationship between training policy and outcomes of interest for each period, separately. For the pre-VAWA 2013 period, I use a two-way fixed effects model to examine the relationship between sexual assault awareness/prevention training and reported forcible sex acts occurring on college campuses. I specify the regression model as follows:

$$arcsinh(y_{it}) = \alpha + \beta_1 MTraining_{it} + \beta_2 OTraining_{it} + \gamma_i + \rho_t + \epsilon_{it} \tag{1.1}$$

where $arcsinh(y_{it})$ denotes the inverse hyperbolic sine (IHS) of reported forcible sex acts reported at college i in year t and $MTraining_{it}$ is equal to one if the college i at time t required undergraduate students to undergo mandatory sexual assault and prevention awareness training. The variable $OTraining_{it}$ is also an indicator variable that takes a value of one if the college i at time t offers optional sexual assault and prevention awareness training. The variables γ_i and ρ_t denote college and year fixed effects while ϵ_{it} is the idiosyncratic error term that I allow to be correlated within schools.

I also use a two-way fixed effects model to estimate the effect of sexual assault prevention and awareness training for the time period following the announcement of the SaVE provision. The SaVE Provision stipulated colleges and universities must offer educational and prevention programs for undergraduate students with the goal of reducing sex crimes on college campuses. In general the model is as follows:

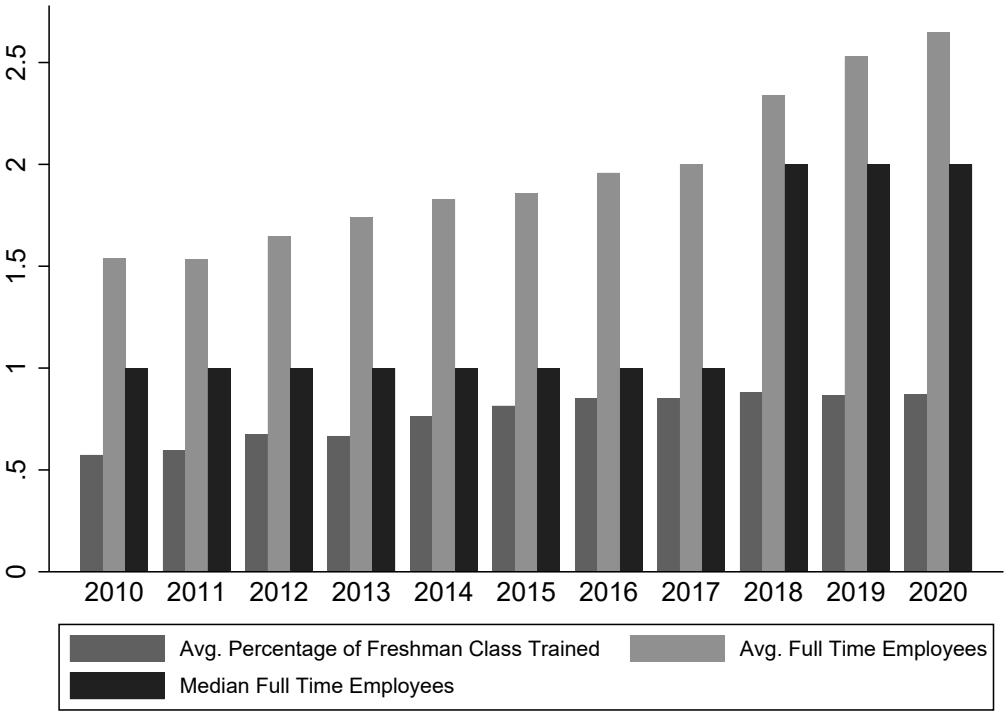

Figure 1.8: Incoming Freshman Class Training & Staffing for 2010 - 2020

Table 1.3: Annual Title IX Office Budget for 2010 - 2020 (N = 64)

Year	$0-$25K	$25-$50K	$50-$75K	$75-$100K	Non-Response
2010	16	2	0	1	45
2011	16	2	0	1	45
2012	18	2	1	1	44
2013	24	3	1	1	35
2014	25	4	2	1	32
2015	37	4	2	2	19
2016	41	6	1	2	14
2017	45	6	1	2	10
2018	45	8	1	2	8
2019	45	7	1	3	8
2020	46	8	1	3	6

$$arcsinh(y_{it}) = \alpha + \beta_1 METraining_{it} + \beta_2 MNETraining_{it} + \gamma_i + \rho_t + \epsilon_{it} \quad (1.2)$$

where $arcsinh(y_{it})$ denotes the inverse hyperbolic sine of the dependent variable at college i at time t. Following the enactment of the SaVE Provision, sex acts were reported differently with the inclusion of VAWA related offenses (dating violence, domestic violence, stalking) as well as rape, incest, and fondling. In this study, I use domestic violence, dating violence, stalking, and rape as my outcomes of interest as they are the most commonly reported crimes in the Clery Data. The variable $METraining_{it}$ is equal to one if the college i at time t required undergraduate students to undergo mandatory and enforced sexual assault and prevention awareness training. Similarly, the variable $MNETraining_{it}$ is equal to one if the college i at time t required undergraduate students to undergo mandatory but not enforced sexual assault and prevention awareness training. The omitted category is optional training under the assumption that all schools comply, making at least some training available. However, the relatively small number of non-compliant colleges and universities also fall into the omitted category. The variables γ_i and ρ_t denote college and year fixed effects while ϵ_{it} is the error term.

I also estimate the relationship between supplementary preventive efforts to reduce sex crimes on college campuses and reported incidence rates using the following equation:

$$\begin{aligned} \text{arcsinh}(y_{it}) = \alpha &+ \beta_1 \text{CampusEvents}_{it} + \beta_2 \text{CampusSignage}_{it} \\ &+ \beta_3 \text{WalletCard}_{it} + \beta_2 \text{SocialMedia}_{it} + \gamma_i + \rho_t + \epsilon_{it} \end{aligned} \quad (1.3)$$

Enforced is defined as the college or university placing an administrative hold on a student's ability to register for classes.

where $arcsinh(y_{it})$ denotes the inverse hyperbolic sine of the dependent variable at college i at time t. The variable $CampusEvents_{it}$ is equal to one if the college i at time t held campus events to reinforce sexual assault and consent messaging in addition to mandatory or optional sexual assault awareness training. The variable $CampusSignage_{it}$ is similarly defined, and refers to whether the college i at time t posted physical signage on campus to promote sexual assault awareness training and consent messaging. The variable $WalletCard_{it}$ is an indicator variable for whether the college i at time t distributed wallet information cards promoting sexual assault awareness and consent messaging. The variable $SocialMedia_{it}$ is an indicator for whether the college i at time t used a social media platform such as Facebook, Instagram, Twitter, etc. to post messages relating to sexual assault awareness prevention or consent messaging. The variables γ_i and ρ_i denote college and year fixed effects while ϵ_{it} is the error term.

Using Equation 1.1, I estimate the effect of mandatory and optional training programs on the inverse hyperbolic sine of reported forcible sex acts prior to the implementation of the SaVE Provision in 2013. As Norton (1983) notes, estimates from linear regression with a IHS transformed dependent variable are not directly interpreted as marginal effects or semi-elasticities. Therefore, for the remainder of the paper, all estimates are transformed following Bellemare and Wichman (2020) and can be interpreted as elasticities. Table 1.4 suggests there is a positive association between implementation of mandatory or optional training programs and the number of reported forcible sex acts on college campuses. This association may be driven by either reflection bias, omitted variable bias, or a woodwork effect. When schools implemented mandatory undergraduate sexual assault training programs, the rate of reported forcible sex acts per 1000 faculty, students, and staff from 2010 to 2013 increased by 9.1 percent. When optional training programs were offered the rate of reported forcible sex acts per 1000 faculty, students, and staff increased by 15.8 percent. I also use Equation 1.1 for a split-sample analysis with the results shown in table 6 of the Appendix. I first split the sample based on school size.

Colleges and universities are defined as large or small schools by whether the average number of faculty, staff, and students throughout the duration of the sample was above or below the median of 7,739. I also split the sample based on college and university classification whether they are a public or private institution. As with the estimates from the full sample, small sample size issues must be taken into account for interpretation of the results. Estimates from Table 6 suggest that the positive relationship between the implementation of optional training and reported forcible sex acts is primarily driven by large schools. Likewise, the positive relationship between the implementation of mandatory training and forcible sex acts is driven by private schools versus public.

Table 1.5 shows the estimated relationship between mandatory training programs, both enforced and not enforced, and the inverse hyperbolic sine of reported rape, reported domestic violence, reported dating violence, and reported stalking for the time period following the implementation of the SaVE Provision (2014-2020). Both estimates for reported rape are positive, but not statistically significant. Row 4 shows a similar result when considering reported stalking as the outcome of interest. The estimated effect of mandatory and enforced training programs on reported domestic violence is not statistically significant at conventional levels but of considerable magnitude (23.9 percent increase). Training programs that are mandatory, but do not carry an enforcement mechanism increase the rate of reported domestic violence per 1000 faculty, students, and staff by 13.9 percent. Both estimates for the effects of training programs on reported dating violence are positive and statistically significant. The estimates suggest that mandatory and enforced training programs are associated with higher rates of reported dating violence per 1000 faculty, students, and staff by 14.1 percent, while mandatory and not enforced training programs are associated with 15.2 percent higher rates of dating violence. Split sample estimates are shown in Table 7 of the Appendix. Estimates from Table 7 suggest that positive estimates for both types of mandatory training with respect to domestic violence are driven by small schools relative to large schools. However, positive estimates for both types of

Table 1.4: Estimated Effect of Training on Forcible Sex Acts Pre-VAWA 2013

Outcome	Mandatory Training	Optional Training
Reported Forcible Sex Acts	0.091^{***}	0.158^{***}
Mean: .321	(0.017)	(0.054)
N	256	256

Notes: Dependent variable has undergone IHS transformation. Coefficients are interpreted as elasticities following Bellemare and Wichman (2020). Standard errors clustered at the school level are in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 1.5: Estimated Effect of Training on Reported Rape and VAWA Offenses

	(1) Mandatory & Enforced	(2) Mandatory & Not Enforced
Reported Rape	0.021	0.037
Mean: .615	(0.071)	(0.047)
Reported Domestic Violence	0.239	0.139^{*}
Mean: .145	(0.16)	(0.081)
Reported Dating Violence	$.141^{*}$	$.152^{***}$
Mean: .357	(.079)	(.046)
Reported Stalking	.142	.059
Mean: .457	(.102)	(.049)
N	448	448

Notes: Dependent variable has undergone IHS transformation. Coefficients are interpreted as elasticities following Bellemare and Wichman (2020). Standard errors clustered at the school level are in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

mandatory training with respect to dating violence and stalking are driven primarily by large schools. There is insufficient evidence to suggest a difference in classification (public or private) is driving the estimates.

Equation 1.3 estimates the relationship between supplemental activities, designed to increase sexual assault awareness and reinforce consent messaging, and reported rape and other reported VAWA defined offenses. Please note these activities are distinct from formal training sessions for undergraduate students. Table 4 shows the correlation between supplementary activities. The use of supplementary activities is usually not a stand alone activity but part of a multidimensional campaign to combat sexual violence. Columns 1 through 4 of Table 1.6 show results for campus events, campus signage, wallet informational cards, and social media posts. Column 1 shows the relationship between campus events and various reported crimes. Estimates for reported domestic violence, reported dating violence, and reported stalking vary in sign but are not statistically different from zero. The estimates that are statistically significant do not lend themselves to a cohesive interpretation. The estimate for the link between campus events and reported rape is negative and implies campus events are associated with lower rates of reported rape per 1000 faculty, students, and staff by 12.4 percent. When considering campus signage and various reported rates of crime, estimates vary in sign and are not statistically significant from zero with the exception of reported rape. Table 1.6 suggests that implementing campus signage precedes an increase in the rate of reported rapes per 1000 faculty, students, and staff by 12.1 percent. Based on the responses of the schools on their use of supplementary activities, there is a high degree of positive correlation amongst these two measures, campus events and campus signage. In results not shown, I estimate Equation 1.3 by combining campus events and campus signage into one indicator variable. The coefficient for this combined variable is negative and not statistically significant from zero for all four reported crime variables. Contrasting results specifying from estimating campus events and campus signage separately appear to be driven by collinearity and due to the very small number of schools who choose to only use

Table 1.6: Estimated Effect of Supplemental Activities on Reported Rape and VAWA Offenses

	(1) Campus Events	(2) Campus Signage	(3) Wallet Cards	(4) Social Media
Reported Rape	-0.124*	0.121*	0.052	-0.033
Mean: 0.615	(0.075)	(0.07)	(0.067)	(0.034)
Reported Domestic Violence	-0.172	0.16	0.276**	-0.155
Mean: 0.145	(0.073)	(0.057)	(0.13)	(0.112)
Reported Dating Violence	0.062	-0.038	0.094	0.059
Mean: 0.357	(0.115)	(0.118)	(0.092)	(0.073)
Reported Stalking	-0.118	-0.008	0.249**	-0.022
Mean: 0.457	(0.166)	(0.148)	(0.101)	(0.043)
N	448	448	448	448

Notes: Dependent variable has undergone IHS transformation. Coefficients are interpreted as elasticities following Bellemare and Wichman (2020). Standard errors clustered at the school level are in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 1.7: Estimated Effect of Training and Supplemental Activities on Reported Rape and VAWA Offenses

	Mandatory & Enforced	Mandatory & Not Enforced	Campus Events	Campus Signage	Wallet Card	Social Media
Reported Rape	0.021	0.03	-0.135*	0.12	0.04	-0.032
Mean: 0.615	(0.066)	(0.046)	(0.076)	(0.073)	(0.065)	(0.035)
Reported Domestic Violence	0.212	0.087	-0.266	0.157	0.234*	-0.162
Mean: 0.145	(0.149)	(0.084)	(0.259)	(0.185)	(0.135)	(0.11)
Reported Dating Violence	0.129*	0.148***	-0.003	-0.042	0.037	0.064
Mean: 0.357	(0.076)	(0.053)	(0.113)	(0.116)	(0.095)	(0.071)
Reported Stalking	0.102	0.012	-0.16	-0.009	0.239**	-0.029
Mean: 0.457	(0.098)	(0.046)	(0.155)	(0.151)	(0.101)	(0.043)
N	448	448	448	448	448	448

Notes: Dependent variable has undergone IHS transformation. Coefficients are interpreted as elasticities following Bellemare and Wichman (2020). Standard errors clustered at the school level are in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

one of campus events and signage. When estimated separately, it is challenging to isolate the unique effect of each supplemental activity on reported crimes rates because of their positive correlation. Column 3 shows the relationship between wallet information cards and all four reported crimes. Estimates are positive but only estimates for reported domestic violence and stalking are statistically insignificant. Column 3 suggests that wallet information cards have a positive relationship with the rate of reported domestic violence and stalking per 1000 individuals in the campus community by 27.6 percent and 24.9 percent respectively. Estimates for the association between social media and reported crime rates vary in sign and are all statistically insignificant. Split sample estimates for Equation 1.3 are shown in Table 8 of the Appendix. Estimates from Table 8 suggest that the significant coefficients for campus events and campus signage are driven by small schools and private schools. Additionally, results from the split sample suggest that positive estimates for the relationship between wallet information cards and domestic violence are being driven by the larger schools. The positive relationship between wallet information cards and reported stalking is largely driven by small and private schools.

I combine Equations 1.2 and 1.3 to use a two-way fixed effect model to estimate the effect of formal training sessions for undergraduate students in conjunction with supplemental activities occurring on college campuses. Results are shown in Table 1.7. The previous conclusions remain largely unchanged. Estimates for the association between mandatory training programs and reported rates of dating violence are both positive and statistically significant. Estimates for campus events are similar, with the coefficient for reported rape still being negative and significant. As in Table 1.6, wallet cards are shown to have a positive relationship with rates of reported domestic violence and stalking. Estimates for campus signage and social media vary in sign and are all statistically insignificant.

1.5 Discussion & Conclusion

The empirical results of this study should be interpreted carefully. Both mandatory and optional trainings had a positive relationship with the number of reported forcible sex acts in the pre-period. Likewise, most estimates of the effect of training and supplemental activities on various reported sex crimes following the campus SaVE Provision were null. When results were statistically significant, they often lacked a clear interpretation or were internally inconsistent. Overall, the results are hard to interpret and the economic mechanisms are ambiguous. However, these results should *not* be used to simply dismiss sexual assault awareness and prevention training as being ineffective for several reasons. First, the effect of sexual assault awareness and prevention training is likely not instantaneous. In the unfortunate event a person is the victim of a sex crime or VAWA related offense, it is impossible to predict when this may occur during their collegiate tenure. Therefore, the effect of any trainings may not appear until a year or two after any regime change. Unfortunately, this dataset lacks the statistical power to model this dynamic effect within the panel. Second, it is possible that due to low participation rates in optional trainings and depending in which year a college or university decided to mandate training, the percentage of the study body that had completed any type of training could be quite low. Third, another possible explanation for the positive association between trainings and the number of reported forcible sex acts is that victims became more aware of their rights. When victims have a clear definition of when they have been assaulted and the available options to them for reporting and intermediate measures, this can absolutely lead to an increase in reported sex acts through a woodwork effect as more victims come forward. Studies have shown that sexual crimes are typically under reported (**?**; Sinozich and Langton, 2014). Fear of retaliation, concerns about privacy, and misstrust of institutions and authorities who handle the reports are some of many factors that can contribute to this underreporting (Krebs et al., 2007). While an increase in reported crime should never been considered favorable, one

beneficial result of an increase in training and victims understanding their rights is that hopefully more victims gained access to intermediate measures (medical care, counseling, protective orders, housing relocation, etc.) to help them deal with the traumatic experience of undergoing a sexual assault or other sex crime.

One concerning aspect of the time period prior to VAWA 2013 was the lack of transparency regarding outcomes of adjudication from university initiated investigations involving violations of their respective university policy on sexual misconduct. While Clery reports can provide the number of forcible sex acts for that time period, statistics on other sexual related offenses occurring on college campuses were non-existent. The data shows roughly 70% of colleges and universities were not reporting outcomes of adjudication to any audience. A classic pre-post analysis is perilous as here the "pre" data are endogenously and not randomly appointed. More data is required to empirically test if the reporting status of a college or university had any causal effect on the number of reported forcible sex acts taking place on campus. However, it is clear based on the evidence from this sample, no incentive structure existed for colleges and universities to provide this information and the expansion and inclusion of VAWA related offenses to crime reporting was sorely needed. Unfortunately, the SaVE Provision still does not require colleges and universities to disclose outcomes of adjudication in their annual security reports. Likewise, only crimes that were reported to campus police and public safety departments appear in annual security reports. Therefore, crimes reported to Title IX offices will not appear in these reports. My survey asked respondents to include the number of reported sexual assaults and stalking incidents to their Title IX office. On average, reported sexual assaults and stalking incidents were higher than those reported in the annual security reports.

As evidenced by the estimates, the empirical results of this study may be difficult to interpret. Both types of mandatory training are shown to have a positive relationship between the number of reported instances and dating violence yet have no relationship with rape, domestic violence, and stalking. Similarly, wallet cards

are associated with more reported instances of domestic violence while the estimate for social media is negative and statistically significant. Wallet cards are also linked with a higher number of reported instances of stalking while no other supplemental activity is shown to have a relationship with stalking. There is no clear explanation for the sign and significance for many of these estimates. However, it should be noted while these crimes were not new prior to the SaVE Provision, they were newly and formally defined. For example, therefore when I consider the positive effect of mandatory training on reported instances of dating violence, it is possible through training this crime was defined for the first time for some victims and led to an increase in reporting.

While colleges and universities were eager to adopt more stringent training requirements and implement supplemental events for their incoming undergraduate classes, this enthusiasm was not extended by university officials when considering the annual operating budget and number of full time employees in Title IX offices. The findings of Lindo et al. (2019) may help explain the unwillingness of college administrators and officials to increase budgetary funds and Title IX staffing following the passing of the Campus SaVE Act. The authors find that colleges and universities that were subject to Title IX investigations conducted by the OCR did not have a negative effect on applications and enrollment. Instead, applications and enrollment for both male and female students increased in response to these investigations. The authors suggest the attention from an OCR Title IX investigations may cause the school to enter the consideration sets of more students during the application process. Therefore college administrators and officials may be operating under the premise that any negative publicity from incidents of sexual assault will not effect applications and admissions. Many readers would agree that the SaVE Provision in VAWA 2013 was a positive and necessary step forward in combating the issue of sexual violence on college campuses. Yet based on the evidence provided from colleges and universities on their budgetary constraints it is fair to question if campus communities can expect to see meaningful and effective change considering these budgetary resources remained

largely unchanged. The same argument can be made with respect to staffing in Title IX offices. The median number of full-time employees remained constant at one throughout the entirety of the sample. When comparing budgets of Title IX offices to other academic-adjacent student services there is a large disparity in the allocation of funds. During the fiscal year of 2017, excluding employee salaries for both offices, a public state flagship university spent 1.165 million dollars on their student affairs office and 3.787 million for their office of communications. In comparison to colleges and universities in the highest budget tier for Title IX offices, these departments still operated with an annual budget 11 and 37 times larger, respectively. Evidence from the survey shows the allocation of resources in terms of funding and staffing for Title IX offices did not change and signals sexual assault prevention is not important to university officials. Funding for these offices must be adequate enough to allow transformative change versus a simple means of compliance with a legislative change. Current efforts being undertaken by Title IX coordinators are a good first step in addressing the issue of sexual assault on campus but are by no means sufficient. If Title IX coordinators and others tasked with reducing sexual assault are not empowered as strategic partners in the educational mission, it is impossible to expect them to effect meaningful change.

Budgetary information provided by Title IX officers excludes employee salaries as well.

Chapter 2

Star Ratings with Extremely Well-Informed Consumers: Evidence from College Football Recruiting

2.1 Introduction

he market for college athletes has more than doubled over the past forty years with the number of high school athletes rising from 3.5 million in 1980 to over 7.6 million in 2022.* At first glance, information imperfections seem ubiquitous due to the size of the market. In an effort to combat these information imperfections, colleges and universities devote large amounts of financial resources in deciding which prospects will receive a scholarship offer. Amongst high school sports in the United States, football was the most popular in 2021-2022 with over 975,000 participants. The NCAA estimates roughly 7.3 percent of these participants will play football across all collegiate levels. This number becomes even smaller when considering the how many

*https://www.nfhs.org/media/5989280/2021-22_participation_survey.pdf

high school prospects, 2.9 percent, will go on to compete at the highest level (Division I). There are roughly 254 Division I collegiate football programs split between the football bowl subdivision (FBS) and football championship division (FCS) with a finite number of scholarships to offer. Thus, there is great competition amongst participating colleges and universities to identify and sign the most promising high school football prospects.

Star rating systems exist to help alleviate information imperfections in contexts such as this one. Discrete star rating systems have been shown to influence consumer decisions where quality is multidimensional, and may only be observed with error (Jin and Sorensen, 2006; Darden and McCarthy, 2015; Huang and Hirth, 2016). Like other markets, the market for college football recruiting suffers from quality uncertainty and information asymmetry between prospects and coaches (Akerlof, 1970). College football recruiting can be thought of as a market with two sides, one which demands the services of prospects (coaches) while the other consists of the prospects themselves. Over the past twenty years, college football recruiting has modernized. Information on high school prospects is now easily accessible online for college coaches and the general public. Several private firms offer rankings of high school players based on their natural ability and potential to play professionally in the National Football League (NFL). These rankings usually entail both a discrete star rating system and a continuous index rating that maps into the star ratings. Upon their introduction, star ratings represented a novel attempt at making complicated information more usable for potential consumers (including coaches). While star ratings have been shown to be salient in other markets with respect to demand choice and product quality, in this study I examine if star ratings affect coaches' demand and act as indicators of future athletic performance in the college athlete market.

The economics literature has shown that when star ratings are salient and succeed in conveying complex information in a more simplified manner, it can guide consumers in their demand choices or incentivize firms to increase product quality. Jin and Leslie (2003) study the effect of publishing hygiene cards at restaurants in California. As

a result of these health scores being publicly displayed, the average hygiene scores of restaurants increased and restaurants were incentivized to improve their hygiene practices. Jin and Sorensen (2006) study the impact of star ratings on consumer choice in the medicare advantage (MA) market. Enrollees who were randomly given access to star ratings were more likely to switch plans. Darden and McCarthy (2015) also study the impact of star ratings on medicare advantage enrollments. Plans with higher star ratings saw an increase in MA plan enrollment and the impact of star ratings was most significant for smaller plans attracting new members. Huang and Hirth (2016) examine the effect between quality ratings and private-pay prices in the nursing home industry. Higher quality ratings led to higher private pay prices.

In this study, we examine the effects of star ratings on demand and equilibrium outcomes in a market with unique features. For a number of reasons, although "star ratings" for college athletes are heavily publicized, they may not be particularly salient. First, unlike other markets, the consumers in this case (coaches) observe the value of the continuous running variable in addition to the discrete star rating. Second, consumers have other means of obtaining information outside of both the discrete star ratings and the continuous running variable. In the context of the market for college football recruiting, these additional information sources may include film, scouting, and other coaches and staff. Third, if we place consumers in different markets on a continuum of how well informed they are, college football coaches in the internet era may be near the end point of being maximally informed. At most colleges and universities there are dedicated teams of coaches and staff responsible for deciding which prospects to target and offer a scholarship. Coaches are not just screening on cardinal ranking or quality, but for specific attributes for athletes at each position that will fit into their schemes. Finally, star ratings in this market attempt to reduce a high dimensional set of characteristics, both quantifiable and unquantifiable characteristics such as natural talent, work ethic, or motivation.[†]

[†]This is different than in the context of restaurants, medicare advantage plans, or nursing homes where input quality or plan characteristics are more easily observed

This is the first study using a regression discontinuity (RD) design to study the effect of star ratings for football recruits on player outcomes and school choice. The introduction of the college football star recruiting system was intended to better inform the general public and coaching community of prospect quality and improve matching between players and schools. Much of the existing literature studying the effect of recruit quality focuses on team level outcomes such as football program revenue generation or on field performance, rather than individual-level outcomes. Langelette (2003) found that highly rated recruiting classes were positively correlated with on-field success. Dumond et al. (2008) study the effect of recruiting quality on school choice. Their results find that recruits' decisions on school choice are largely driven by geographic distance, recent football rankings, and membership in a Bowl Championship Series (BCS) conference. Bricker and Hanson (2013) examine the relationship between when a prospect commits to a college or university and his subsequent playing time. The authors find committing to a scholarship offer early is associated with less playing time after acceptance. Bergman and Logan (2016), Dronyk-Trosper and Stitzel (2013) study the effect of recruit quality on college football team performance. Their findings indicate that even after controlling for between school heterogeneity, an increase in recruit quality leads to higher on field performance in terms of winning percentage. Bergman and Logan (2020) study the effects of recruiting star ratings on annual school revenue. The authors estimate the value of college football players using their ex ante star rating determined before a player commits to a school. Their findings indicate that higher rated recruits generate more revenue for their collegiate football program through increased team performance. While star ratings may be able to predict team level outcomes such as winning percentage or future revenue generation, there are no studies examining the relationship between star ratings and individual level outcomes. This is the first study to use player level observation data to examine the impact of recruiting stars on individual athletic outcomes and consumer demand which is important to understand

how star ratings impact the trajectories of prospects and if star ratings translate into tangible benefits for institutions.

I have collected data from a private firm, *247Sports*, and have the ratings of all prospects from 2002-2016 in their database. Each prospect has a continuous rating from 0 to 1 which then corresponds to a discrete star rating from two to five. These discrete star ratings have a distinct cutoff on the continuous scale [0,1]. In keeping with the literature on star ratings, I use a regression discontinuity design for the empirical analysis.[‡] I use these discontinuities to estimate the effect of a marginal recruiting star on various athletic and academic outcomes for high school prospects. Likewise, I also estimate the effect a marginal recruiting star has on the probability that a head football coach tenders a college scholarship offer to a prospect. The empirical analysis of this study is separated into two distinct parts. For both parts of the analysis, RD estimates are obtained for each star threshold separately for all selected outcomes.

First, I examine whether the discontinuity around star rating contains any information about a discontinuous change in player "quality" or "ability". To that end, I examine the effect of a marginal star on player outcomes and school choice. The outcomes of interest include the number of scholarship offers a prospect receives as well as the probability a prospect: is selected in the NFL draft, attains All-American Status and attains All-Conference status. The analysis is extended to include whether there is an effect of a marginal recruiting star on the probability a prospect enrolls in a very high (R1) or high (R2) research institution as well as cohort graduation rates.

Results from this portion of the analysis indicate that star ratings do not contain additional information on whether a player receives more scholarship offers, is selected in the NFL draft, or attains All-American and All-Conference status. With some

[‡]Thistlewaith and Campbell (1960) first introduced the RD research design. The application of RD research designs have been widely used across many different disciplines in economics (Lee and Lemieux, 2010). These include education: Angrist and Krueger (1991), Angrist and Lavy (1999), Figlio and Kenny (2009); labor market outcomes: DiNardo and Lee (2004), Card et al. (2007); and health: Gruber and Zinman (2001), Snyder and Evans (2006), Ludwig and Miller (2007).

exceptions, the estimates suggest that regardless of the threshold, there is no effect of a marginal recruiting star on the probability a prospect will receive an additional scholarship offer. Likewise, estimates obtained at each separate threshold suggest there is no effect of a marginal recruiting star on the probability a prospect will attain All-American or All-Conference selection. Based on these results, it is likely that variation in the continuous index is responsible for the unconditional differences in outcomes between players in different discrete star categories and the discontinuity has no effect. In a few specific cases, however, there are statistically significant effects at the star discontinuity. There is a robust negative effect on being drafted conditional on being a five star prospect, but there is no effect of a marginal recruiting star on the probability of being drafted at the other three-and-four-star thresholds. In an effort to study outcomes closer to the time of the rating assignment, I estimate the effect of a marginal recruiting star on cohort graduation rates at the college or university where the prospect enrolled as well as the probability a prospect enrolls at a very high (R1) research or high (R2) research institution. The evidence suggests there is a positive effect of a marginal recruiting star at the four star threshold on cohort graduation rates. Also, I find there is a negative effect of a marginal recruiting star on the probability of attending a R2 institution at the three star threshold.

Having shown that a star does not represent a discontinuous signal of quality, I subsequently examine the effect of a marginal recruiting star on coaches' demand in the college football recruiting market. I transform the data so that the unit of observation is a coach/player pairing based on the year a prospect was being recruited. For every possible coach/player pairing, I observe if a scholarship offer was made to a prospect. I estimate the effect of a marginal recruiting star on the probability a coach tenders a scholarship offer to a player, and allow that effect to vary by the tenure of the coach. The inclusion of tenure allows me to study how star ratings may effect the demand choices of coaches who are in their beginning of their tenure as opposed to when they may be more established in their position. One can argue coaches in

the onset of their tenure may be more likely to offer scholarships to prospects with higher star ratings in attempts to shape the narrative around their program.

With the exception of the five star threshold, there is no evidence to suggest that marginal recruiting stars have an effect on the probability a head coach tenders a scholarship offer to a prospect. Estimates from the five star threshold suggest there is a positive effect of a marginal recruiting star on the probability a coach tenders an offer for all tenure levels, but the effect is largest among coaches with four to six years of tenure. Effects at the three-and-four-star levels are negligible.

Overall, results from this study suggest that conditional on the continuous rating variable, discontinuous changes in discrete star ratings convey little if any new or salient information to head football coaches or athletic directors. This raises the question of why these star ratings are tracked. There are a few possible explanations for these findings. First and most importantly, head coaches are most likely acting as hyper-informed consumers and are not influenced by discrete star ratings. Second, while making their decisions, coaches are most likely utilizing other sources of information at their disposal outside the ratings. Third, firms in the market who provide prospect rankings are may be imperfectly reducing the high dimensional information set of prospect characteristics in their discrete star ratings. While star ratings in the college football recruiting market were a novel concept at a time where prospect information was largely fragmented, conditional on the running variable, they have failed to act as a mechanism that alleviates information imperfections in the market and cannot be relied upon to act as indicator for future prospect performance. More precisely, star ratings in this market add very little new information to the continuous index. This is evident from the estimates of the effect of marginal recruiting stars on player outcomes as well as demand choices for head coaches. These null or inconsistent findings imply that variations in the assignment variable are responsible for the difference in observed outcomes as well as the decision of a head coach to tender a scholarship offer to a player.

The implications of the empirical results for this market are quite interesting. It is clear that coaches are not summarily relying upon star ratings in their demand choices and that star ratings do not serve as indicators of future athletic performance. However, this market still exists, is widely cited in the popular press, and has attracted new entrants offering recruiting rankings. The most plausible explanation for the existence of the college football recruiting market is that some audience finds this information valuable, most likely the general public. Other product markets have shown star ratings are designed with the intent of streamlining consumer demand but in this case it appears star ratings are instead providing information for uninformed outside audiences.

This paper is organized as follows: section II provides a brief overview of the evolution of college football recruiting. Section III outlines data collection while section IV explains methodology and results. Section V provides a discussion and concludes.

2.2 Evolution of College Football Recruiting

The first college football game was played in 1869 between Rutgers University and Princeton. Over seven hundred and fifty universities currently play college football across various divisions - most notably Division I. According to the NCAA, over one million high athletes participate in high school football and on average, roughly 74,000 play collegiate football across all levels annually. This number becomes even smaller when considering the allocation of players across Division I, II, and III schools. A survey of high school athletics participation found that approximately 2200 high school football players go on to play Division I collegiate football, and the number of athletes for Division II and III are similar (NFHS). Football programs are currently divided in one of two subdivisions at the Division I level. The two subdivisions are the Football Bowl Subdivision (FBS) and Football Championship Subdivision (FCS). The FBS is considered to be the more competitive of the two subdivisions and can issue up

to 85 full scholarships to athletes in comparison to only 63 for FCS schools. Within the FBS there are two distinct groups, the Autonomous Five and Non-Autonomous schools. Autonomous Five schools are believed to have more designated areas of institutional autonomy than their Group of Five counterparts.

Up until the early 2000s, there was no widely available formal ranking system of high school football players interested in competing at the collegiate level. Therefore coaching staffs from each institution were responsible for evaluating potential prospects from a talent and skill perspective and incurred search costs in the process. Due to fragmented nature of information on high school players, collegiate football programs would rely on private regional scouts, local newspapers, and members of their own coaching staff when deciding which players to target. Thus, star ratings from *247Sports* and other recruiting firms were a novel concept when introduced in the early 2000s. Prior to these firms publicly publishing recruiting rankings of high school players, there was no centralized source readily providing this type of information. Therefore, the advent of recruiting rankings from firms like *247Sports* and others marked a new era of information accessibility to college coaches and the general public. These firms now publicly offered rankings of high school players online and every ranked player could now be classified as a two, three, four or five star prospect. These star ratings were intended to provide actionable and salient information for interested parties, most notably college coaches in an effort to reduce search costs and potentially guide their demand choices (in terms of offering scholarships to prospects) during the recruiting process. In the case of *247Sports*, the ultimate goal with their recruiting rankings are to *accurately project college success with an element or raw ability baked in.* They also add, *we have turned to the NFL drafts as the measuring stick and answer key that best indicates, in a a quantitative manner, level of success and ability players showcased during their college careers.*

Prospects and colleges and universities both have incentives to give credence to ex ante recruiting rankings. Prospects are competing against one another for limited scholarship opportunities and eventual playing time. There is a financial

motivation for colleges and universities to recruit and have highly rated prospects enroll at their institution. Studies (Langelette (2003), Bergman and Logan (2016) have shown highly rated recruiting classes have translated to more on-field success. Likewise, Chung (2015) and Brook (2016) have shown the relationship between wins and revenue is positive. Additionally, Dronyk-Trosper and Stitzel (2013) document increasing financial resources colleges and universities have devoted to the college football recruiting process.

2.3 Data Collection

The primary data for this study come from *24/7Sports*. *24/7Sports* is a company that began offering college football player recruiting rankings in 2000 and employs a staff of more than 50 full time recruiting reporters and evaluators that rank and compile data on the nation's elite high school recruits. The company states the goal of their rankings is to accurately project college success with an "element of raw ability baked in." *24/7Sports* believes the NFL Draft is the best measuring stick to quantitatively measure the level of success and ability players exhibit during their college careers. Additionally they make the distinction that the purpose of these rankings are to project how a prospect will perfrom during his collegiate career and not professionally. The company believes being drafted into the NFL is the most objective measure of a players performance in college versus looking at All-Conference selections or statistics which in their opinion can be "corrupted" by level of competition, scheme limitations, uninformed opinions as well as any number of factors.

24/7Sports has a composite rating system for high school football players that assigns a numeric value for each prospect between 0 and 1. Ratings for each player are continuous and correspond to a star value. The 24/7Sports composite rating system is a proprietary algorithm that compiles prospect rankings and ratings listed in the public domain by the major media recruiting services.[§] Their composite rating

[§]Source: 24/7Sports

converts average industry ranks and ratings into a linear composite index which is capped at 1.00. A rating of 1.00 indicates a consensus number one prospect across all major media services. These major media services receive and equal percentage in the composite ranking where the composite index equally weights this percentage among the services that participate in a ranking for any given prospect. Due to each recruiting service having their own philosophy on the number of "stars" allocated to each recruiting class, the composite rating assigns stars based on an approximate average distribution of stars from the industry.

Therefore based on a prospect's numeric rating, each player falls into the category of being a five, four, three, or two star prospect. *24/7Sports* provides an explanation of their rating system and defines the prospects in each category. Five stars is the highest rating a prospect can achieve and corresponds to the top 32 players nationally who are most likely to be drafted in the first round from each recruiting class. The next category of prospects are four stars. Four stars are believed to be capable of having college careers worthy of being drafted and usually fall in the range of 350 prospects. Three stars correspond to the bulk of college prospects that are found and encompass a wide range of ability levels, all of which can be considered as NFL players long term. Three star prospects can be fall into one of three categories: high, mid, and low. High three star prospects are considered to have significant NFL upside and project to be impact college players. Mid three star prospects project to be Power Five starters or impact players at the Group of Five level. Low three stars are prospects projected to be contributors at the Power Five level and impact starters at the Group of Five level. Prospects who are FBS level players with very limited NFL potential are two stars.

Composite ratings for all prospects from 2002-2016 were collected from the 24/7Sports website. In addition to the composite ratings, the following attributes for each prospect were collected: the first college or university at which a prospect enrolled, the conference in which the prospect competed, position, position group, height and weight. There are 21 positions listed in the data which are then put in

nine distinct groups. These groups include: athlete, receiver, defensive back, defensive line, linebacker, offensive line, quarterback, running back, and special teams. Height measurements are listed in total inches and weight measurements are listed in pounds. While *24/7Sports* does offer composite separate ratings for junior college (JUCO) prospects, these prospects were not included in the sample. However, any prospect who initially enrolled in a four year institution and later transferred to another like institution is included in the data. NFL draft selections from 2005 to 2021 were collected from the Pro-Football-Reference website[¶]. For each drafted prospect the following attributes were collected: draft year, draft round, draft pick, position, age, and last college or university attended. In addition to draft selection, All-American and All-Conference awards were collected for ranked prospects from 2002 to 2021 from their respective conference websites.

I also collect data from the Integrated Postsecondary Education Data System (IPEDS) website on several college and university characteristics including cohort graduation rates and Carnegie Classification for institutions included in the study. With respect to cohort graduation rates, the applicable graduation rate would be reflected four years after his enrollment. For example, if a prospect is a member of the 2002 recruiting class, his cohort's graduation rate would be that of August 2006. Likewise, I have collected the Carnegie Classification for all colleges and universities included in the study. In this study I examine if a marginal recruiting star effects the probability a prospect enrolls in a very high or high research institution. Therefore Institutions included in our study can fall into one of three categories: very high (R1) research, high (R2) research, or neither.

Between 2002 and 2016, they were $39,855$ rated prospects in the *247Sports* database. To preserve the continuity of the index in an RD design, I exclude recruits for a small number of specific values that are very common values of the assignment variable that are not near thresholds. It is unclear why some recruits are heaped

[¶]NFL rules state a player must participate in three years of college football in order to become eligible for the NFL Draft. 2005 denotes the first year a prospect from the 2002 recruiting class would be eligible to be drafted.

at these values but may include rounding or habitual ratings from those responsible for talent evaluation at recruiting firms. The heaps of specific assignment variable ratings in the full sample occur away from all three thresholds and choosing to include them in the empirical analysis could work against the regression discontinuity design identification assumptions. For this reason, I exclude the aforementioned recruits from this study. In results not shown, conclusions derived from empirical estimates are very similar for the full and smaller samples. When considering the distribution of the sample with respect to star classification, the majority of prospects fall into the two or three star category. I find that 26.2 percent of the sample is comprised of two stars prospects, and on average these prospects receive the fewest amount of offers, weigh the least, and are not as tall as prospects in the other star classifications. Three star prospects comprise 55.6 percent of the sample while four stars comprise 15.4 percent of the sample. The five star classification is the most selective and comprises 2.2 percent of the sample. On average, these prospects receive the most offers, are the tallest, and heaviest relative to prospects in the other star classification groups. When considering the selected outcomes used in this study, the most common are All-Conference and NFL draft selections. 9.02 percent of prospects in the sample earned All-Conference selections while 7.4 percent of prospects were selected in the NFL draft. All-American selections were the least common outcome for prospects in the sample with only 2.39 percent attaining this accolade. When considering the conference affiliation of schools in which prospects enrolled in, the majority of four star (90.6 percent) and five star prospects enrolled in autonomous five schools. The Southeastern Conference (SEC) enrolled the highest percentage of four and five star prospects relative to other conferences. With respect to positional grouping, offensive and defensive linemen comprise the highest percentage of four and five star prospects, followed by wide receivers.

Table 2.1 shows the distribution of ratings, height, weight, and outcomes of interest by star and for the entire sample. Outcomes of interest include NFL Draft, All-American, and All-Conference selections.[‖] Every prospect in the sample has a rating, however height and weight were not available via the 24/7Sports website for roughly 120-130 prospects. The average rating for all prospects in the sample was .839 and the average height and weight was 73.84 inches and 219.61 pounds, respectively. 2,057 prospects in the sample were drafted and 544 earned All-American selections. There were 2,955 All-Conference selections combined between autonomous five and group of five schools. On average, fiver star prospects are the tallest and heaviest. However, the average height difference between two, three, four and five stars are separated by less than one inch. Differences in average weight by prospect group are relatively larger in comparison to height. Five star prospects on average are about 1.96 percent heavier than four stars and 5.27 percent heavier than three stars. Table 2.1 also shows the ratings range for each star group. Most important to this study is the distinct cutoff for ratings differentiating prospects from different star groups. Based on the minimum and maximum value ratings for each star group, it is impossible for any prospect to fall into more than one star group. The distinct cutoffs remain constant for the entirety of the sample (2002-2016), meaning a four star prospect rated in 2002 would be rated as four star prospect for all subsequent years.

Table 2.2 shows where prospects in the sample chose to enroll and their respective position group by star rating. Of the 22,800 rated prospects in the sample, 20,749 (91 percent) of those prospects enrolled at a college or university. The top half of table 2.2 shows the conference in which each prospect enrolled at and is separated into three groups: autonomous five, group of five, and others. Conference USA and the Mid American Conference (MAC) lead all conferences in two star enrolled prospects and the group of five schools accounted for two thirds of all two star prospects. Three star prospects represented the largest star category to enroll at a college or university in the sample at 57.4 percent. 64.4 percent of three star prospects chose to

[‖] All-Conference combines Autonomous 5 and Group of 5 schools.

Table 2.1: Summary Statistics

2 Star	Mean	Std. Dev.	Min	Max	Obs
Rating	.771	.02	.4278	.7967	6,116
Height	73.483	2.59	61	81	6,100
Weight	216.118	42.659	140	425	6,098
Offers	2.354	2.6	0	35	6,116
Drafted					137 (2.24)
All-American					20 (.33)
All-Conference					482 (7.88)
3 Star					
Rating	.84	.025	.7968	.8899	12,679
Height	73.875	2.581	64	82	12,654
Weight	218.912	42.485	139	402	12,652
Offers	5.62	5.203	0	70	12,679
Drafted					853 (6.73)
All-American					209 (1.65)
All-Conference					1,479 (11.66)
4 Star					
Rating	.931	.028	.89	.9832	3,502
Height	74.256	2.511	61	81	3,502
Weight	226.604	44.306	141	380	3,502
Offers	9.6	8.182	0	58	3,502
Drafted					796 (22.73)
All-American					200 (5.71)
All-Conference					753 (21.5)
5 Star					
Rating	.991	.005	.9833	1	503
Height	74.436	2.5	61	80	503
Weight	230.964	44.849	160	355	503
Offers	10.342	8.96	0	57	503
Drafted					271 (53.88)
All-American					115 (22.86)
All-Conference					241 (47.91)
All					
Rating	.839	.06	.4278	1	22,800
Height	73.841	2.584	61	82	22,759
Weight	219.614	43.029	139	425	22,755
Offers	5.46	5.89	0	70	22,800
Drafted					2,057 (9.02)
All-American					544 (2.39)
All-Conference					2,955 (12.96)

Percentage of outcomes per star total are shown in parentheses

Table 2.2: Stars by Conference and Position Group

Autonomous Five	Two Star	Three Star	Four Star	Five Star	Total
Atlantic Coast Conference	155	1,793	531	87	2,566
Big Ten	156	1,566	542	56	2,320
Big Twelve	118	1,344	489	58	2,009
Pacific Athletic Conference	111	1,355	551	80	2,097
Southeastern Conference	80	1,603	1,063	188	2,934
Subtotal	620	7,661	3,176	469	11,926
Group of Five					
American Athletic Conference	284	498	11	1	794
Conference USA	830	794	19	2	1,645
Mid American Conference	913	652	2	0	1,567
Mountain West	558	692	24	2	1,306
Sun Belt	693	369	2	0	1,064
Subtotal	3,308	3,005	58	5	6,376
Others					
Big East	95	548	95	14	752
Division II	5	0	0	0	5
FCS	488	307	3	0	798
Independents	229	234	145	15	623
Western Athletic Conference	122	146	1	0	269
Subtotal	939	1,235	244	29	2,447
Total	4,867	11,901	3,478	503	20,749

Position Group	Two Star	Three Star	Four Star	Five Star	Total
Athlete	417	938	210	20	1,585
Defensive Back	975	1,958	518	70	3,521
Defensive Linemen	873	2,002	634	114	3,623
Linebacker	760	1,463	393	57	2,673
Offensive Linemen	1,006	1,995	541	54	3,596
Quarterback	345	836	249	47	1,477
Running Back	499	1,156	340	68	2,063
Receiver	1,030	2,128	613	73	3,844
Special Teams	210	201	4	0	415
Total	6,115	12,677	3,502	503	22,797

enroll at an autonomous five college or university. Four star prospects represent 16.8 percent of enrolled prospects. 30.6 percent of prospects who enrolled chose to play at a Southeastern Conference (SEC) university. The conference with the next highest share of enrolled four star prospects was the Pacific 10/12 conference at 15.8 percent. I find that 91.3 percent of enrolled four star prospects chose to play at a Power 5 college or university. Five star prospects represent the smallest star rating of enrolled prospects in the sample at 2.42 percent and are usually capped at 32 prospects for each recruiting cycle. When explaining the fixed number of five star prospects, 24/7Sports states: five star prospects are "*The top 32 players in the country to mirror the 32 first round picks in the NFL Draft. These are 32 players that we believe are the most likely to be drafted in the first round from each recruiting class.*" Therefore relative to the other thresholds, the five star threshold is arguably the most difficult for a player to cross given the number of five star prospects is fixed yearly. Any player receiving a promotion from four to five stars must be met with a corresponding demotion for another player. This type of trade-off could hypothetically add an additional level of subjectivity in the recruiting ranking process. More than a third (40 percent) of enrolled five star prospects choose to play in the SEC, the conference with the next largest share of enrolled five star prospects was the Atlantic Coast Conference (ACC) at 18.6 percent.

The bottom half of Table 2.2 shows the distribution of prospects by star category as well as the distribution based on the position group they were assigned. Wide receivers (REC) were the most common prospects in the sample followed by offensive linemen (OL), defensive linemen (DL), and defensive backs (DB) respectively. The most common star rating and position group pairings are four star wide receivers, three star offensive linemen, and three star wide receivers. When considering only five star prospects, defensive linemen are the most common in the sample at 22.7 percent, wide receivers follow at 14.5 percent.

2.4 Methodology and Results

The empirical analysis of this paper consists of several regression discontinuity designs focused around two groups of outcomes. The first set of regressions look at player outcomes. I examine these outcomes because they may signal that there is in fact a discontinuity in athletic performance around that star, or that the star creates opportunities for that player in some way. Second, I examine whether a star increases the probability that coaches with certain characteristics make a player a scholarship offer. The first part estimates the marginal effect of a recruiting star on the probability of attaining selected athletic outcomes of interest as well as two academic related outcomes: the probability of attending a R1 or R2 research institution and cohort graduation rates. The second part of the empirical strategy estimates the marginal effect of a recruiting star on the probability of receiving a scholarship offer from a head football coach based on his tenure. Identification is dependent on the absence of systematic manipulation of the prospect's rating around the cutoff, and the density of prospects should be continuous near all three thresholds. Following Cattaneo et al. (2020), I run density tests to support the assumption of continuous densities on both sides of all three thresholds and provide the results in the appendix. Likewise, baseline covariates should be balanced on both sides of all three thresholds and there should be no evidence of a discontinuity. Table 24 shows the RD estimates for weight and height as the dependent variable for all three thresholds. I also follow Lee and Lemieux (2010) and use Seemingly Unrelated Regression (SUR) to test for discontinuity gaps being zero for both covariates. Results from both approaches provide evidence that there are no discontinuities in baseline covariates for all three thresholds. Figure **??** shows the relationship between average height (measured in inches) and weight (measured in pounds). While these are not discontinuities, there is a positive association between rating and both height and weight for prospects in the sample. Similarly, Figure **??** shows the relationship between average outcomes and rating. For most outcomes, a higher rating is associated with better outcomes. I use the data driven approach

outlined by Calonico et al. (2014) to select the bandwidth that optimizes bias-variance trade-off. For the remainder of this paper, this bandwidth is referred to as "optimal" in the results. Additionally, I provide the results from selected ad-hoc bandwidths for completeness and to illustrate overall results are not sensitive to bandwidth selection. Graphical representations of the estimated discontinuities for each outcome and threshold can be found in the Appendix.

2.4.1 Player Outcomes

For the first part of the empirical analysis, I merged all the data sources from the previous section to create a cross section where each prospect is an observation. For every observation, physical characteristics as well as school enrollment are merged with selected outcomes of interest in this study. Selected outcomes of interest include: the number of college scholarship offers, NFL Draft Selection, All-American Selection, and All-Conference Selection. All-Conference selections are not differentiated between Autonomous Five and Group of Five. In addition to studying these four athletic outcomes, I also have collected data on the Carnegie classification of the school each prospect enrolled at and the graduation rate for the cohort in the year a prospect enrolled. I use a regression discontinuity design to utilize the presence of three distinct cutoff thresholds for different star ratings in order to estimate the marginal effect of a star on both athletic and academic outcomes. In general, the estimating equation is a linear probability model as follows:

$$y_i = \beta_0 + \beta_1 \tilde{x_i} + \beta_2 (Star_i) + \beta_3 1(Star_i) * (\tilde{x_i}) + \epsilon_i \tag{2.1}$$

where y_i denotes selected outcomes. In the cases where the dependent variable denotes NFL draft selection or All-American and All-Conference selections, y_i is equal to 1 if a prospect is drafted or earns and All-American or All-Conference selection. The variable $\tilde{x}$ is equal to $(x - c)$ and denotes the transformed running variable, where x is equal to the prospect's continuous rating between 0 and 1 and

c denotes the cutoff threshold for each discrete star rating. This study measures the marginal effect of a recruiting star around three distinct thresholds:.9833, .89, and .7968. *Star* is a indicator variable equal to 1 when a prospect's rating is greater than the cutoff (c) for a given threshold. The coefficient β_2 estimates the effect of a marginal recruiting star on selected outcomes of interest, and β_3 measures the coefficient on the interaction between a prospects transformed rating and indicator if they are to the right of a given cutoff. The inclusion of these terms allow the slope of the regression line to vary before and after the cutoff. Equation 2.1 is also estimated with the inclusion of covariates to reduce sampling variability in the estimates (Lee and Lemieux (2010)). Covariates include year fixed effect, indicator for position group, height, and weight. For each estimating equation, the sample is restricted to a small bandwidth around one of the three distinct thresholds which will lead to greater variance in regression discontinuity estimates but will reduce misspecification bias. The optimal bandwidth is the preferred specification and ad-hoc bandwidths are also shown in the results. In results not shown, estimates for β_1 and β_3 are generally positive and statistically insignificant and provide evidence of a weak positive correlation between the continuous rating and the outcomes of interest. This is consistent with other findings in the literature that show a positive relationship between recruit quality and on-field success and school choice. Empirical results are shown separately for each threshold and star rating.

Table 15 shows the results of Equation 2.1 for athletic outcomes of interest at the five star threshold. Dependent variables are shown in the first column with or without the inclusion of covariates. The regression discontinuity estimates for the optimal bandwidth are shown in the second column. Results from column two indicate there is a negative effect from a marginal recruiting star on the probability of being drafted at the five star threshold when a prospect is classified as a five star. This estimate implies that when a prospect crosses the five star threshold, their probability of being drafted decreases by 27.8 percent. The sign of the estimate of the effect of

the discontinuity of the fifth star is consistently negative when considering the ad-hoc bandwidths but appear to become more noisy with the reduction of sample size. These results are robust to the inclusion of covariates. Intuitively, one would expect the sign of these estimates to be positive since the main stated goal of the recruiting firm is to have five star prospects closely mirror the first round of the NFL draft. While I have relaxed this requirement for "drafted" to include any selection, five star prospects are only drafted in *any* round at a rate just above fifty percent. In the discussion section, I provide more explanation as to what may be responsible for this negative results. Estimates from Table 15 suggest there is no effect of a marginal recruiting star at the five star thresholds on the receiving an additional scholarship offer or on the probability of attaining All-American and All-Conference selections. The results from the ad-hoc bandwidths in columns three through eight support this finding.

Results from Equation 2.1 for athletic outcomes are shown in Table 16. Estimates from the optimal bandwidth are shown in the seventh column and indicate there is a positive effect from a marginal recruiting star on receiving an additional scholarship offer. The effect of a marginal recruiting star at the four star threshold is on average an increase of one scholarship offer. Estimates from column 7 suggest there is no effect of a marginal recruiting star at the four star threshold on the probability a prospect is drafted or attains either All-American or All-Conference status. Estimates from the ad-hoc bandwidths support these findings and lead to the conclusion that at the four star threshold, with the exception of receiving an additional scholarship offer, there is no effect of a marginal recruiting star on the selected athletic outcomes of interest. Table 17 shows the results of Equation 2.1 for athletic outcomes at the three star threshold. Results from the optimal bandwidth are shown in column 7. These estimates also suggests that there is no effect of a marginal recruiting star at the three star threshold on the probability of receiving an additional scholarship offer, being drafted, or either attaining All-American or All-Conference status. Again, the inclusion of estimates from the ad-hoc bandwidths support the general finding that

there is no effect of a marginal recruiting star at the three star threshold on the selected athletic outcomes of interest. When considering the results overall from all three thresholds, the evidence suggests that in many cases there is no effect of a marginal recruiting star has on receiving additional scholarship offers, the probability a prospect will be drafted, or received distinction for his on-field performance.

Next, I use Equation 2.1 to estimate the effect of a marginal recruiting star on cohort graduation rates as well as the probability a prospect enrolls at a very high (R1) or high (R2) research institution. Results are shown separately for each threshold. When the dependent variable is cohort graduation rate, only prospects who enrolled at an institution are included in the analysis. Thus, for each threshold and bandwidth used in the results, the number of observations will vary based on the dependent variable. This distinction is reflected in the results. Table 18 shows the results of Equation 2.1 at the five star threshold for academic outcomes. Estimates from the optimal bandwidth in shown in column two and suggest there is no effect of marginal recruiting star on cohort graduation rates or the probability of enrollment at a R1 or R2 institution. These results are not sensitive to the inclusion of covariates or bandwidth selection as evidenced by the estimates from the ad-hoc bandwidths. Results from the four star threshold are shown in Table 19 and estimates from the optimal bandwidth can be found in column 7. Estimates from column 7 suggest there is a positive effect of a marginal recruiting star on cohort graduation rates at the four star threshold. The marginal effect of a recruiting star leads to an increase of the cohort graduation rate by .023 percent. This result, however, is sensitive to the inclusion of covariates and is not supported by estimates from the ad-hoc bandwidths. While this result from the optimal bandwidth is statistically significant, its magnitude is very small and one can make the argument it is economically insignificant. Results from the remainder of the table suggest there is no effect of a marginal recruiting star at this threshold on the probability a prospect will enroll at a R1 or R2 institution. Table 20 shows the results of Equation 2.1 for academic outcomes at the three star threshold with estimates from the optimal bandwidth

shown in column seven. Estimates from column seven indicate there is no effect of a marginal recruiting star on cohort graduation rates or the probability a prospect enrolls at a R2 institution. However, estimates suggest there is a negative effect of a marginal recruiting star on the probability a prospect enrolls at a R2 institution. The estimate implies that crossing the three star threshold decreases the probability of enrolling at a R2 institution by 15.8 percent.

The empirical results of this study are robust to estimating Equation 2.1 for all outcomes with a quadratic functional form of the running variable. Estimates for Equation 2.1 with a quadratic functional form of the running variable are shown in Table 25 and provide evidence that the quadratic specification does not overturn major inferences from the linear specification. While some estimates may change sign or lose significance, overall when considering all three thresholds and both sets of outcomes the general conclusion remains the same: in most cases star ratings serve as a poor indicator of prospect quality and are unable to predict future athletic and academic outcomes.

2.4.2 Coach & School Scholarship Outcomes

For the second part of the empirical analysis, the data is transformed to create a school and coach pairing for each prospect given their recruiting class year. Instead of being a single observation, each prospect now has 127 observations, one for each school and coach pairing for that given year. For each coach/school pairing I observe whether or not a prospect was offered a scholarship, and denote this variable as "offer" where it is equal to 0 or 1. In addition to observing whether a coach offered a prospect a scholarship offer, I also denote the year of a head coach's tenure at the given school. The value for head coach tenure ranges from 0 to 45. In order to estimate the effect of a marginal recruiting star on the probability of receiving a scholarship offer, I use the following linear probability model:

$$offer_i = \alpha + \beta_1(\tilde{x_i}) + \beta_2 1(Star_i) + \beta_3 1(Star_i) * (\tilde{x_i}) + \epsilon_i \tag{2.2}$$

where $offer$ is equal to 1 if the prospect received a recruiting offer. $\tilde{x}$ denotes the transformed running variable where $\tilde{x} = (x - c)$. The variable x is a prospect's rating between 0 and 1 while c is the rating cutoff for a given discrete star threshold. $Star$ is an indicator variable equal to 1 if the prospect's rating exceeds the cutoff value for a given threshold. As in the first part, I study the effect of a marginal recruiting star on the probability of receiving a scholarship offer separately at the three distinct thresholds. When estimating the effect of a marginal recruiting star at each threshold, the sample is restricted to a smaller bandwidth around the applicable threshold. Results are organized by head coach tenure level and are shown separately for each threshold with the number of included observations based on the applicable bandwidth. Tenure level is broken out into four groups: all, one to three years, four to six years, and seven years or more. In results not shown, estimates for β_1 and β_3 are generally positive and statistically significant and provide evidence of a positive correlation between the continuous rating and the probability a head coach tenders a scholarship offer to a prospect.

Table 21 shows the results of equation 2.2 at the five star threshold. Estimates from the optimal bandwidth are shown in column 2. The evidence suggests there is a positive effect of a marginal recruiting star on the probability a head coach tenders a scholarship offer when including all tenure levels at this threshold. The estimate implies that by crossing the five star threshold, the probability that a head coach tenures a scholarship offer to a player increases by 9.13 percent. This positive effect is largest in magnitude for coaches with four to six years of tenure and implies an increase in offer probability by 15.1 percent. Estimates for the most tenured coaches, more than seven years in their head coach position, implies there is no effect of a fifth star on their offer probability. While these estimates are statistically significant, one could argue the implied change in probability of a coach tendering an offer is

not economically significant. Overall, the estimates from Table 21 indicate there is positive albeit small effect of a marginal recruiting star on the probability a head coach tenders a scholarship offer at the five star threshold. However, this result is not robust across bandwidths.

The estimates from Equation 2.2 at the four star threshold are shown in Table 22. Results from the optimal bandwidth are shown in column seven and indicate there is no effect of marginal recruiting star on the probability a head coach tenders a scholarship offer for all four tenure groups. While estimates from the ad-hoc bandwidths are statistically significant, the implied changes in probability are very small and do not have any economic significance. Similar results are shown in table 23 for Equation 2.2 at the three star threshold. Estimates from the optimal bandwidth indicate there is no effect of a marginal recruiting star on the probability a coach tenders a scholarship offer. The estimate for the optimal bandwidth and coaches with one to three years of tenure is statistically significant but implies a change in probability of 0.08 percent. When considering the results from both the optimal and ad-hoc bandwidths, there is no evidence that a marginal recruiting star effects the probability a head coach tenders a scholarship offer at the three star threshold. The results from all three thresholds for Equation 2.2 provide evidence that recruiting stars have little effect on coaches' demand and fail to alleviate information imperfections in this market.

Estimates for Equation 2.2 with a quadratic functional form of the running variable are shown in Table 27. The estimate from the quadratic functional form of the running variable are very similar to those of the linear specification. There is a positive effect of attaining a marginal recruiting star at the five star threshold for offer probability and this effect is still largest in magnitude for coaches with four to six years of tenure. At the four and three star thresholds, estimates are similar in sign and magnitude to the linear specification. There appears to be no evidence to suggest that estimating Equation 2.2 with a quadratic functional form of the running variable overturns any major inferences from the linear specification.

2.5 Discussion & Conclusion

Estimates for both player outcomes and coach offers indicate that conditional on the continuous index or assignment variable, star ratings add little if any new valuable information. However, information quality from the continuous index should still be considered valuable. When considering the effect of a marginal recruiting star on player outcomes, many of the estimates suggest a null result, with the limited exception of draft probability at the five star threshold, R1 enrollment at the three star threshold, and offering a scholarship at the five star threshold. Based on these results, the evidence suggests that variation in the continuous index is more responsible for the difference in observed outcomes. As previously mentioned, unlike other markets, discrete star ratings in this market attempt to capture a high level of dimensionality for prospect quality which includes both observed and unobserved characteristics. In addition to not providing any new information to the continuous index, it appears star ratings fail to adequately capture the high dimensionality of prospects characteristics as evidenced by many of the null and inconsistent results when it comes to predicting future player outcomes.

While discrete star ratings have been shown to influence consumer demand in other markets such as medicare enrollments (Jin and Sorensen (2006), Darden and McCarthy (2015)) and nursing homes (Huang and Hirth (2016), this does not appear to be the case for this particular market. The inability of star ratings to influence consumer (coach) demand likely occurs for a few reasons. Most notably consumers in this market are extremely well-informed. Unlike other markets where star ratings can be the only source of information, consumers are able to directly observe the running variable and have access to alternate sources of information for prospect quality when making their demand decisions. Additionally, when making their demand decisions, consumers in this market are doing so in concert with other individuals or groups of staff in large part due to the amount of financial resources at their disposal. It is highly unlikely that in other markets consumers have these similar resources at their

disposal when making demand decisions. The evidence suggests that indeed coaches are behaving as well-informed consumers and do not let discrete star ratings influence their demand decision. Variation in the composite index in combination with other sources of available information on prospect quality most likely affects demand choices for consumers in this market. Although star ratings in this market do not appear to influence consumer demand, the demand choices of these particular consumers are still of interest because in may cases they are the highest paid public employees in their state. In 2018, 16 out of the top 20 highest paid public state employees in the United States were college head football coaches with an average annual salary of 5 million dollars[**]. The evidence suggests college football coaches, regardless of tenure, are not summarily relying on discrete star ratings in their demand choices with respect to tendering scholarship offers to players. Given the level of financial compensation most of these individuals receive, this finding should be viewed as a positive that coaches are behaving as well-informed consumers.

The negative effect of a marginal recruiting star on the probability of being drafted at the five star threshold is a counterintuitive result and directly conflicts with the recruiting philosophy of the firm. Recall, the number of five star prospects is fixed at roughly 30-32 players for each recruiting year in an effort to mirror the first round of the NFL Draft. Due to the selectivity of the five star classification, one would expect the marginal effect of a recruiting star on the probability of being drafted at the five star threshold to at least be positive in sign. In theory, the ratings are designed to identify the best 32 players in a pool of thousands for a given year. While *247Sports* strives to identify these 32 players every year, their success rate is questionable. Roughly 54.8 percent of five star prospects are drafted. This number may be misleading because it represents the number of five star prospects drafted in any round, not just the first. The number of five star prospects drafted in the first round is smaller, only 34.3 percent. There may be a few reasons that explain this finding. The first is the "chip on the shoulder" hypothesis where prospects

[**] https://www.al.com/news/2018/04/nick_saban_is_countrys_highest.html

who are just to the left of the five star threshold feel slighted in not receiving that marginal recruiting star are extremely motivated to perform well. Second, it's possible that five star recruits are more likely to play sooner and due to the violent and physical nature of football, are more likely to become injured. Unfortunately, I cannot directly control for this possibility. Likewise, it must be acknowledged that the lack of predictive ability from changes in a marginal recruiting star is solely not a function of *247Sports* but instead of the recruitment rankings industry as a whole. Composite rankings provided by *247Sports* reflect ratings from all industry leading firms involved in recruiting services and suggest some adjustment in the threshold placement or underlying rating index is needed if star ratings are to serve as an adequate indicator of prospect quality.

Overall, the empirical results of this study suggest that star ratings do not add additional information beyond the continuous rating index. It is that evident prospects and coaches derive little benefit from star ratings, yet some audience must find this information useful or otherwise the market would not exist. Most likely, uninformed outside audiences are the ones which find this information more digestible in discrete star format. Although this is outside the scope this study, it would be interesting to examine if other parties such as college administrators or individuals working in college athletic departments are able to leverage these star ratings their benefit with respect to funding of the athletic department.

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Appendix

The Clery Act requires your institution to include four general categories of crime statistics:

- **Criminal Offenses** - Criminal Homicide, including Murder and Non-negligent Manslaughter, and Manslaughter by Negligence; Sexual Assault, including Rape, Fondling, Incest and Statutory Rape; Robbery; Aggravated Assault; Burglary; Motor Vehicle Theft; and Arson.
- **Hate Crimes** - Any of the above-mentioned offenses, and any incidents of Larceny-Theft, Simple Assault, Intimidation, or Destruction/Damage/ Vandalism of Property that were motivated by bias.
- **VAWA Offenses** - Any incidents of Domestic Violence, Dating Violence and Stalking. (Note that Sexual Assault is also a VAWA Offense but is included in the Criminal Offenses category for Clery Act reporting purposes.)
- **Arrests and Referrals for Disciplinary Action** - for Weapons—Carrying, Possessing, Etc. Law Violations, Drug Abuse Violations and Liquor Law Violations.

Definitions for sexual criminal offenses used in this study:

- **Forcible Sex Act** is any sexual act directed against another person, forcibly and/or against that person's will; or not forcibly or against the person's will where the victim is incapable of giving consent (forcible rape; forcible sodomy, sexual assault with an object; and forcible fondling).
- **Non-Forcible Sex Act** is unlawful, non-forcible sexual intercourse (incest, statutory rape).
- **Rape** is the penetration, no matter how slight, of the vagina or anus, with any body part or object, or oral penetration by a sex organ of another person, without the consent of the victim. This offense includes the rape of both males and females.

- **Statutory Rape** is sexual intercourse with a person who is under the statutory age of consent.

- **Fondling** is the touching of the private body parts of another person for the purpose of sexual gratification, without the consent of the victim, including instances where the victim is incapable of giving consent because of his/her age or because of his/her temporary or permanent mental incapacity.

- **Incest** is sexual intercourse between persons who are related to each other within the degrees wherein marriage is prohibited by law.

Definitions for VAWA offenses used in this study:

- **Dating Violence** is defined as violence committed by a person who is or has been in a social relationship of a romantic or intimate nature with the victim. The existence of such a relationship shall be determined based on the reporting party's statement and with consideration of the length of the relationship, the type of relationship, and the frequency of interaction between the persons involved in the relationship. For the purposes of this definition - dating violence includes, but is not limited to, sexual or physical abuse or the threat of such abuse and dating violence does not include acts covered under the definition of domestic violence.

- **Domestic Violence** is defined as a felony or misdemeanor crime of violence committed by: a current or former spouse or intimate partner of the victim; a person with whom the victim shares a child in common; a person who is cohabitating with, or has cohabitated with, the victim as a spouse or intimate partner; a person similarly situated to a spouse of the victim under the domestic or family violence laws of the jurisdiction in which the crime of violence occurred; any other person against an adult or youth victim who is protected from that person's acts under the domestic or family violence laws of the jurisdiction in which the crime of violence occurred.

To categorize an incident as Domestic Violence, the relationship between the perpetrator and the victim must be more than just two people living together as roommates. The people cohabitating must be current or former spouses or have an intimate relationship.

- **Stalking** is defined as engaging in a course of conduct directed at a specific person that would cause a reasonable person to fear for the person's safety or the safety of others; or suffer substantial emotional distress. For the purpose of this definition course of conduct means two or more acts, including, but not limited to, acts in which the stalker directly, indirectly, or through third parties, by any action, method, device, or means, follows, monitors, observes, surveils, threatens, or communicates to or about a person, or interferes with a person's property.

Source: U.S. Department of Education[††]

Table 3: Sex Offense by Training and Adjudication Report Status for 2010-2013

Median Values for Forcible Sex Acts by Training and Reporting Status			
Training	Campus Community	General Public	Not Reported
Mandatory	.14	.25	.45
Optional	.18	1.82	.25
Not Offered	.29	.34	.14

[††] https://www2.ed.gov/admins/lead/safety/handbook.pdf

Table 4: Correlation Matrix For Training & Supplemental Activities

	Mandatory Not Enforced	Mandatory & Enforced	Campus Events	Campus Signage	Wallet Info Card	Social Media
Mandatory Not Enforced	1.0000					
Mandatory & Enforced	.	1.0000				
Campus Events	.2318	.2656	1.0000			
Campus Signage	.1842	.3360	.7575	1.0000		
Wallet Info Card	.2255	.2750	.5366	.5330	1.0000	
Social Media	.3313	.1346	.4233	.4846	.4474	1.0000

Table 5: Comparisons in Sample Means to Partial and Non-Respondents

Outcome	Respondents vs. Partial Respondents					Respondents vs. Non-Respondents				
	mean	*diff*	*t*	*df*	*p*	*mean*	*diff*	*t*	*df*	*p*
Reported Forcible Sex Acts (.321)	.377	-0.056	-.9906	398	.3225	.44	-0.119	-1.5796	2,274	.1143
Reported Rape (.615)	.636	-0.021	-.2022	698	.8398	.649	-0.033	-.6157	3,981	.5381
Domestic Violence (.145)	.207	-0.062	-2.2691	698	.0236	.178	-0.033	-1.72	3,981	.0842
Reported Dating Violence (.357)	.362	-0.006	-.1116	698	.9112	.36	-0.003	-.0921	3,981	.9266
Reported Stalking (.457)	.421	0.036	.5272	698	.5982	.417	.041	1.1921	3,981	.2333
N	256 (64)		144 (36)			256 (64)		2,020 (505)		

Notes: T-test results are shown for comparisons in sample means for respondents to partial and non-respondents. Mean values for respondents are shown in parentheses. There were 36 partial respondents and 505 non-respondents.

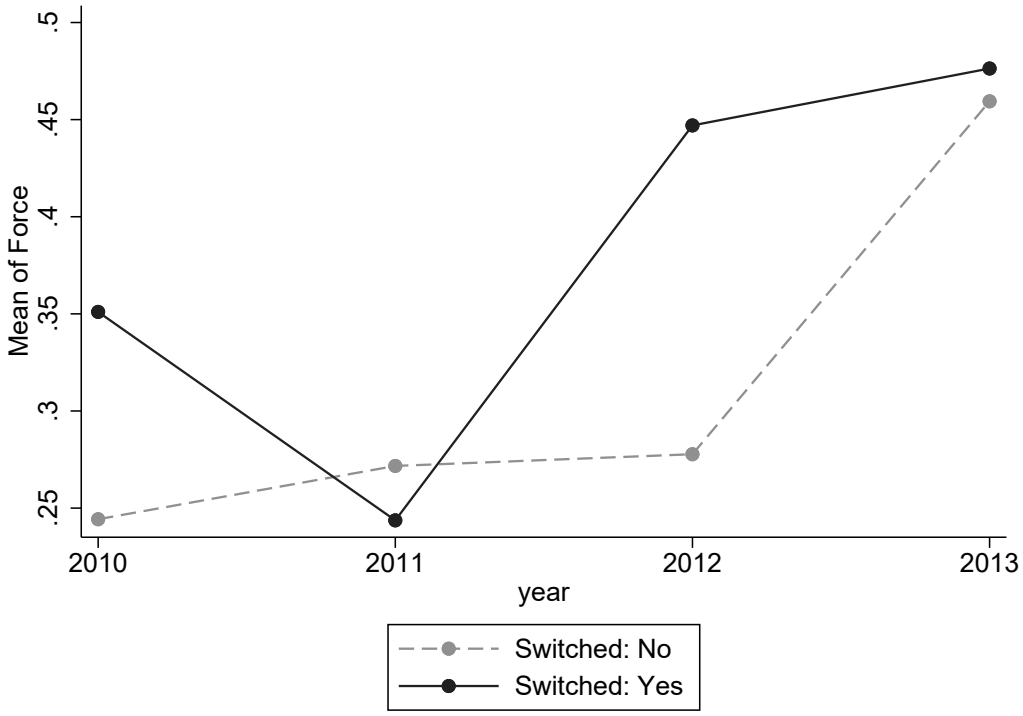


Figure 1: Binned Sample Means of Reported Forcible Sex Acts

Notes: Means for colleges and universities that switched from optional or no training to mandatory training are shown in red.

Table 6: Estimated Effect of Training on Forcible Sex Acts Pre-VAWA 2013

	School Size		School Classification	
	Large Schools	Small Schools	Public Schools	Private Schools
Mandatory Training	0.078***	0.134***	-0.020	0.079**
	(0.018)	(0.021)	(0.046)	(0.032)
Optional Training	0.278***	0.066		0.013
	(0.076)	(0.049)		(0.046)
N	128	128	128	128

Notes: Each column represents a separate regression. Estimates are shown for two subsamples by school size: large or small and school classification: public or private. Independent variables were simultaneously included in the regression equation. Dependent variable is reported forcible sex acts. Dependent variable has undergone IHS transformation. Coefficients are interpreted as elasticities following Bellemare and Wichman (2020). Standard errors clustered at the school level are in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Estimated Effect of Training on Reported Rape and VAWA Offenses

	School Size		School Classification	
	Large	Small	Public	Private
Outcome: Reported Rape				
Mandatory & Enforced Training	0.036	0.005	-0.024	0.108
	(0.071)	(0.111)	(0.063)	(0.140)
Mandatory & Not Enforced Training	0.011	0.057	0.030	0.050
	(0.045)	(0.071)	(0.033)	(0.087)
Outcome: Reported Domestic Violence				
Mandatory & Enforced Training	0.186	0.330**	0.269	0.167
	(0.331)	(0.18)	(0.237)	(0.215)
Mandatory & Not Enforced Training	0.081	0.192*	0.155	0.119
	(0.13)	(0.11)	(0.117)	(0.111)
Outcome: Reported Dating Violence				
Mandatory & Enforced Training	0.307**	0.008	0.182	0.047
	(0.123)	(0.107)	(0.087)	(0.216)
Mandatory & Not Enforced Training	0.194**	0.124	0.018	0.093
	(0.077)	(0.064)	(0.053)	(0.075)
Outcome: Reported Stalking				
Mandatory & Enforced Training	0.167**	0.123	0.182	0.047
	(0.074)	(0.174)	(0.087)	(0.216)
Mandatory & Not Enforced Training	0.077**	0.046	0.018	0.093
	(0.038)	(0.076)	(0.053)	(0.075)
N	224	224	224	224

Notes: Column in each panel represents a separate regression. Estimates are shown for two subsamples by school size: large or small and school classification: public or private. Independent variables were simultaneously included in regression equation for each outcome. Dependent variable is shown at the top of each panel. Dependent variable has undergone IHS transformation. Coefficients are interpreted as elasticities following Bellemare and Wichman (2020). Standard errors clustered at the school level are in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Estimated Effect of Training on Reported Rape and VAWA Offenses

	School Size		School Classification	
	Large	Small	Public	Private
Outcome: Reported Rape				
Campus Events	0.087	0.247**	-0.068	-0.200*
	(0.092)	(0.126)	(0.113)	(0.11)
Campus Signage	-0.067	-0.262**	0.067	0.191**
	(0.065)	(0.116)	(0.099)	(0.087)
Wallet Info Cards	0.068*	0.049	0.036	0.08
	(0.038)	(0.127)	(0.041)	(0.14)
Social Media	0.004	-0.069	0.013	-0.081
	(0.046)	(0.069)	(0.038)	(0.053)
Outcome: Reported Domestic Violence				
Campus Events	0.245	-0.382	0.071	-0.247
	(0.377)	(0.369)	(0.388)	(0.356)
Campus Signage	0.047	0.161	0.397	-0.064
	(0.16)	(0.273)	(0.326)	(0.296)
Wallet Info Cards	0.435**	0.188	-0.010	0.058
	(0.212)	(0.173)	(0.18)	(0.163)
Social Media	-0.134	-0.198	0.065	-0.227
	(0.133)	(0.172)	(0.154)	(0.153)
Outcome: Reported Dating Violence				
Campus Events	0.228	-0.077	0.122	-0.05
	(0.168)	(0.189)	(0.165)	(0.157)
Campus Signage	0.032	-0.141	0.076	-0.059
	(0.15)	(0.177)	(0.212)	(0.115)
Wallet Info Cards	0.104	0.131	-0.010	0.200
	(0.074)	(0.162)	(0.084)	(0.141)
Social Media	0.026	0.091	0.065	0.063
	(0.062)	(0.144)	(0.064)	(0.134)
Outcome: Reported Stalking				
Campus Events	0.162	-0.358	0.032	-0.262
	(0.165)	(0.275)	(0.128)	(0.321)
Campus Signage	-0.169	0.045	0.135	0.002
	(0.162)	(0.226)	(0.172)	(0.235)
Wallet Info Cards	0.162**	0.378**	0.113*	0.364*
	(0.063)	(0.18)	(0.062)	(0.197)
Social Media	-0.058	0.054	-0.067	0.024
	(0.049)	(0.073)	(0.062)	(0.058)
N	224	224	224	224

Notes: Column in each panel represents a separate regression. Estimates are shown for two subsamples by school size: large or small and school classification: public or private. Independent variables were simultaneously included in regression equation for each outcome. Dependent variable is shown at the top of each panel. Dependent variable has undergone IHS transformation. Coefficients are interpreted as elasticities following Bellemare and Wichman (2020). Standard errors clustered at the school level are in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: Multinomial Logistic Regression With Training Status as the Dependent Variable

	(1)	(2)
Mandatory & Not Enforced		
Avg Forcible Sex Acts	0.673	1.017
	(1.070)	(1.173)
Public		-0.066
		(1.417)
Tuition		-0.000
		(0.000)
Religious Affiliation		0.382
		(1.305)
Financial Aid		0.026
		(0.028)
Leader Change		-1.331
		(0.870)
Acceptance Rate		-0.038*
		(0.022)
Constant	-0.372	0.926
	(0.464)	(3.825)
Mandatory & Enforced		
Avg. Forcible Sex Acts	0.472	0.216
	(1.005)	(1.121)
Public		2.361
		(1.451)
Tuition		1.064×10^{-4}**
		(0.000)
Religious Affiliation		0.714
		(1.147)
Financial Aid		0.063*
		(0.035)
Leader Change		0.424
		(0.677)
Acceptance Rate		-0.006
		(0.020)
Constant	0.216	-10.244**
	(0.412)	(5.059)
N	62	62

Training status in 2015 is the dependent variable. Made available is the base outcome. Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Correlation Matrix for Forcible Sex Acts & Risk Factors

	Force	Tuition	Financial Aid	Religious Affiliation	Public	Leader Change	City	Suburb	Town
Force	1.0000	.	.	.	.	.	.	.	.
Tuition	0.2813	1.0000	.	.	.	.	.	.	.
Financial Aid	-0.0868	-0.1370	1.0000	.	.	.	.	.	.
Religious Affiliation	-0.1054	0.3858	0.2611	1.0000	.	.	.	.	.
Public	-0.1765	-0.7848	-0.0786	-0.6988	1.0000	.	.	.	.
Leader Change	-0.0080	-0.0635	-0.0156	-0.0813	0.0757	1.0000	.	.	.
City	-0.2621	0.0872	0.1782	0.0998	-0.0579	-0.0120	1.0000	.	.
Suburb	0.1119	0.1729	-0.3630	-0.1334	-0.0414	0.0198	.	1.0000	.
Town	0.0554	-0.1846	0.0653	0.0529	0.0784	-0.0152	.	.	1.0000
Rural	0.3785	-0.0348	0.0688	-0.1422	0.0145	0.0405	.	.	.

Notes: Other risk factors include: full cost of tuition (in-state rates were used for public universities), the percentage of students receiving any type of financial aid, religious affiliation, public or private classification, acceptance rate, university leadership change, and degrees of urbanicity.

Table 11: Correlation Matrix for Crime Rates & Risk Factors

	Rape	Domestic	Dating	Stalking	Tuition	Financial Aid	Religious Affiliation	Public	Leader Change	City	Suburb	Town	Rural
Rape	1.0000	.	.	.	.	.	.	.	.	.	.	.	.
Domestic	0.0365	1.0000	.	.	.	.	.	.	.	.	.	.	.
Dating	0.1604	0.3699	1.0000	.	.	.	.	.	.	.	.	.	.
Stalking	0.3054	0.1212	0.3295	1.0000	.	.	.	.	.	.	.	.	.
Tuition	0.1617	-0.0669	-0.0813	-0.0405	1.0000	.	.	.	.	.	.	.	.
Financial Aid	0.0617	0.0149	0.0950	0.0188	-0.1370	1.0000	.	.	.	.	.	.	.
Religious Affiliation	0.0702	-0.0995	-0.1186	-0.1095	0.3858	0.2611	1.0000	.	.	.	.	.	.
Public	-0.1571	0.0754	0.1040	-0.0569	-0.7848	-0.0786	-0.6988	1.0000	.	.	.	.	.
Leader Change	-0.0120	0.0237	0.0256	0.0270	-0.0635	-0.0156	-0.0813	0.0757	1.0000	.	.	.	.
City	-0.0940	-0.0637	-0.0871	-0.1015	0.0872	0.1782	0.0998	-0.0579	-0.0120	1.0000	.	.	.
Suburb	0.0791	-0.0595	0.0324	0.2973	0.1729	-0.3630	-0.1334	-0.0414	0.0198	.	1.0000	.	.
Town	0.0103	0.1012	0.1024	-0.1055	-0.1846	0.0653	0.0529	0.0784	-0.0152	.	.	1.0000	.
Rural	0.0887	0.0291	-0.0639	0.0172	-0.0348	0.0688	-0.1422	0.0145	0.0405	.	.	.	1.0000
Acceptance Rate	-0.0117	-0.0121	0.0228	-0.0133	-0.3858	0.4981	0.1562	0.1302	-0.0035	0.1450	-0.3599	0.0787	0.0336

Notes: Other risk factors include: full cost of tuition (in-state rates were used for public universities), the percentage of students receiving any type of financial aid, religious affiliation, public or private classification, acceptance rate, university leadership change, and degrees of urbanicity.

Table 12: Correlation Matrix For Training 2010 - 2013

	Not Offered	Optional	Mandatory	Tuition	Financial Aid	Religious Affiliation	Public	Leader Change	City	Suburb	Town	Rural
Not Offered	1.0000	.	.	.	.	.	.	.	.	.	.	.
Optional	.	1.0000	.	.	.	.	.	.	.	.	.	.
Mandatory	.	.	1.0000	.	.	.	.	.	.	.	.	.
Tuition	-0.1439	-0.0941	-0.0038	1.0000	.	.	.	.	.	.	.	.
Financial Aid	-0.0030	0.0434	-0.1483	-0.1370	1.0000	.	.	.	.	.	.	.
Religious Affiliation	0.1313	-0.1226	0.0016	0.3858	0.2611	1.0000	.	.	.	.	.	.
Public	-0.0493	0.0346	0.0176	-0.7848	-0.0786	-0.6988	1.0000	.	.	.	.	.
Leader Change	-0.0011	0.0301	-0.0423	-0.0635	-0.0156	-0.0813	0.0757	1.0000	.	.	.	.
City	-0.0550	0.0203	0.0502	0.0872	0.1782	0.0998	-0.0579	-0.0120	1.0000	.	.	.
Suburb	-0.0654	-0.0573	0.0916	0.1729	-0.3630	-0.1334	-0.0414	0.0198	.	1.0000	.	.
Town	0.1010	-0.0163	-0.1023	-0.1846	0.0653	0.0529	0.0784	-0.0152	.	.	1.0000	.
Rural	-0.0620	0.0959	-0.0364	-0.0348	0.0688	-0.1422	0.0145	0.0405	.	.	.	1.0000
Acceptance Rate	0.0308	-0.0662	-0.1304	-0.3858	0.4981	0.1562	0.1302	-0.0035	0.1450	-0.3599	0.0787	0.0336

Notes: Other risk factors include: full cost of tuition (in-state rates were used for public universities), the percentage of students receiving any type of financial aid, religious affiliation, public or private classification, acceptance rate, university leadership change, and degrees of urbanicity.

Table 13: Correlation Matrix For Training 2014 - 2020

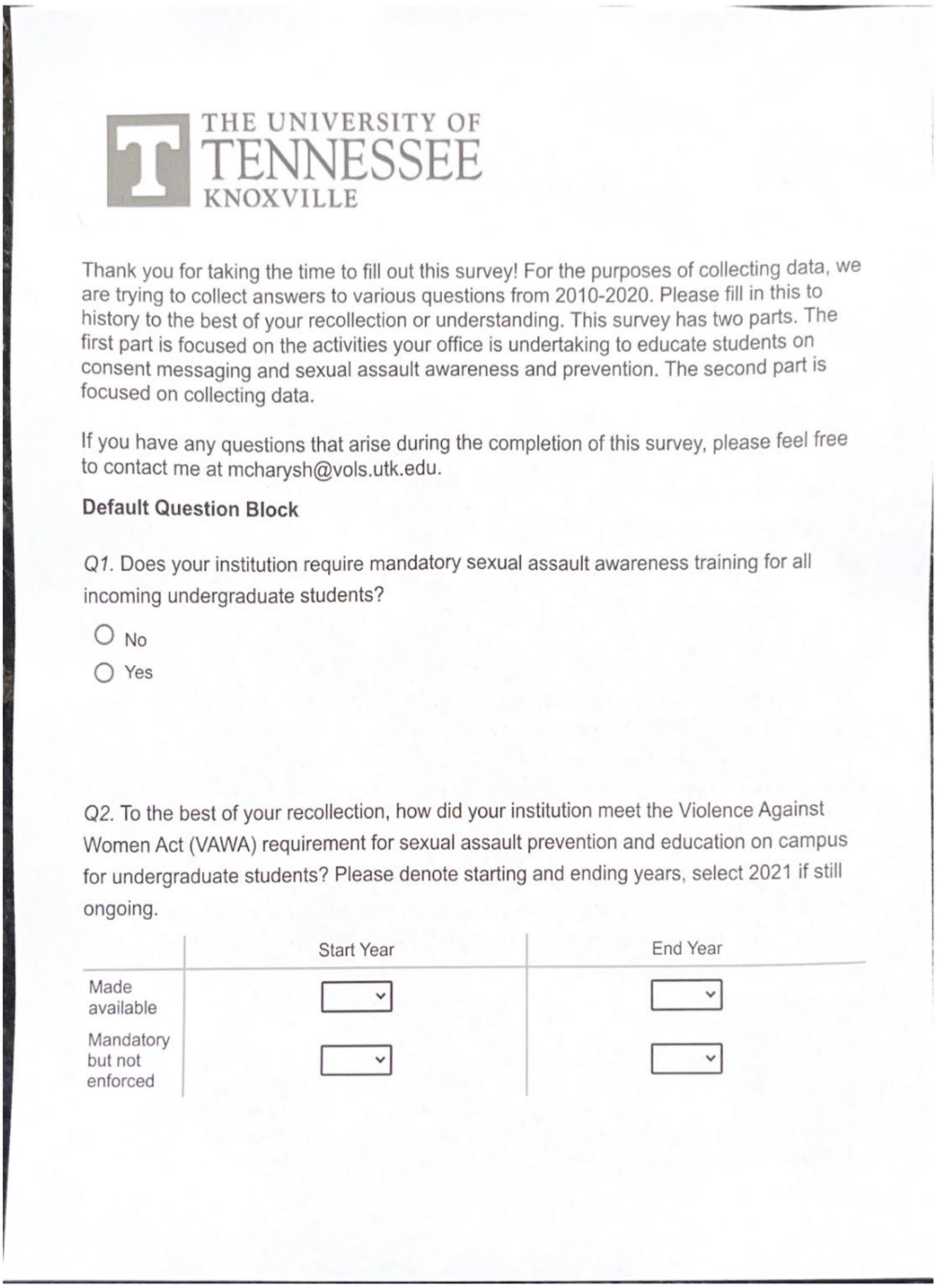
	Made Available	Mandatory Not Enforced	Mandatory and Enforced	Tuition	Financial Aid	Religious Affiliation	Public	Leader Change	City	Suburb	Town	Rural
Made Available	1.0000	.	.	.	.	.	.	.	.	.	.	.
Mandatory Not Enforced	.	1.0000	.	.	.	.	.	.	.	.	.	.
Mandatory and Enforced	.	.	1.0000	.	.	.	.	.	.	.	.	.
Tuition	-0.0586	-0.0217	0.2292	1.0000	.	.	.	.	.	.	.	.
Financial Aid	-0.0198	0.0685	-0.1033	-0.1370	1.0000	.	.	.	.	.	.	.
Religious Affiliation	-0.0285	-0.0318	0.0022	0.3858	0.2611	1.0000	.	.	.	.	.	.
Public	0.0368	0.0424	-0.0241	-0.7848	-0.0786	-0.6988	1.0000	.	.	.	.	.
Leader Change	-0.0049	0.0714	-0.0541	-0.0635	-0.0156	-0.0813	0.0757	1.0000	.	.	.	.
City	0.0681	-0.0237	-0.0316	0.0872	0.1782	0.0998	-0.0579	-0.0120	1.0000	.	.	.
Suburb	-0.0225	0.0087	0.0904	0.1729	-0.3630	-0.1334	-0.0414	0.0198	.	1.0000	.	.
Town	-0.0371	-0.0144	0.0030	-0.1846	0.0653	0.0529	0.0784	-0.0152	.	.	1.0000	.
Rural	-0.0441	0.0946	-0.0560	-0.0348	0.0688	-0.1422	0.0145	0.0405	.	.	.	1.0000
Acceptance Rate	0.1034	0.0204	-0.1007	-0.3858	0.4981	0.1562	0.1302	-0.0035	0.1450	-0.3599	0.0787	0.0336

Notes: Other risk factors include: full cost of tuition (in-state rates were used for public universities), the percentage of students receiving any type of financial aid, religious affiliation, public or private classification, acceptance rate, university leadership change, and degrees of urbanicity.

Table 14: Correlation Matrix for Supplemental Activities 2014-2020

	Campus Events	Campus Signage	Wallet Card	Social Media	Tuition	Financial Aid	Religious Affiliation	Public	Leader Change	City	Suburb	Town	Rural
Campus Events	1.0000	.	.	.	.	.	.	.	.	.	.	.	.
Campus Signage	0.7575	1.0000	.	.	.	.	.	.	.	.	.	.	.
Wallet Card	0.5366	0.5330	1.0000	.	.	.	.	.	.	.	.	.	.
Social Media	0.4233	0.4846	0.4474	1.0000	.	.	.	.	.	.	.	.	.
Tuition	-0.0185	0.1093	0.0483	-0.0207	1.0000	.	.	.	.	.	.	.	.
Financial Aid	0.0447	0.0341	0.0083	-0.0085	-0.1370	1.0000	.	.	.	.	.	.	.
Religious Affiliation	-0.1647	-0.0736	-0.1165	-0.1337	0.3858	0.2611	1.0000	.	.	.	.	.	.
Public	0.2054	0.0655	0.1584	0.1855	-0.7848	-0.0786	-0.6988	1.0000	.	.	.	.	.
Leader Change	0.0378	0.0428	0.0210	0.0559	-0.0635	-0.0156	-0.0813	0.0757	1.0000	.	.	.	.
City	0.0181	0.0611	0.0614	-0.0412	0.0872	0.1782	0.0998	-0.0579	-0.0120	1.0000	.	.	.
Suburb	-0.0492	-0.0641	-0.0070	0.1658	0.1729	-0.3630	-0.1334	-0.0414	0.0198	.	1.0000	.	.
Town	-0.0128	-0.0623	-0.0693	-0.1085	-0.1846	0.0653	0.0529	0.0784	-0.0152	.	.	1.0000	.
Rural	0.0961	0.1201	0.0293	0.1050	-0.0348	0.0688	-0.1422	0.0145	0.0405	.	.	.	1.0000
Acceptance Rate	0.1457	0.1343	-0.0378	0.0388	-0.3858	0.4981	0.1562	0.1302	-0.0035	0.1450	-0.3599	0.0787	0.0336

Notes: Other risk factors include: full cost of tuition (in-state rates were used for public universities), the percentage of students receiving any type of financial aid, religious affiliation, public or private classification, acceptance rate, university leadership change, and degrees of urbanicity.



THE UNIVERSITY OF TENNESSEE KNOXVILLE

Thank you for taking the time to fill out this survey! For the purposes of collecting data, we are trying to collect answers to various questions from 2010-2020. Please fill in this to history to the best of your recollection or understanding. This survey has two parts. The first part is focused on the activities your office is undertaking to educate students on consent messaging and sexual assault awareness and prevention. The second part is focused on collecting data.

If you have any questions that arise during the completion of this survey, please feel free to contact me at mcharysh@vols.utk.edu.

Default Question Block

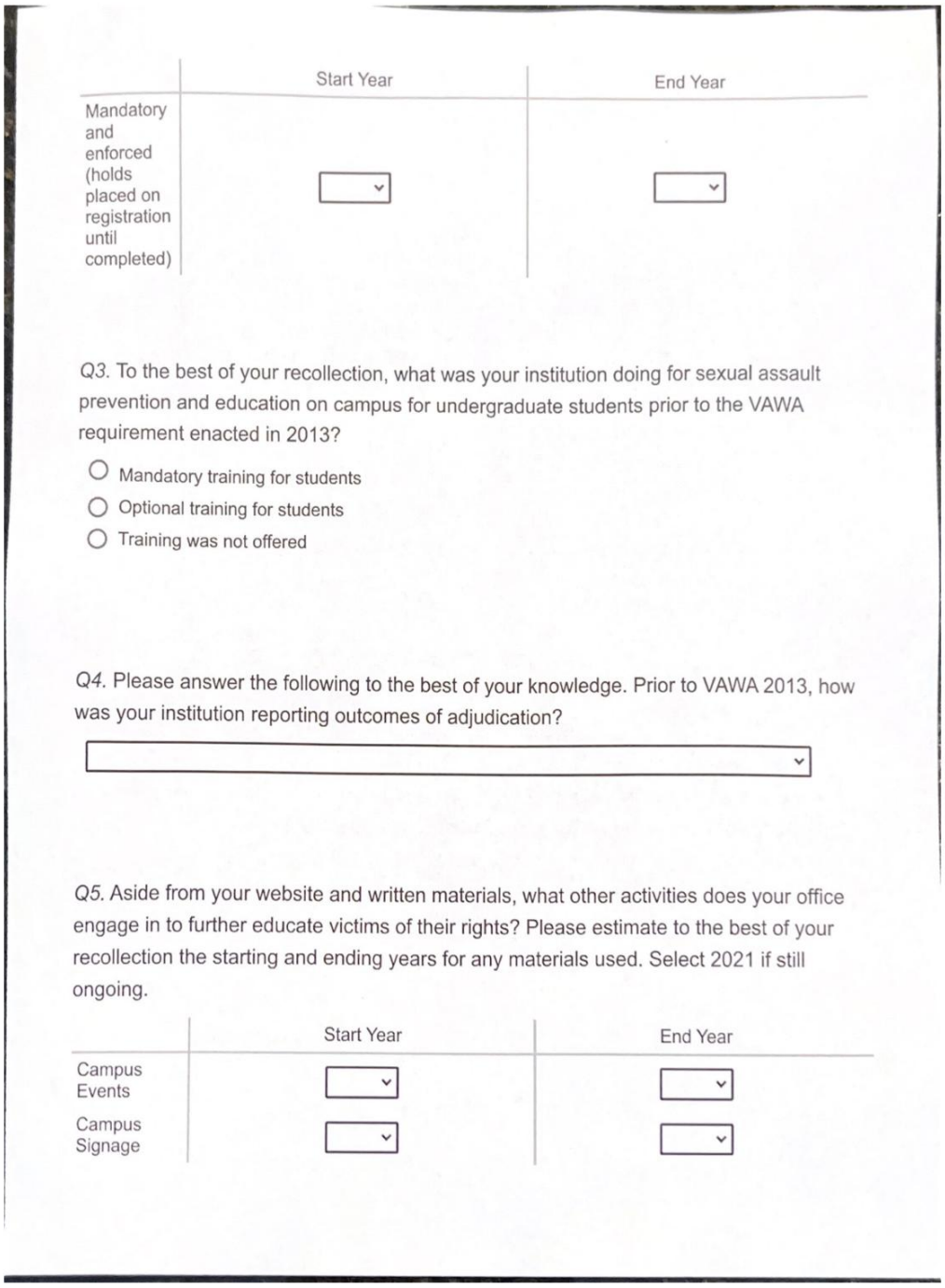
Q1. Does your institution require mandatory sexual assault awareness training for all incoming undergraduate students?

- ○ No
- ○ Yes

Q2. To the best of your recollection, how did your institution meet the Violence Against Women Act (VAWA) requirement for sexual assault prevention and education on campus for undergraduate students? Please denote starting and ending years, select 2021 if still ongoing.

	Start Year	End Year
Made available		
Mandatory but not enforced		

Figure 2: Copy of Survey - Page 1



	Start Year	End Year
Mandatory and enforced (holds placed on registration until completed)		

Q3. To the best of your recollection, what was your institution doing for sexual assault prevention and education on campus for undergraduate students prior to the VAWA requirement enacted in 2013?

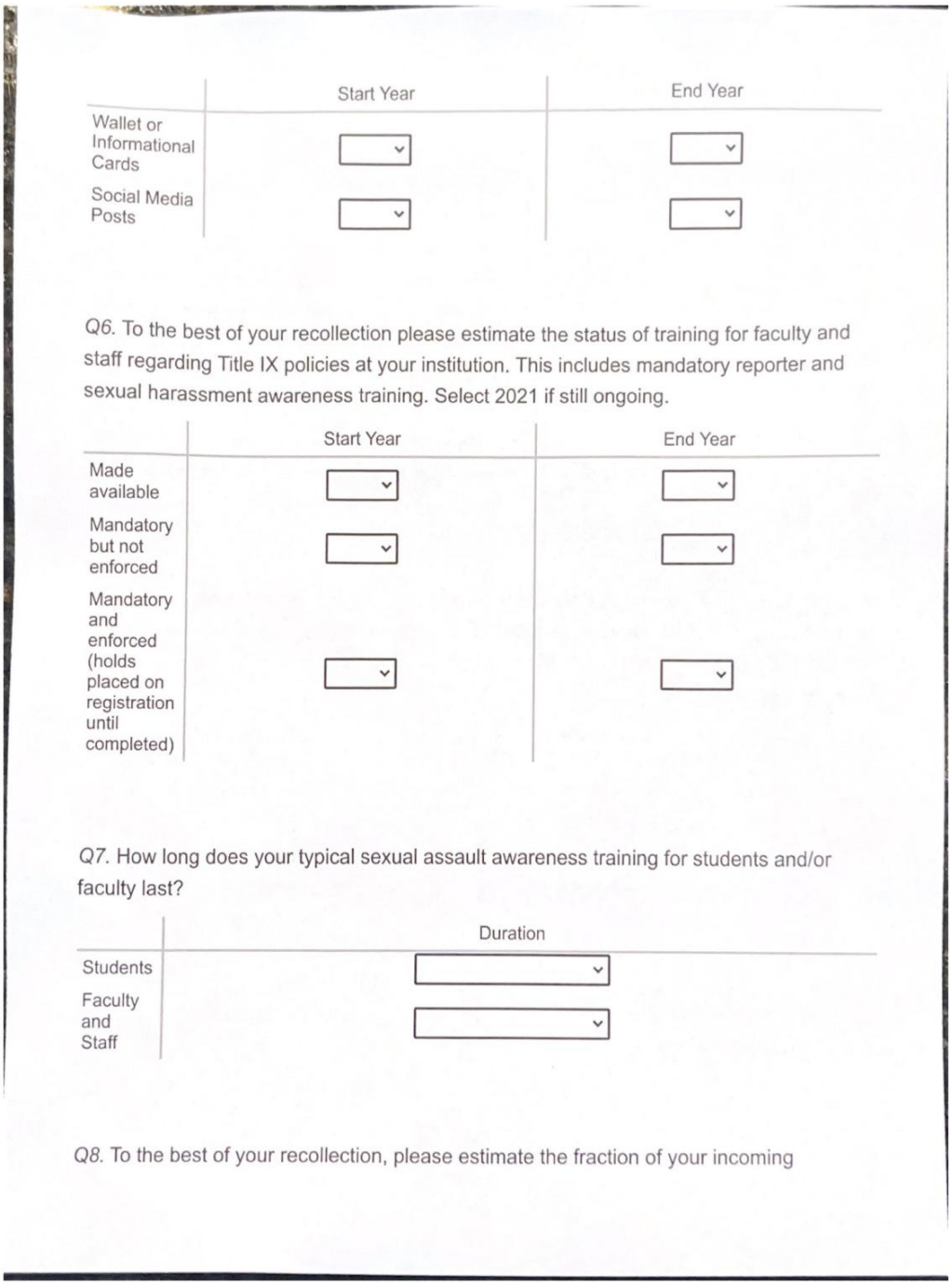
- ○ Mandatory training for students
- ○ Optional training for students
- ○ Training was not offered

Q4. Please answer the following to the best of your knowledge. Prior to VAWA 2013, how was your institution reporting outcomes of adjudication?

Q5. Aside from your website and written materials, what other activities does your office engage in to further educate victims of their rights? Please estimate to the best of your recollection the starting and ending years for any materials used. Select 2021 if still ongoing.

	Start Year	End Year
Campus Events		
Campus Signage		

Figure 3: Copy of Survey - Page 2



	Start Year	End Year
Wallet or Informational Cards		
Social Media Posts		

Q6. To the best of your recollection please estimate the status of training for faculty and staff regarding Title IX policies at your institution. This includes mandatory reporter and sexual harassment awareness training. Select 2021 if still ongoing.

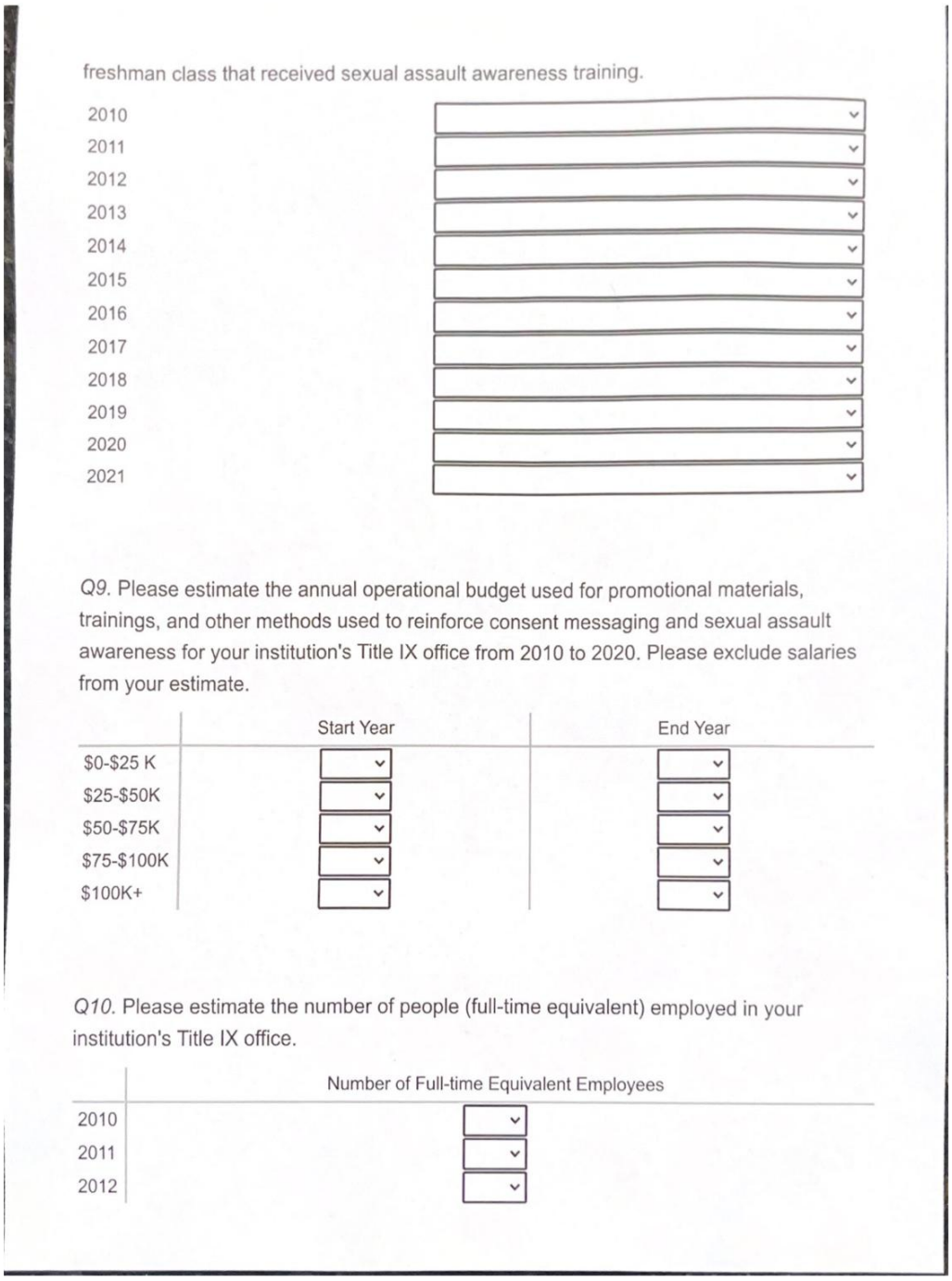
	Start Year	End Year
Made available		
Mandatory but not enforced		
Mandatory and enforced (holds placed on registration until completed)		

Q7. How long does your typical sexual assault awareness training for students and/or faculty last?

	Duration
Students	
Faculty and Staff	

Q8. To the best of your recollection, please estimate the fraction of your incoming

Figure 4: Copy of Survey - Page 3



freshman class that received sexual assault awareness training.

2010	
2011	
2012	
2013	
2014	
2015	
2016	
2017	
2018	
2019	
2020	
2021	

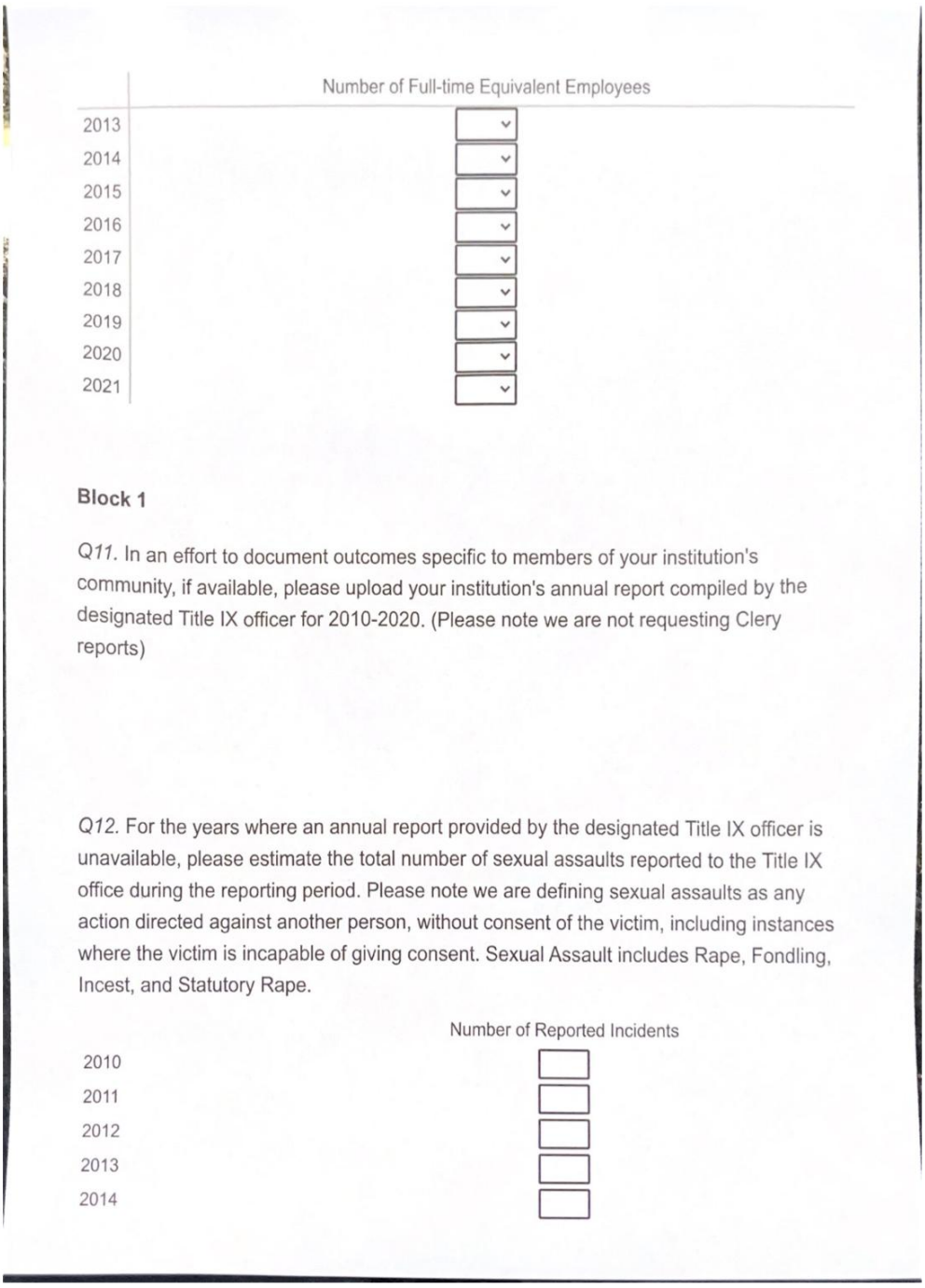
Q9. Please estimate the annual operational budget used for promotional materials, trainings, and other methods used to reinforce consent messaging and sexual assault awareness for your institution's Title IX office from 2010 to 2020. Please exclude salaries from your estimate.

	Start Year	End Year
$0-$25 K		
$25-$50K		
$50-$75K		
$75-$100K		
$100K+		

Q10. Please estimate the number of people (full-time equivalent) employed in your institution's Title IX office.

	Number of Full-time Equivalent Employees
2010	
2011	
2012	

Figure 5: Copy of Survey - Page 4



	Number of Full-time Equivalent Employees
2013	
2014	
2015	
2016	
2017	
2018	
2019	
2020	
2021	

Block 1

Q11. In an effort to document outcomes specific to members of your institution's community, if available, please upload your institution's annual report compiled by the designated Title IX officer for 2010-2020. (Please note we are not requesting Clery reports)

Q12. For the years where an annual report provided by the designated Title IX officer is unavailable, please estimate the total number of sexual assaults reported to the Title IX office during the reporting period. Please note we are defining sexual assaults as any action directed against another person, without consent of the victim, including instances where the victim is incapable of giving consent. Sexual Assault includes Rape, Fondling, Incest, and Statutory Rape.

	Number of Reported Incidents
2010	
2011	
2012	
2013	
2014	

Figure 6: Copy of Survey - Page 5

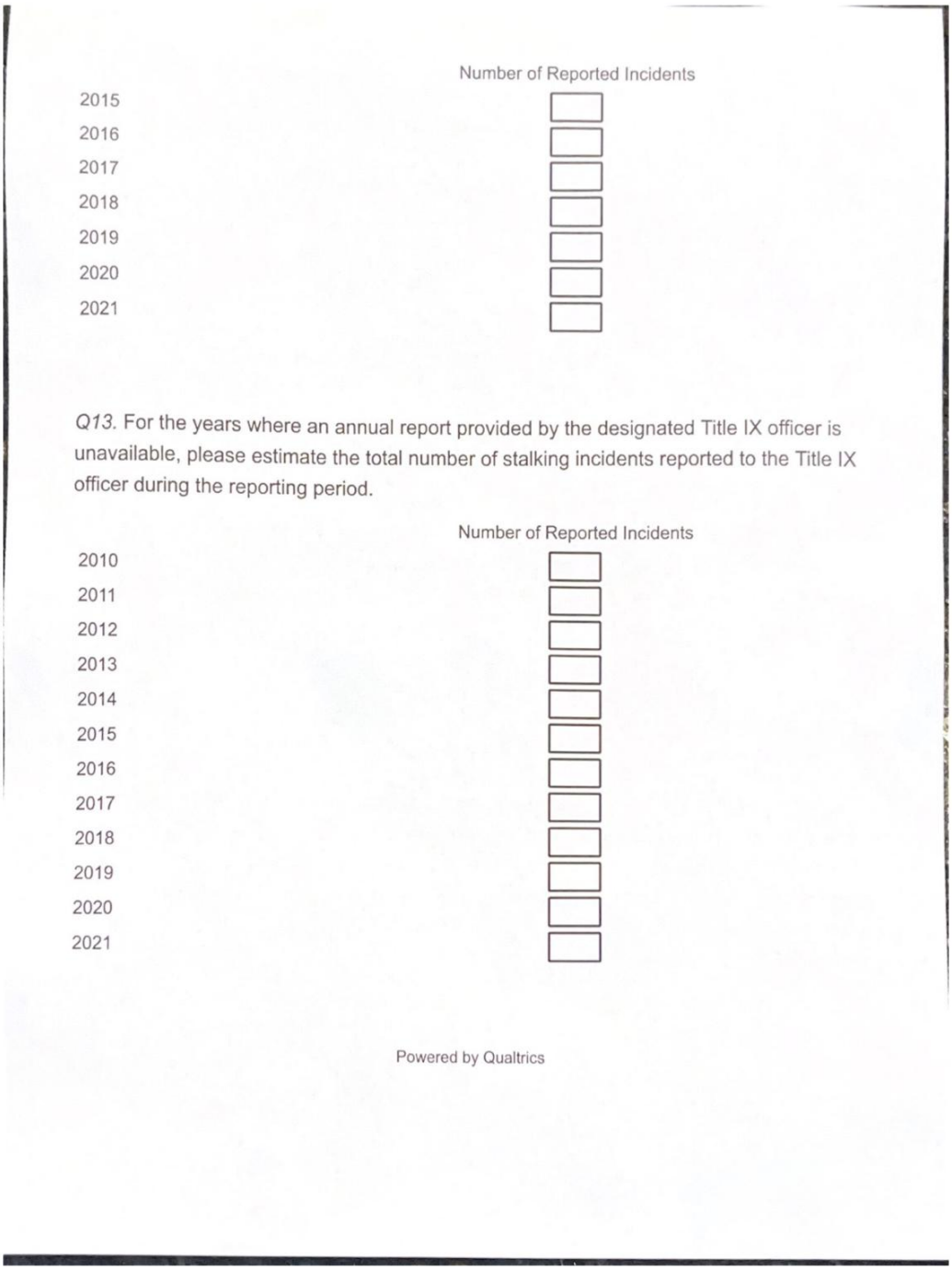


Figure 7: Copy of Survey - Page 6

Table 15: RD Estimates of the Effect Of Marginal Recruiting Star at Five Star Threshold on Athletic Outcomes

Bandwidth	Optimal	.0167	.015	.0125	.01	.0075	.005
Offers	.354	0.564	0.236	0.176	-0.262	-2.546	-4.379**
	(1.03)	(1.057)	(1.108)	(1.255)	(1.375)	(1.619)	(1.952)
Offers with Covariates	-.267	-0.142	-0.388	-0.303	-0.149	-1.002	-1.256
	(.679)	(0.7)	(0.753)	(0.833)	(0.915)	(1.08)	(1.254)
Drafted	-.097*	-0.105*	-0.080	-0.097	-0.173**	-0.131	-0.065
	(.059)	(0.059)	(0.064)	(0.070)	(0.077)	(0.089)	(0.109)
Drafted with Covariates	-.111*	-0.118**	-0.095	-0.110	-0.183**	-0.147	-0.049
	(.059)	(0.060)	(0.064)	(0.071)	(0.078)	(0.092)	(0.115)
All-American	-0.058	-0.065	-0.048	-0.030	-0.055	-0.036	-0.029
	(0.043)	(0.043)	(0.046)	(0.051)	(0.057)	(0.066)	(0.082)
All-American with Covariates	-.071	-0.078*	-0.063	-0.045	-0.070	-0.062	-0.038
	(0.044)	(0.044)	(0.047)	(0.053)	(0.060)	(0.068)	(0.085)
All-Conference	-0.041	-0.041	-0.048	-0.041	-0.068	-0.031	0.025
	(0.059)	(0.060)	(0.064)	(0.071)	(0.078)	(0.090)	(0.111)
All-Conference with Covariates	-0.052	-0.053	-0.062	-0.058	-0.088	-0.040	0.036
	(0.059)	(0.060)	(0.063)	(0.071)	(0.079)	(0.092)	(0.113)
N	1,127	1,097	990	833	687	495	318

Notes: Optimal bandwidth is asymmetrical and ranges from .018 to the left of the cutoff and .0167 to the right of the cutoff. Dependent variable is shown in first column. Covariates include year fixed effect, position group, height, and weight. Number of observations are shown for each bandwidth. Robust standard errors are shown in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 16: RD Estimates of the Effect of Marginal Recruiting Star at Four Star Threshold on Athetic Outcomes

Bandwidth	.07	.06	.05	.04	.03	Optimal	.02
Offers	-0.115	0.245	0.624*	0.371	0.184	1.032**	-0.074
	(0.313)	(0.328)	(0.357)	(0.399)	(0.456)	(0.509)	(0.540)
Offers with Covariates	-0.403	-0.302	-0.585**	-0.460	-0.287	0.273	0.174
	(0.253)	(0.262)	(0.284)	(0.316)	(0.359)	(0.404)	(0.423)
Drafted	0.008	0.004	0.005	0.008	0.019	0.025	0.055**
	(0.015)	(0.016)	(0.017)	(0.019)	(0.022)	(0.025)	(0.027)
Drafted with Covariates	0.009	0.004	0.006	0.005	0.016	0.026	0.051*
	(0.015)	(0.016)	(0.018)	(0.019)	(0.023)	(0.025)	(0.028)
All-American	0.001	-0.003	-0.002	0.007	0.009	0.002	0.021
	(0.008)	(0.009)	(0.010)	(0.010)	(0.012)	(0.013)	(0.014)
All-American with Covariates	0.001	-0.003	0.000	0.006	0.006	0.003	0.018
	(0.008)	(0.009)	(0.010)	(0.010)	(0.012)	(0.013)	(0.015)
All-Conference	0.002	-0.003	0.007	0.015	0.035	0.024	0.053*
	(0.016)	(0.017)	(0.019)	(0.020)	(0.024)	(0.026)	(0.029)
All-Conference with Covariates	0.000	-0.005	0.005	0.010	0.029	0.025	0.050*
	(0.016)	(0.017)	(0.019)	(0.021)	(0.024)	(0.026)	(0.029)
N	12,086	10,369	8,287	6,454	4,506	3,766	2,900

Notes: Optimal bandwidth is asymmetrical and ranges from .015 to the left of the cutoff and .059 to the right of the cutoff. Dependent variable is shown in first column. Covariates include year fixed effect, position group, height, and weight. Number of observations are shown for each bandwidth. Robust standard errors are shown in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 17: RD Estimates of the Effect of Marginal Recruiting Star at Three Star Threshold on Athletic Outcomes

Bandwidth	.04	.035	.03	.025	.02	Optimal	.015
Offers	-0.136	-0.073	-0.198	-0.115	-0.192	-0.217	-0.160
	(0.120)	(0.128)	(0.138)	(0.152)	(0.167)	(0.182)	(0.196)
Offers with Covariates	-0.013	0.027	-0.101	-0.076	-0.217	-0.263	-0.159
	(0.117)	(0.125)	(0.135)	(0.148)	(0.163)	(0.178)	(0.192)
Drafted	-0.007	-0.008	-0.014*	-0.010	-0.013	-0.012	-0.014
	(0.007)	(0.007)	(0.008)	(0.008)	(0.009)	(0.010)	(0.011)
Drafted with Covariates	-0.006	-0.007	-0.012	-0.009	-0.013	-0.013	-0.013
	(0.007)	(0.007)	(0.008)	(0.008)	(0.010)	(0.010)	(0.011)
All-American	-0.001	0.002	0.000	-0.000	-0.001	-0.001	-0.004
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.005)	(0.005)
All-American with Covariates	0.104	-0.014	0.048	0.220	0.342	-0.000	-0.276
	(0.138)	(0.155)	(0.196)	(0.280)	(0.404)	(0.005)	(0.559)
All-Conference	-0.008	-0.012	-0.013	-0.005	-0.012	-0.018	-0.029
	(0.011)	(0.012)	(0.013)	(0.014)	(0.016)	(0.017)	(0.018)
All-Conference with Covariates	-0.008	-0.011	-0.011	-0.004	-0.009	-0.015	-0.026
	(0.011)	(0.012)	(0.013)	(0.014)	(0.016)	(0.017)	(0.018)
N	10,872	9,624	8,413	7,028	5,717	4,963	4,149

Notes: Optimal bandwidth is asymmetrical and ranges from .019 to the left of the cutoff and .015 to the right of the cutoff. Dependent variable is shown in first column. Covariates include year fixed effect, position group, height, and weight. Number of observations are shown for each bandwidth. Robust standard errors are shown in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 18: RD Estimates of the Effect of Marginal Recruiting Star at Five Star Threshold on Academic Outcomes

Bandwidth	Optimal	.0167	.015	.0125	.01	.0075	.005
Graduation Rate	-0.006	-0.005	-0.001	0.005	-0.005	-0.022	-0.04
	(0.017)	(0.017)	(0.018)	(0.020)	(0.022)	(0.025)	(0.031)
Graduation Rate with Covariates	-0.003	-0.003	0.002	0.008	0.006	-0.007	-0.02
	(0.016)	(0.017)	(0.018)	(0.020)	(0.022)	(0.024)	(0.032)
N	1,112	1,082	977	820	677	487	314
R1 Enrollment	0.008	0.003	0.021	0.020	0.029	0.017	-0.066
	(0.044)	(0.045)	(0.047)	(0.053)	(0.057)	(0.065)	(0.077)
R1 Enrollment with Covariates	0.007	0.002	0.022	0.019	0.019	0.001	-0.115
	(0.044)	(0.045)	(0.047)	(0.053)	(0.058)	(0.066)	(0.08)
R2 Enrollment	-0.000	0.005	-0.012	-0.012	-0.022	-0.015	0.073
	(0.044)	(0.045)	(0.047)	(0.052)	(0.057)	(0.064)	(0.077)
R2 Enrollment with Covariates	0.001	0.005	-0.014	-0.011	-0.012	0.002	0.126
	(0.044)	(0.044)	(0.046)	(0.052)	(0.057)	(0.065)	(0.079)
N	1,127	1,097	990	833	690	500	318

Notes: Optimal bandwidth is asymmetrical and ranges from .018 to the left of the cutoff and .0167 to the right of the cutoff. Dependent variable is shown in first column with graduation rate logged. Covariates include year fixed effect, position group, height, and weight. Number of observations are shown for each bandwidth. Robust standard errors are shown in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 19: RD Estimates of the Effect of Marginal Recruiting Star at Four Star Threshold on Academic Outcomes

Bandwidth	.07	.06	.05	.04	.03	Optimal	.02
Graduation Rate	-0.003	-0.000	0.008	0.010	0.002	0.023**	0.006
	(0.007)	(0.007)	(0.008)	(0.009)	(0.010)	(0.011)	(0.012)
Graduation Rate with Covariates	-0.004	-0.005	-0.002	0.003	-0.002	0.017	0.007
	(0.007)	(0.007)	(0.008)	(0.009)	(0.010)	(0.011)	(0.012)
N	11,331	9,828	7,935	6,217	4,368	3,656	2,817
R1 Enrollment	-0.042**	-0.030	-0.014	-0.017	-0.009	0.035	-0.013
	(0.018)	(0.019)	(0.021)	(0.023)	(0.027)	(0.030)	(0.032)
R1 Enrollment with Covariates	-0.042**	-0.026	-0.015	-0.022	-0.016	0.032	-0.012
	(0.018)	(0.019)	(0.021)	(0.023)	(0.027)	(0.030)	(0.032)
R2 Enrollment	0.020	0.009	0.002	0.011	0.002	-0.041	0.003
	(0.017)	(0.018)	(0.020)	(0.022)	(0.025)	(0.029)	(0.031)
R2 Enrollment with Covariates	0.023	0.010	0.010	0.021	0.010	-0.037	0.002
	(0.017)	(0.018)	(0.020)	(0.022)	(0.026)	(0.029)	(0.031)
N	11,913	10,273	8,239	6,426	4,493	3,762	1,316

Notes: Optimal bandwidth is asymmetrical and ranges from .015 to the left of the cutoff and .059 to the right of the cutoff. Dependent variable is shown in first column with graduation rate logged. Covariates include year fixed effect, position group, height, and weight. Number of observations are shown for each bandwidth. Robust standard errors are shown in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 20: RD Estimates of the Effect of Marginal Recruiting Star at Three Star Threshold on Academic Outcomes

Bandwidth	.04	.035	.03	.025	.02	Optimal	.015
Graduation Rate	0.017	0.009	0.009	0.007	0.006	0.015	0.012
	(0.011)	(0.011)	(0.012)	(0.013)	(0.015)	(0.016)	(0.017)
Graduation Rate with Covariates	0.021**	0.014	0.014	0.012	0.013	0.021	0.016
	(0.010)	(0.011)	(0.012)	(0.013)	(0.015)	(.016)	(0.017)
N	8,738	7,592	6,561	5,499	4,433	3,781	3,260
R1 Enrollment	0.039**	0.035*	0.035	0.036	0.032	0.031	0.041
	(0.018)	(0.020)	(0.022)	(0.024)	(0.027)	(0.029)	(0.032)
R1 Enrollment with Covariates	0.036**	0.037*	0.039*	0.042*	0.043*	0.039	0.045
	(0.018)	(0.020)	(0.021)	(0.023)	(0.026)	(0.028)	(0.031)
R2 Enrollment	-0.004	0.000	-0.019	-0.017	-0.045*	-0.053*	-0.025
	(0.019)	(0.021)	(0.022)	(0.024)	(0.027)	(0.029)	(0.032)
R2 Enrollment with Covariates	-0.004	-0.001	-0.023	-0.021	-0.049*	-0.055*	-0.024
	(0.019)	(0.021)	(0.022)	(0.024)	(0.027)	(0.029)	(0.032)
N	10,167	8,832	7,694	6,432	5,220	4,503	3,792

Notes: Optimal bandwidth is asymmetrical and ranges from .019 to the left of the cutoff and .015 to the right of the cutoff. Dependent variable is shown in first column with graduation rate logged. Covariates include year fixed effect, position group, height, and weight. Number of observations are shown for each bandwidth. Robust standard errors are shown in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 21: RD Estimates for Offer Probability at Five Star Threshold

Bandwidth	Optimal	.0167	.015	.0125	.01	.0075	.005
All	0.006**	0.009***	0.006**	0.006**	-0.003	-0.017***	-0.034***
[0.071]	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.005)
N	148,354	144,447	131,449	111,650	93,234	67,374	42,517
1-3 Years	0.007*	0.009**	0.005	0.004	-0.005	-0.019***	-0.031***
[0.065]	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.006)	(0.007)
N	72,803	70,864	64,438	54,803	45,670	32,904	20,683
4-6 Years	0.011**	0.014***	0.012**	0.011*	0.003	-0.013*	-0.031***
[0.073]	(0.005)	(0.005)	(0.005)	(0.006)	(0.007)	(0.008)	(0.01)
N	39,753	38,695	35,210	29,853	24,995	18,103	11,483
7+ Years	0.001	0.003	0.001	0.005	-0.006	-0.016*	-0.042***
[0.08]	(0.006)	(0.006)	(0.006)	(0.007)	(0.008)	(0.009)	(0.011)
N	35,798	34,888	31,801	26,994	22,569	16,367	10,351

Notes: Optimal bandwidth is asymmetrical and ranges from .018 to the left of the cutoff and .0167 to the right of the cutoff. Control mean values for the dependent variable (offer) are shown in square brackets. The sample is defined by coach tenure level shown in years. Number of observations are shown for each bandwidth and tenure level. Robust standard errors are shown in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 22: RD Estimates for Offer Probability at Four Star Threshold

Bandwidth	.07	.06	.05	.04	.03	Optimal	.02
All	-0.003***	-0.003***	-0.001	-0.003***	-0.005***	0.001	-0.003**
[0.057]	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
N	2,217,169	1,982,348	1,477,466	1,163,316	780,323	607,609	499,576
1-3 Years	-0.003**	-0.002*	0.001	-0.000	-0.003*	0.002	-0.002
[0.057]	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)
N	1,113,441	992,433	745,144	585,102	393,249	304,282	250,470
4-6 Years	-0.006***	-0.005***	-0.003**	-0.006***	-0.008***	-0.000	-0.004
[0.057]	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
N	588,218	525,992	390,135	307,031	205,869	160,851	131,801
7+ Years	-0.003*	-0.002	-0.002	-0.005**	-0.008***	0.000	-0.003
[0.056]	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
N	515,510	463,923	342,187	271,183	181,205	142,476	117,305

Notes: Optimal bandwidth is asymmetrical and ranges from .015 to the left of the cutoff and .059 to the right of the cutoff. Control mean values for the dependent variable (offer) are shown in square brackets. The sample is defined by coach tenure level shown in years. Number of observations are shown for each bandwidth and tenure level. Robust standard errors are shown in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 23: RD Estimates for Offer Probability at Three Star Threshold

Bandwidth	.04	.035	.03	.025	.02	Optimal	.015
All	-0.000	-0.001***	-0.002***	-0.001***	-0.001*	-0.001	-0.002**
[.022]	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
N	2,598,403	2,193,317	1,388,830	1,212,778	1,040,900	936,791	841,686
1-3 years	-0.000	-0.002***	-0.003***	-0.003***	-0.002**	-0.002**	-0.003**
[0.024]	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
N	1,291,420	1,093,832	706,675	615,399	525,756	471,599	422,246
4-6 Years	0.000	-0.001	-0.001	-0.001	-0.001	0.000	-0.001
[0.021]	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
N	700,823	591,413	369,765	322,876	277838	250,770	225,188
7+ Years	0.000	0.001	0.000	0.000	0.000	0.000	-0.000
[0.018]	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
N	606,160	508,072	312,390	274,503	237,306	214,422	194,252

Notes: Optimal bandwidth is asymmetrical and ranges from .019 to the left of the cutoff and .015 to the right of the cutoff. Control mean values for the dependent variable (offer) are shown in square brackets. The sample is defined by coach tenure level shown in years. Number of observations are shown for each bandwidth and tenure level. Robust standard errors are shown in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 24: RD Estimates for Height and Weight

Outcome	(1) Five Star	(2) Four Star	(3) Three Star
Height	0.058	0.141	-0.08
	(0.304)	(0.183)	(0.156)
Weight	5.684	3.825	0.476
	(5.323)	(3.163)	(2.554)
N	1,127	3,764	4,956

Notes: RD estimates are shown for each cutoff with height and weight as the dependent variables. Height is measured in inches while weight is measured in pounds. Optimal asymmetric bandwidths for each threshold were used. Number of observations are shown for each bandwidth by threshold. Robust standard errors are shown in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 25: Quadratic Polynomial RD Estimates for Athletic Outcomes

	Five Star			Four Star			Three Star		
Outcome	Most Flexible	Flexible	Least Flexible	Most Flexible	Flexible	Least Flexible	Most Flexible	Flexible	Least Flexible
Offers	-0.856*	0.399	0.356	1.086	0.567	0.309	-0.615**	-0.241	-0.229
	(0.479)	(1.067)	(1.036)	(0.767)	(0.556)	(0.553)	(0.278)	(0.191)	(0.187)
Offers with covariates	-0.614	-0.246	-0.278	0.465	0.112	-0.003	-0.676**	-0.254	-0.265
	(0.514)	(0.702)	(0.682)	(0.622)	(0.437)	(0.429)	(0.270)	(0.186)	(0.182)
Drafted	-0.112	-0.104*	-0.101*	0.011	0.045	0.047*	-0.029*	-0.014	-0.013
	(0.089)	(0.059)	(0.059)	(0.040)	(0.028)	(0.028)	(0.016)	(0.011)	(0.010)
Drafted with covariates	-0.118	-0.116*	-0.114*	0.011	0.044	0.045	-0.027	-0.014	-0.013
	(0.089)	(0.059)	(0.059)	(0.040)	(0.028)	(0.028)	(0.017)	(0.011)	(0.010)
All-American	-0.019	-0.064	-0.062	0.035**	0.018	0.023	-0.010	-0.002	-0.001
	(0.067)	(0.044)	(0.043)	(0.017)	(0.014)	(0.015)	(0.007)	(0.005)	(0.005)
All-American with covariates	-0.032	-0.078*	-0.075*	0.035**	0.016	0.020	-0.010	-0.254	-0.265
	(0.068)	(0.045)	(0.044)	(0.018)	(0.014)	(0.015)	(0.007)	(0.186)	(0.182)
All-Conference	-0.037	-0.058	-0.044	0.074*	0.064**	0.071**	-0.060**	-0.002	-0.001
	(0.090)	(0.059)	(0.060)	(0.040)	(0.029)	(0.029)	(0.028)	(0.005)	(0.005)
All-Conference with covariates	-0.051	-0.069	-0.055	0.070*	0.062**	0.067**	-0.054**	-0.001	-0.001
	(0.089)	(0.059)	(0.059)	(0.040)	(0.029)	(0.029)	(0.028)	(0.005)	(0.005)
N		1,127			3,766			4,963	

Notes: Quadratic polynomial estimates with athletic outcomes as the dependent variable are shown for three specifications separately by thresholds. Most flexible specification adds interaction terms to both sides of the cutoff along with the running variable squared. Flexible specification includes interaction term to the left of the cutoff along with the running variable squared. Least flexible specification only includes the running variable squared. Asymmetric optimal bandwidths were used for each cutoff. Graduation rate is logged. Number of observations are shown for each bandwidth. Robust standard errors are shown in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 26: Quadratic Polynomial RD Estimates for Academic Outcomes

	Five Star			Four Star			Three Star		
Outcome	Most Flexible	Flexible	Least Flexible	Most Flexible	Flexible	Least Flexible	Most Flexible	Flexible	Least Flexible
Graduation Rate	-0.010	-0.005	-0.006	0.022	0.025**	0.023*	0.011	0.012	0.015
	(0.025)	(0.017)	(0.017)	(0.017)	(0.012)	(0.012)	(0.025)	(0.017)	(0.016)
Graduation Rate with covariates	-0.003	-0.003	-0.003	0.017	0.02*	0.018	0.006	0.017	0.02
	(0.025)	(0.017)	(0.016)	(0.016)	(0.012)	(0.012)	(0.025)	(0.016)	(0.016)
N		1,112			3,656			3,781	
R1 Enrollment	0.006	0.007	0.007	-0.063	0.017	0.002	0.036	0.026	0.03
	(0.064)	(0.045)	(0.045)	(0.046)	(0.033)	(0.032)	(0.047)	(0.03)	(0.03)
R1 Enrollment with covariates	-0.001	0.006	0.006	-0.062	0.014	0.001	0.043	0.034	0.039
	(0.064)	(0.045)	(0.044)	(0.046)	(0.033)	(0.032)	(0.045)	(0.03)	(0.029)
R2 Enrollment	0.000	0.001	0.001	0.063	-0.024	-0.006	-0.058	-0.04	-0.049*
	(0.064)	(0.045)	(0.044)	(0.044)	(0.031)	(0.031)	(0.047)	(0.03)	(0.03)
R2 Enrollment with covariates	0.007	0.001	0.002	0.062	-0.021	-0.007	-0.041	-0.04	-0.05*
	(0.063)	(0.044)	(0.044)	(0.044)	(0.031)	(0.031)	(0.047)	(0.03)	(0.03)
N		1,127			3,762			4,503	

Notes: Quadratic polynomial estimates with graduation rate and R1/R2 enrollment as the dependent variable are shown for three specifications separately by thresholds. Most flexible specification adds interaction terms to both sides of the cutoff along with the running variable squared. Flexible specification includes interaction term to the left of the cutoff along with the running variable squared. Least flexible specification only includes the running variable squared. Asymmetric optimal bandwidths were used for each cutoff. Graduation rate is logged. Number of observations are shown for each bandwidth. Robust standard errors are shown in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 27: Quadratic Polynomial RD Estimates for Offer Probability

	Five Star			Four Star			Three Star		
Tenure	Most Flexible	Flexible	Least Flexible	Most Flexible	Flexible	Least Flexible	Most Flexible	Flexible	Least Flexible
All	.002	.006**	.007**	-0.003**	-0.003*	-0.002	-.004**	-0.001	-0.001
	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
N		148,354			607,609			936,791	
1-3 Years	-0.003	0.007*	0.007**	-0.002	-0.001	-0.000	-0.007**	-0.002**	-0.002**
	(0.005)	(0.004)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
N		72,803			304,282			471,559	
4-6 Years	0.008	0.011**	.012**	-0.004	-0.004*	-0.004	-0.002	-0.000	0.000
	(0.007)	(0.005)	(0.005)	(0.003)	(0.003)	(0.003)	(0.002)	(0.001)	(0.001)
N		39,753			160,851			250,770	
7+ Years	0.005	0.001	0.001	-0.005	-0.004	-0.003	0.002	0.000	0.000
	(0.007)	(0.006)	(0.006)	(0.003)	(0.003)	(0.003)	(0.002)	(0.001)	(0.001)
N		35,798			142,476			214,422	

Notes: Quadratic polynomial estimates with offer as the dependent variable are shown for three specifications separately by thresholds. Most flexible specification adds interaction terms to both sides of the cutoff along with the running variable squared. Flexible specification includes interaction term to the left of the cutoff along with the running variable squared. Least flexible specification only includes the running variable squared. Asymmetric optimal bandwidths were used for each cutoff. The sample is defined by coach tenure level shown in years. Number of observations are shown for each bandwidth and tenure level. Robust standard errors are shown in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

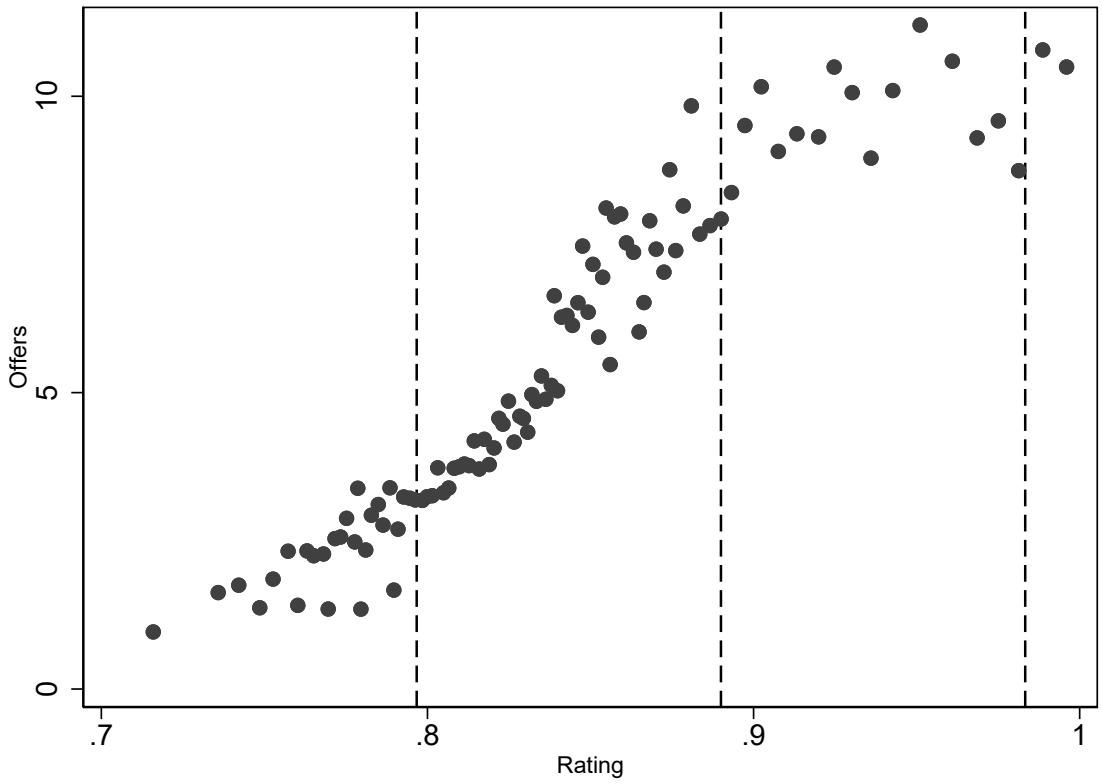


Figure 8: Average Scholarship Offers by Rating

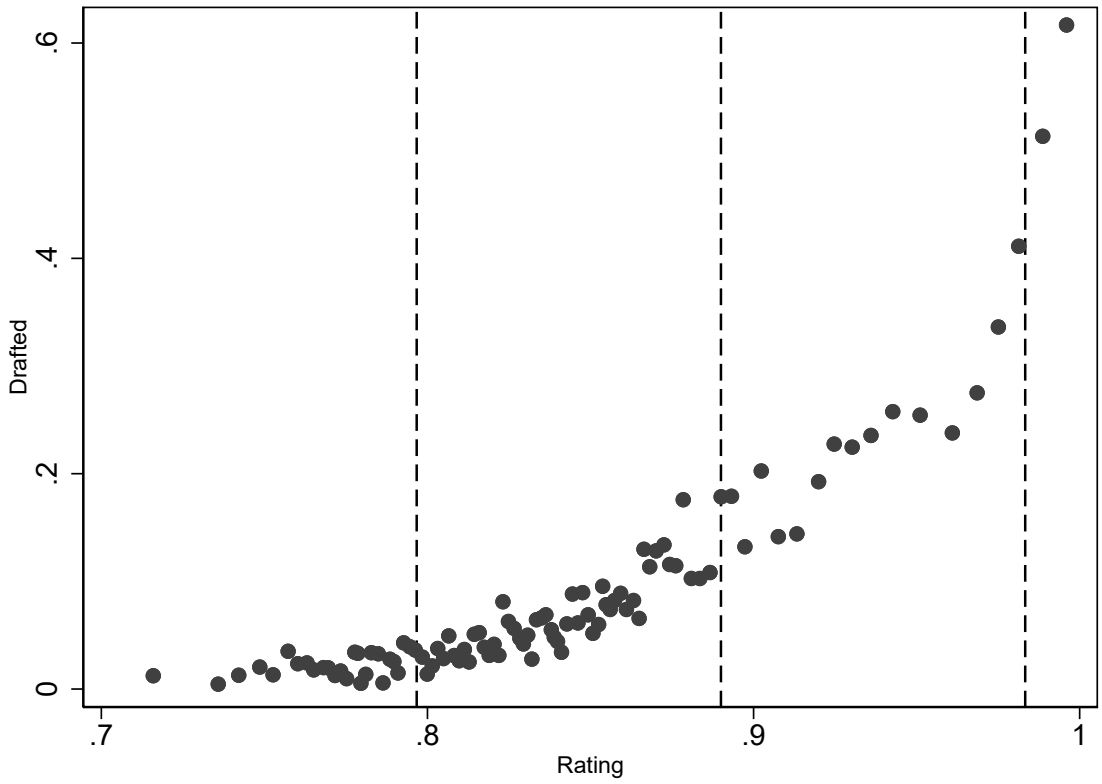


Figure 9: Average Draft Selection by Rating

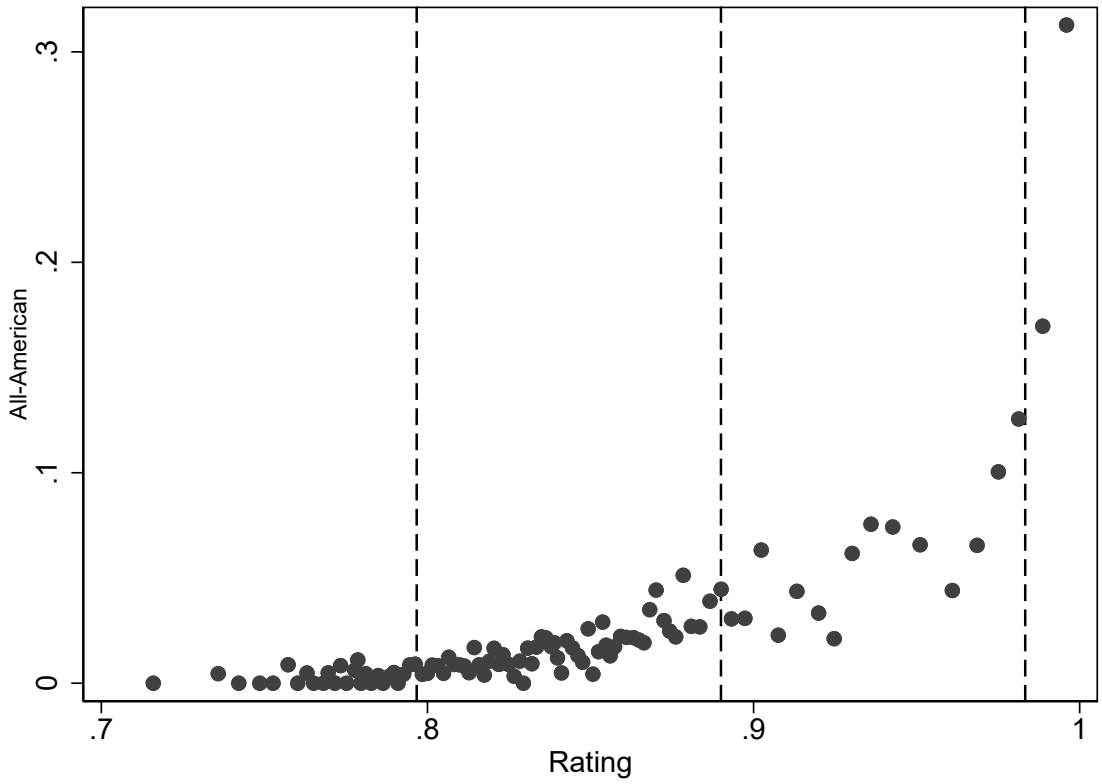


Figure 10: Average All-American Selection by Rating

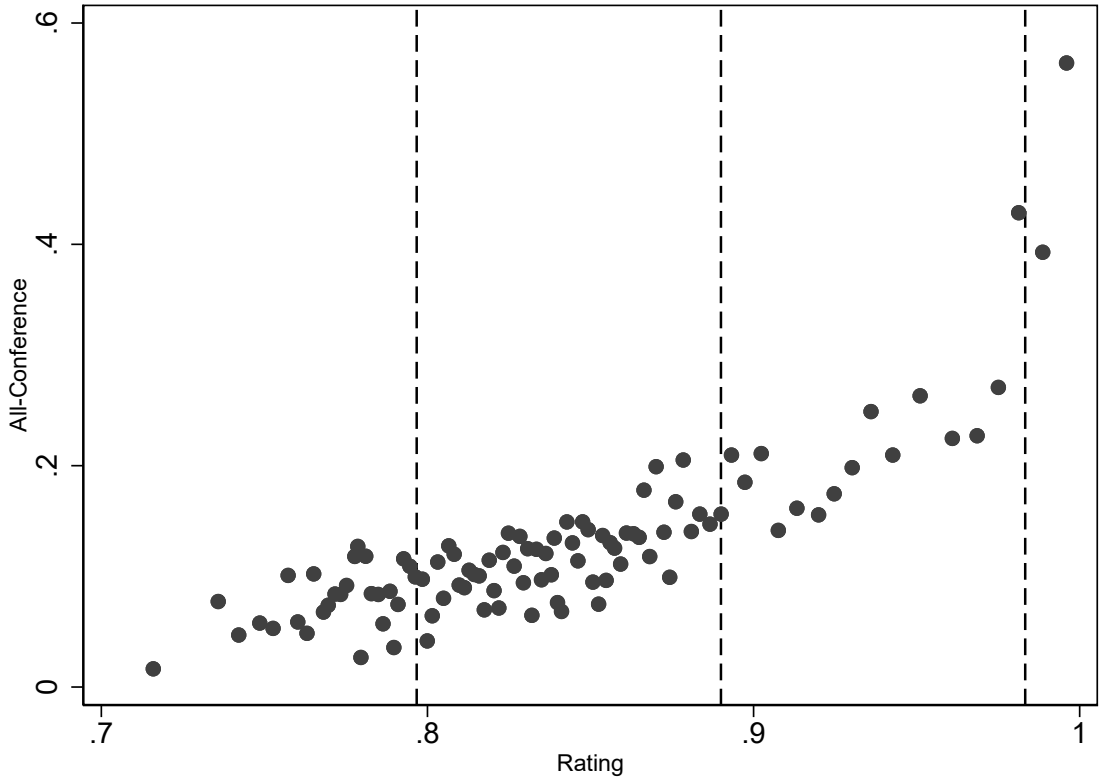


Figure 11: Average All-Conference Selection by Rating

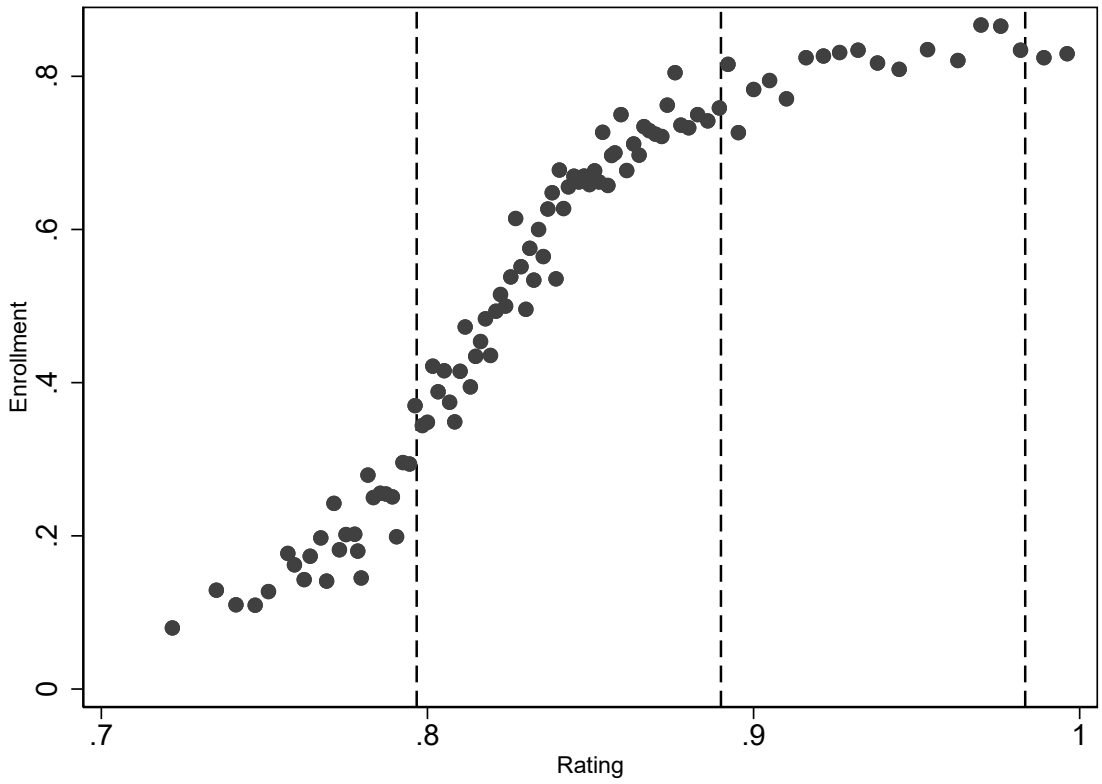


Figure 12: Average R1 Enrollment by Rating

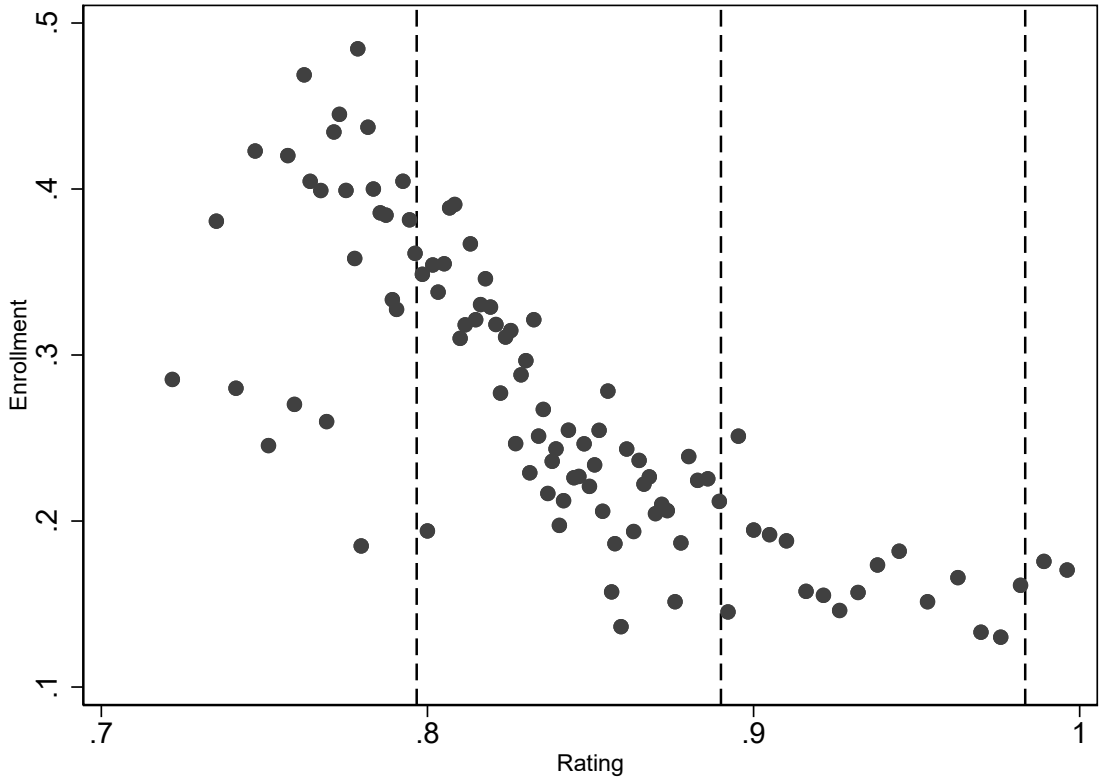


Figure 13: Average R2 Enrollment by Rating

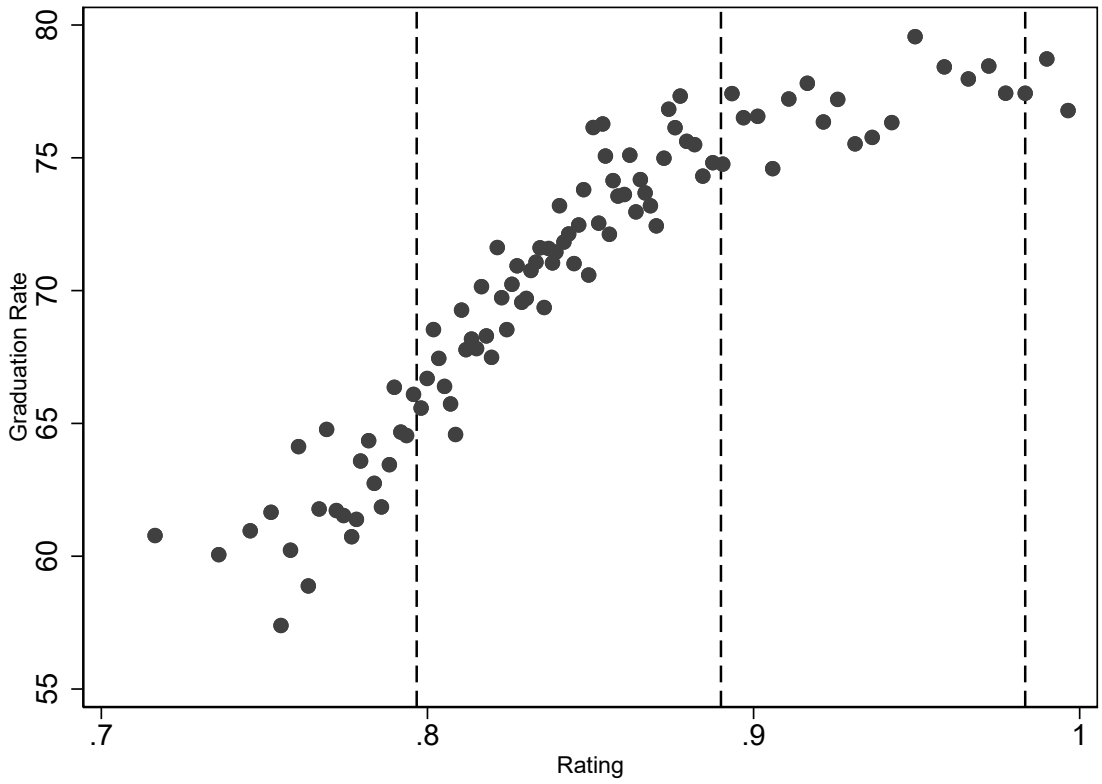


Figure 14: Average Graduation Rate by Rating

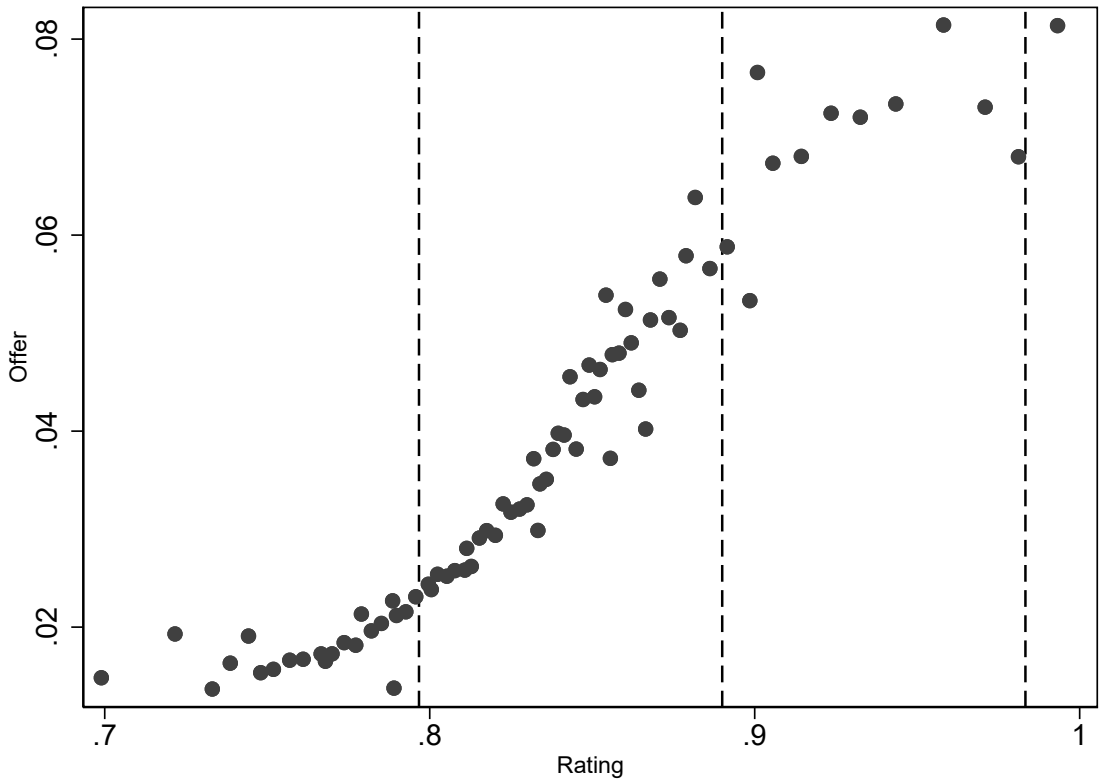
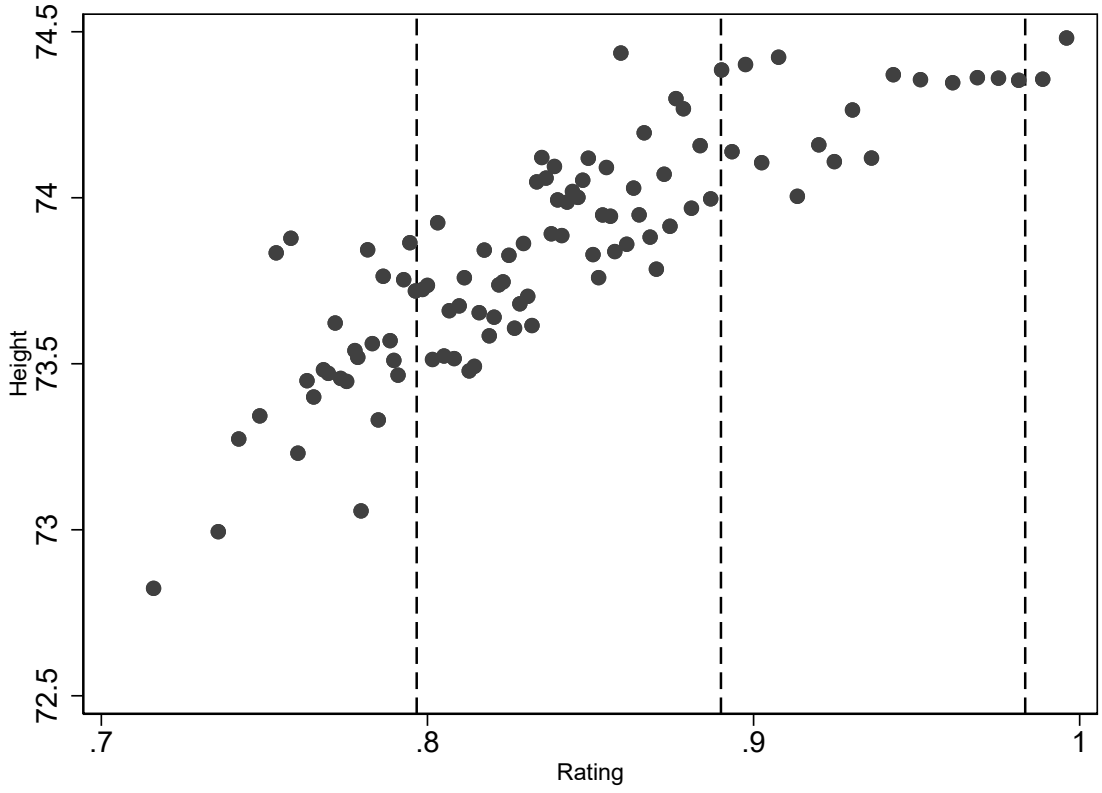
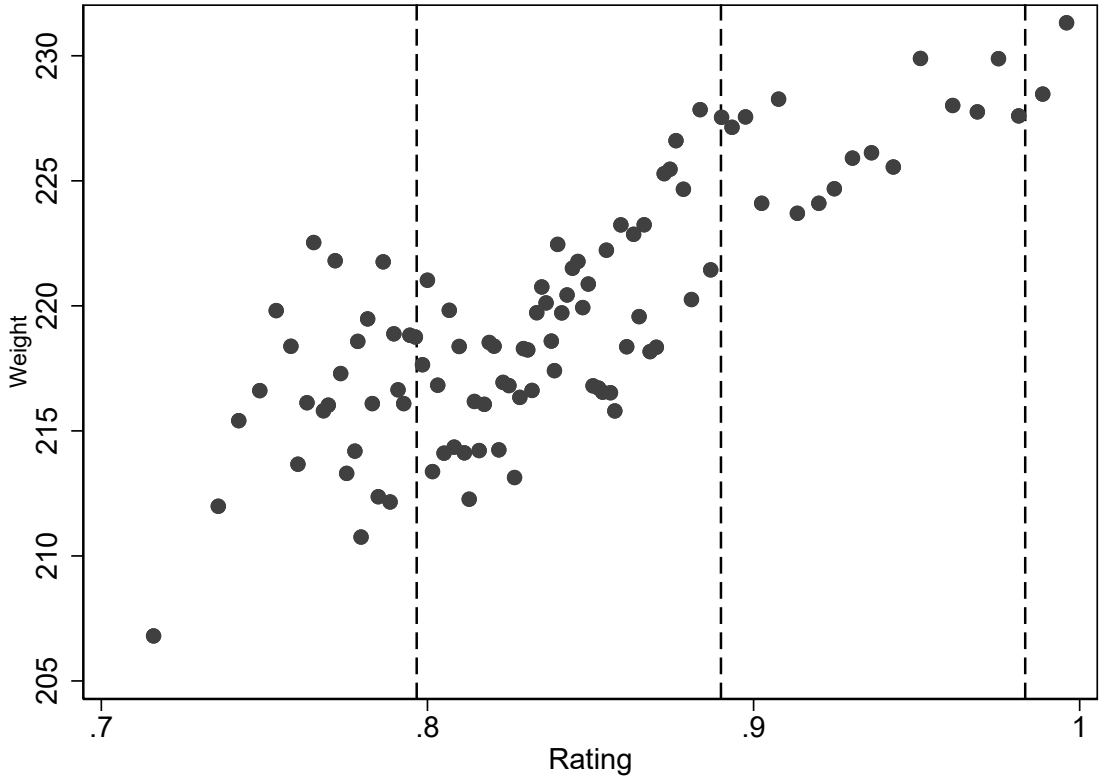


Figure 15: Average Offer Probability by Rating



(a) Height

Figure 16: Average Height (Inches) by Rating



(a) Weight

Figure 17: Average Weight (Pounds) by Rating

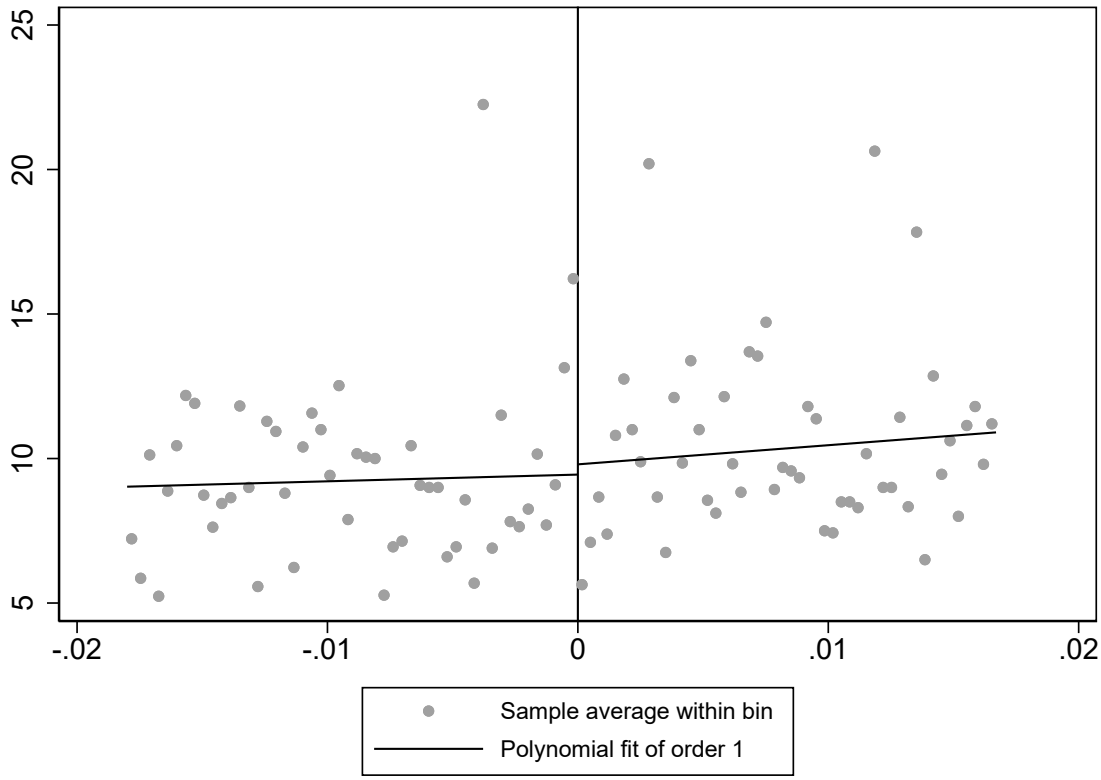


Figure 18: Average Scholarship Offers at Five Star Threshold

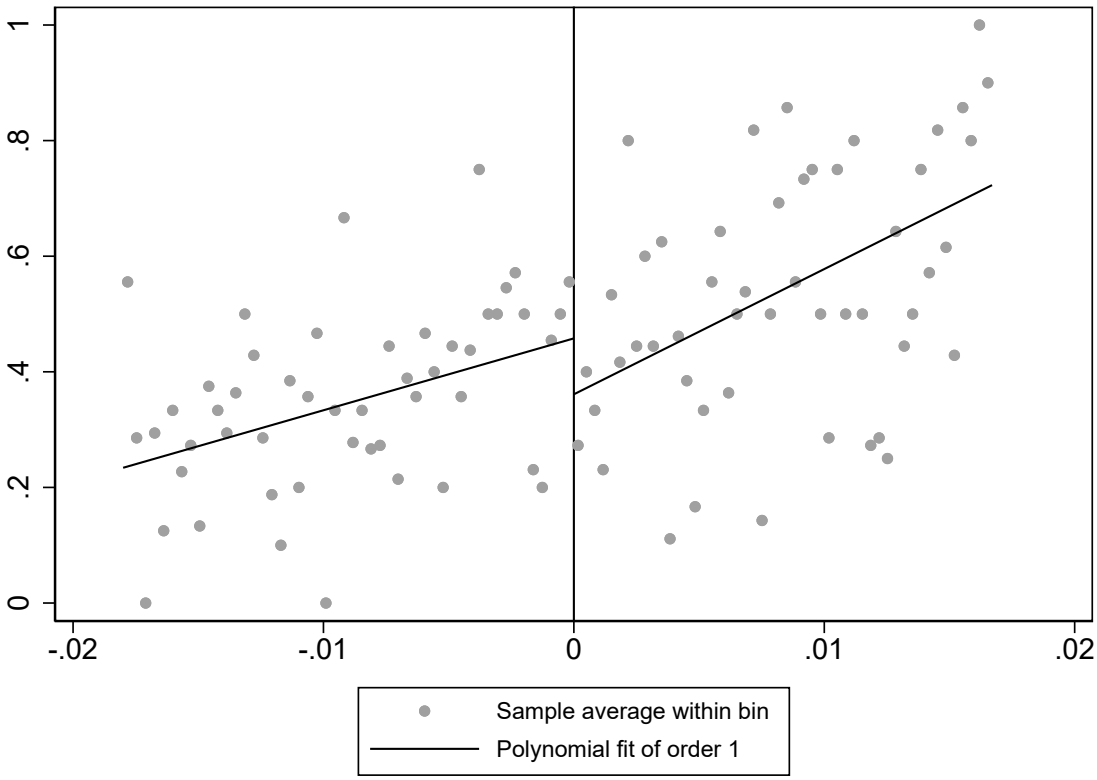


Figure 19: Draft Selection at Five Star Threshold

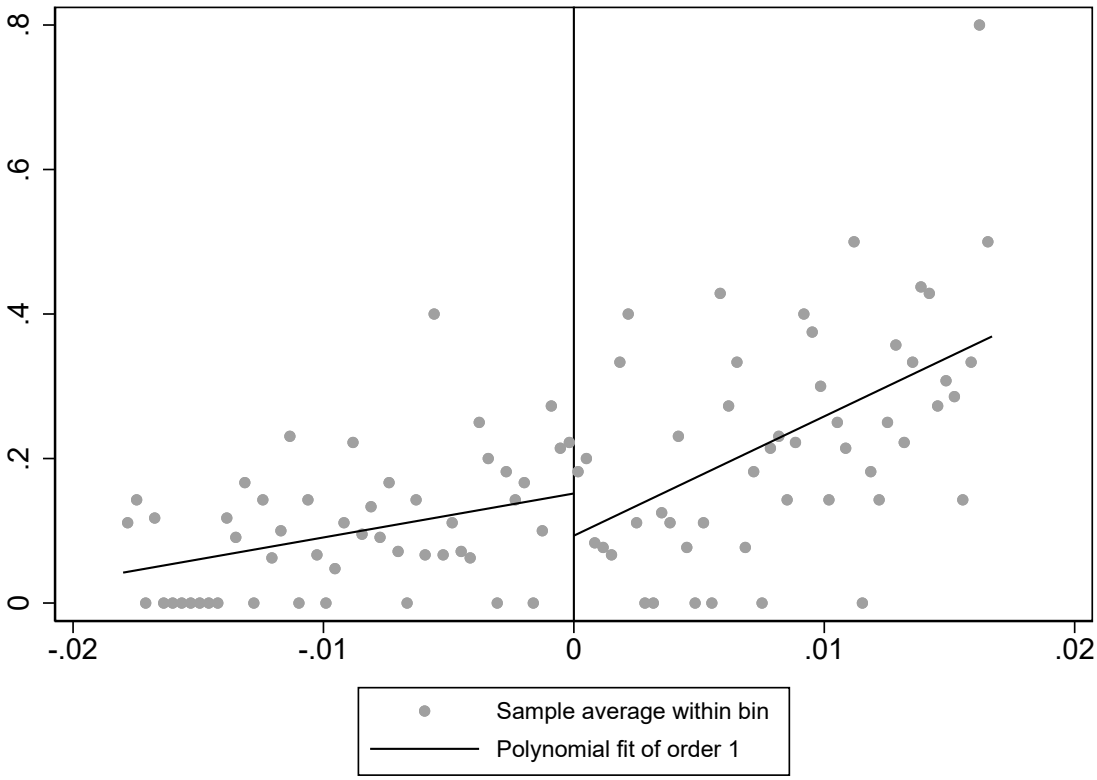


Figure 20: All-American Selection at Five Star Threshold

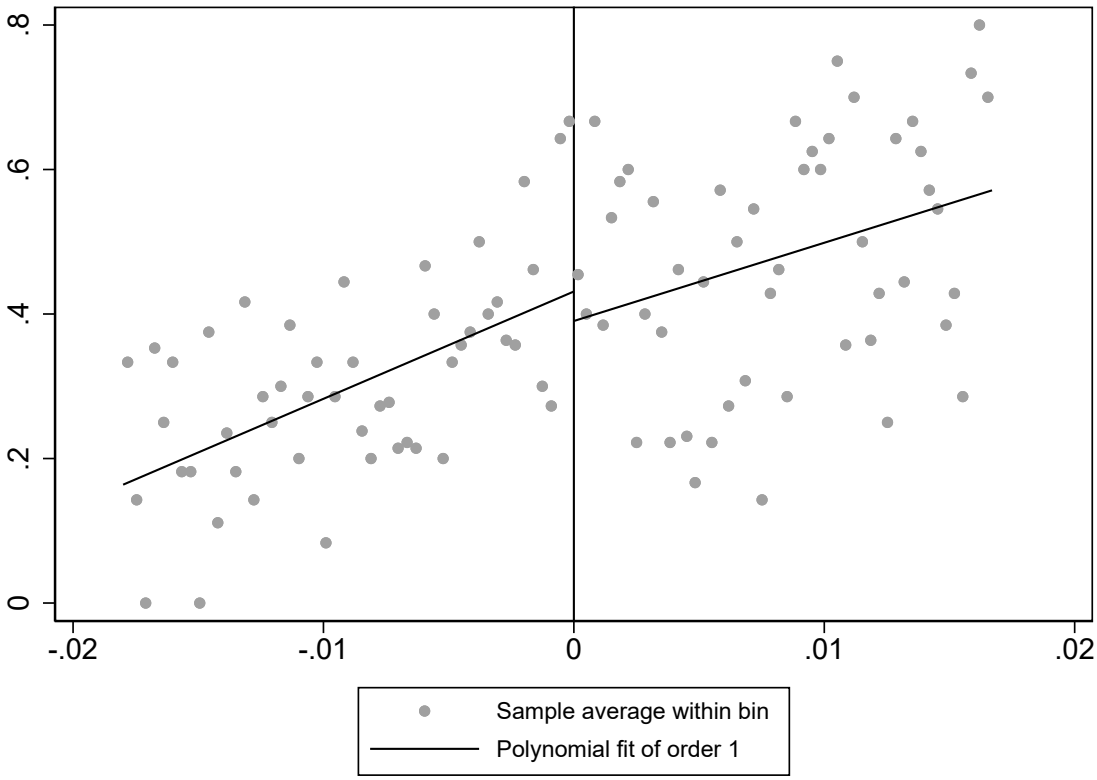


Figure 21: All-Conference Selection at Five Star Threshold

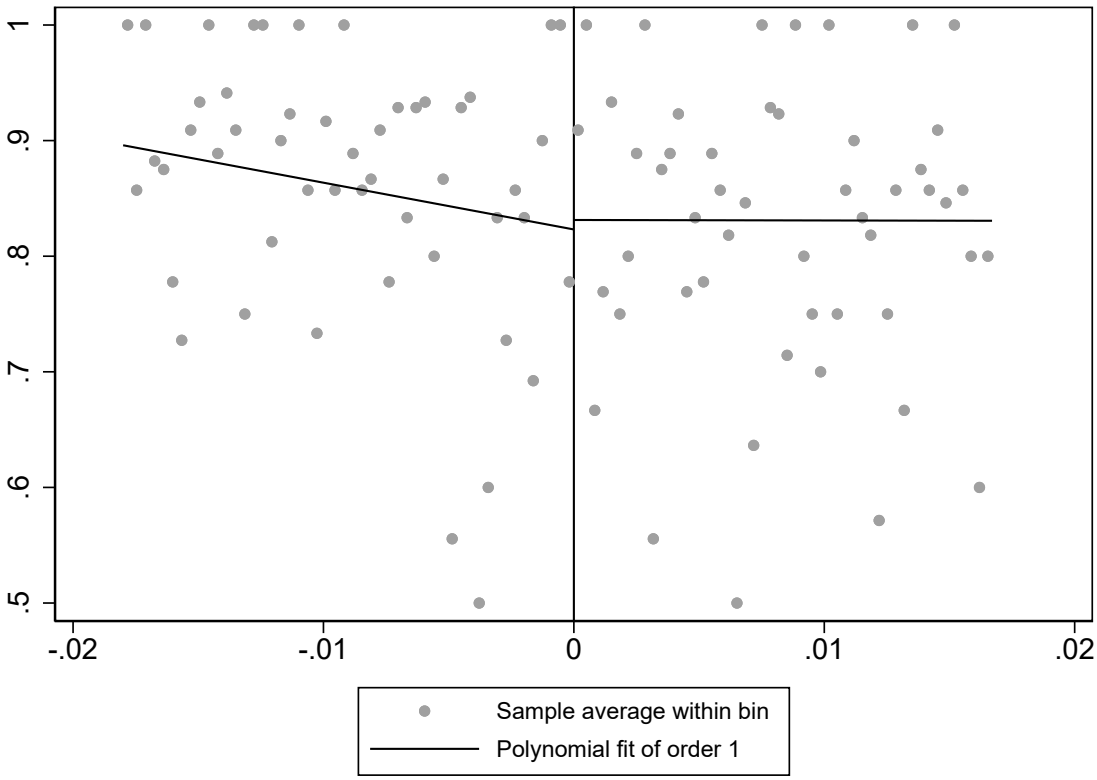


Figure 22: R1 Enrollment at Five Star Threshold

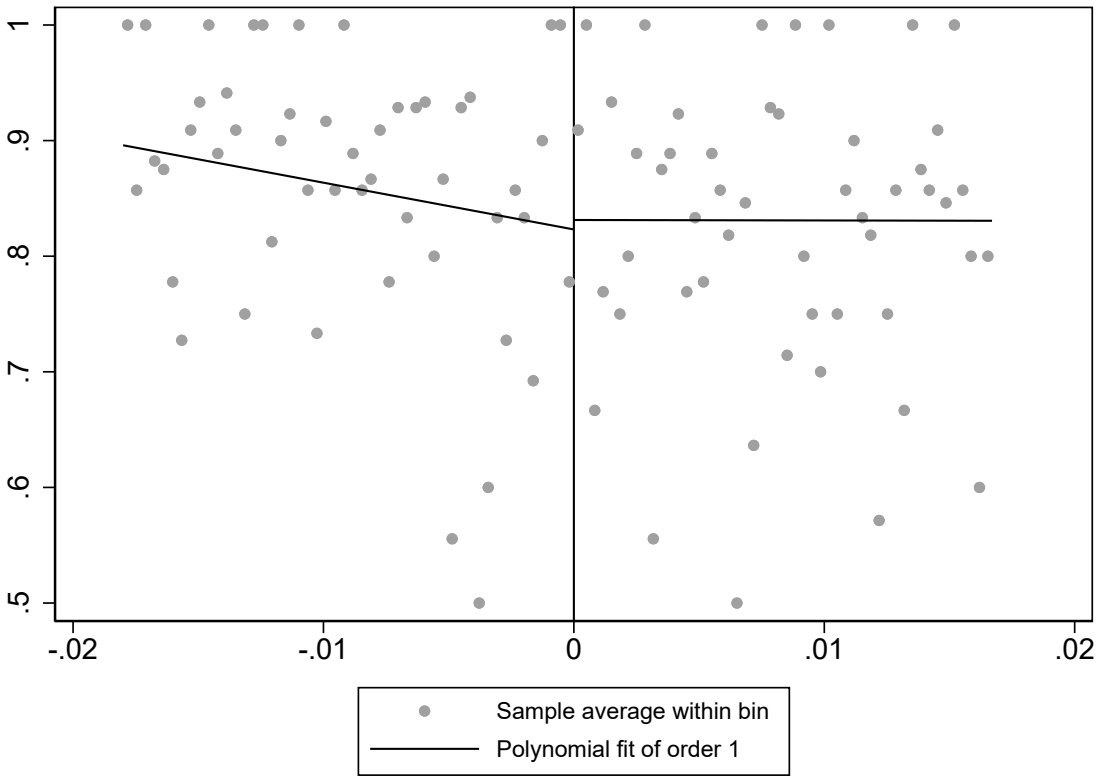


Figure 23: R2 Enrollment at Five Star Threshold

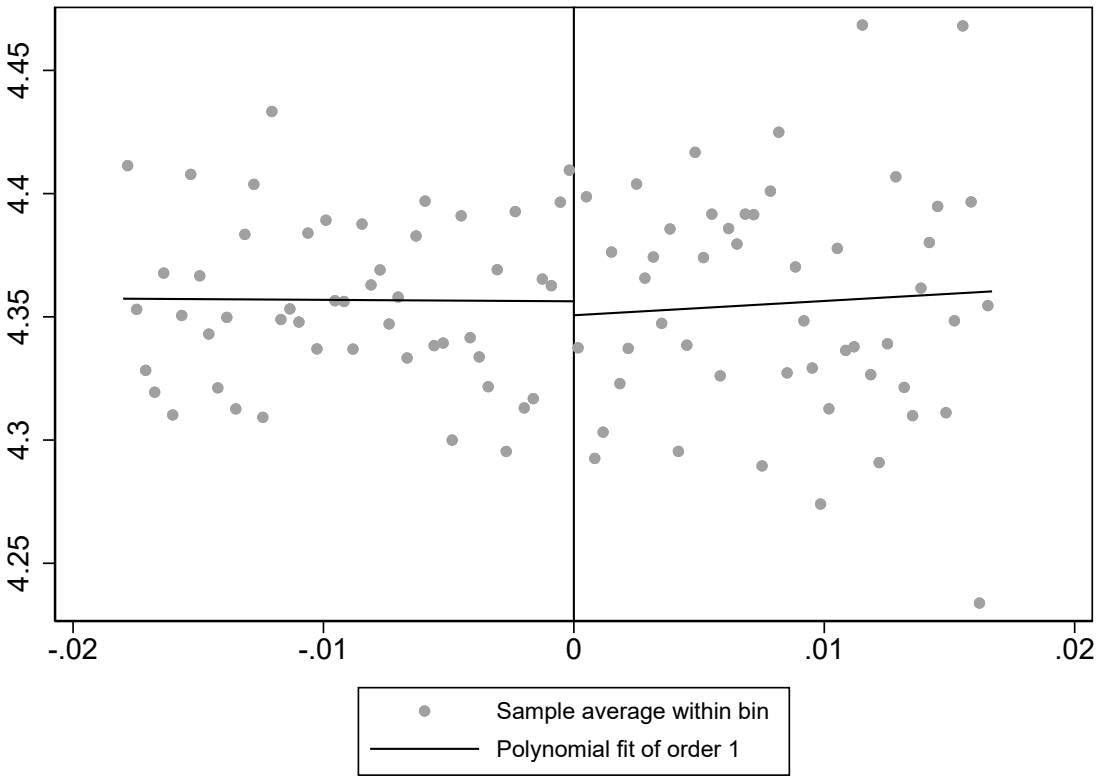


Figure 24: Graduation Rate at Five Star Threshold

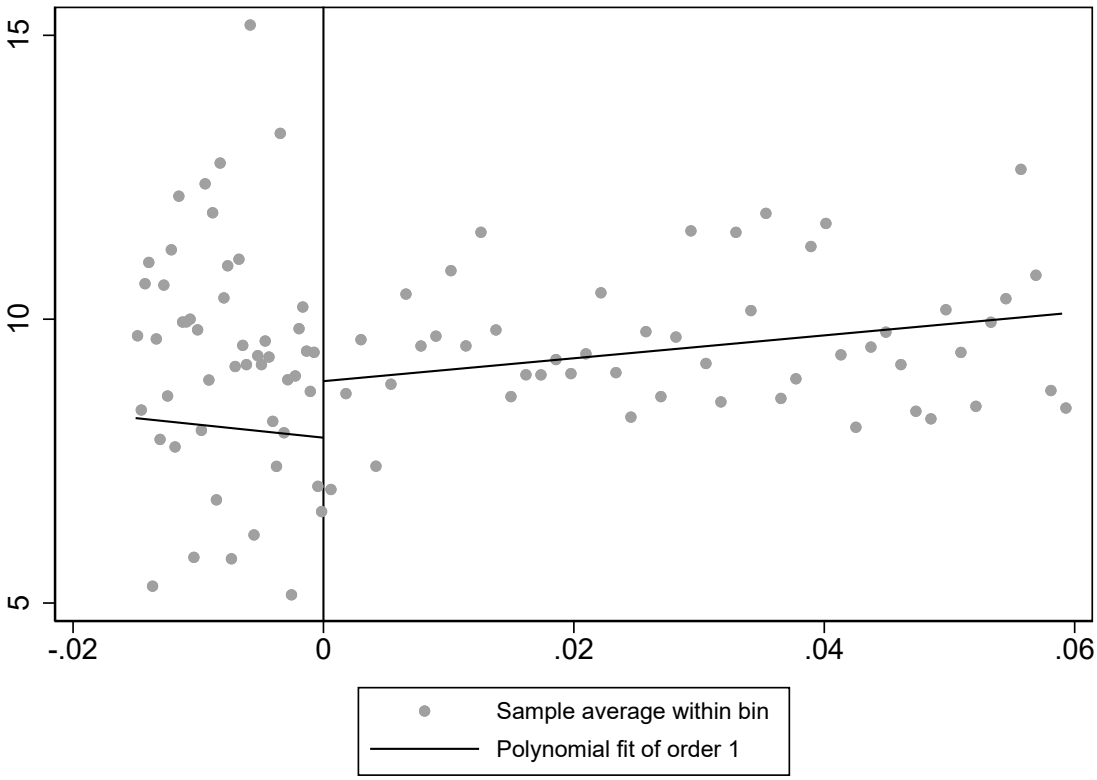


Figure 25: Average Scholarship Offers at Four Star Threshold

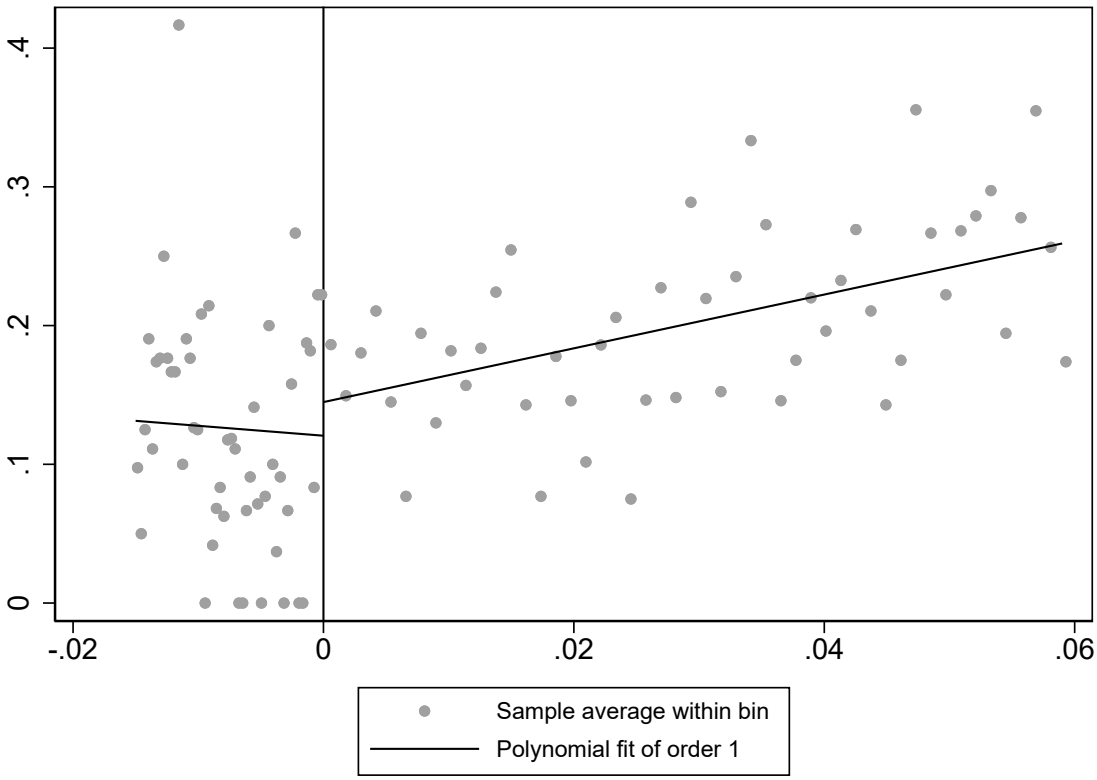


Figure 26: Draft Selection at Four Star Threshold

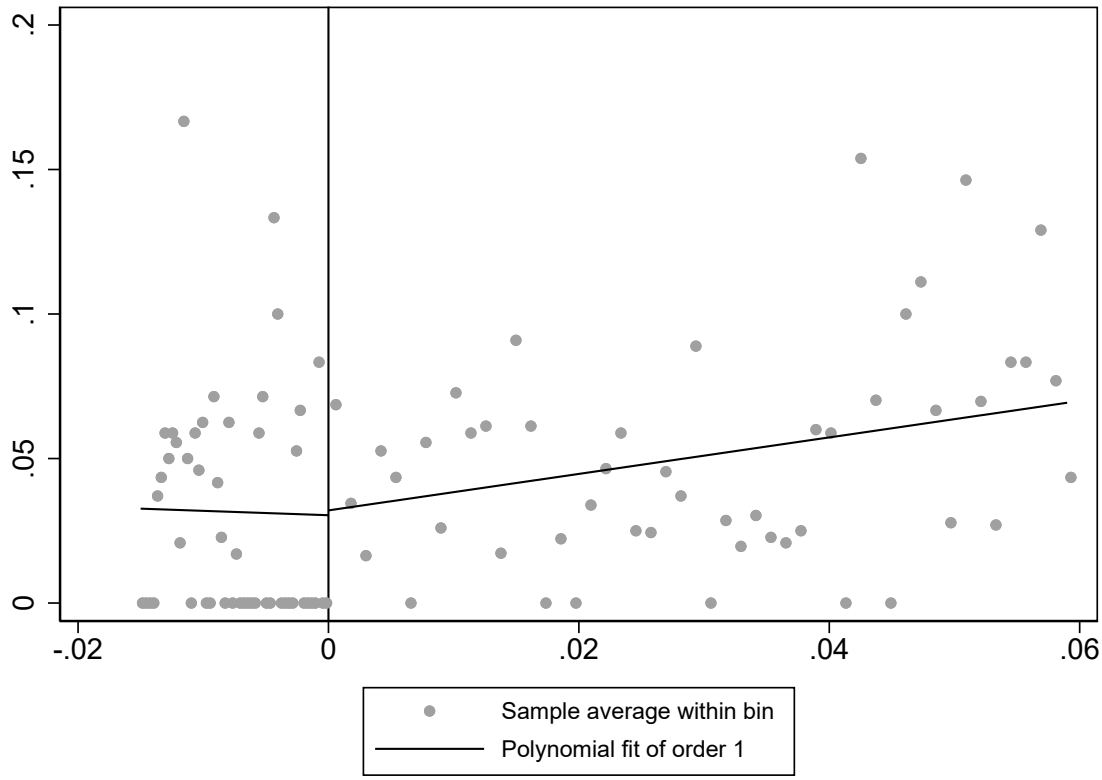


Figure 27: All-American Selection at Four Star Threshold

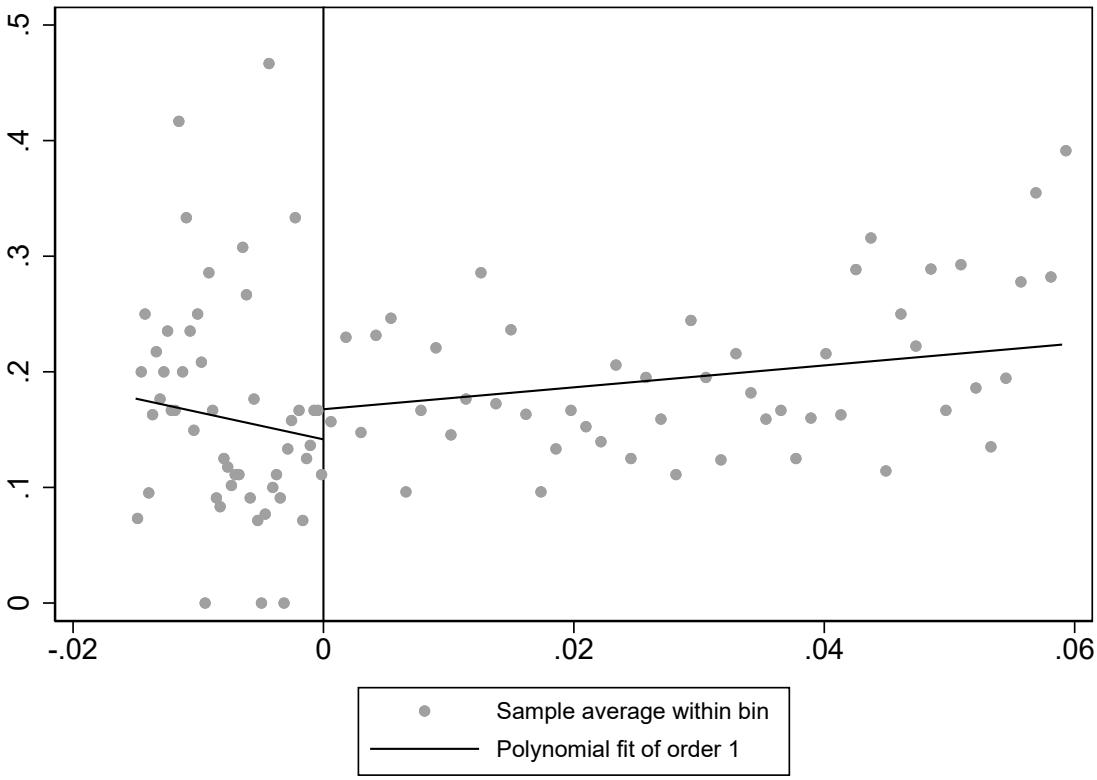


Figure 28: All-Conference Selection at Four Star Threshold

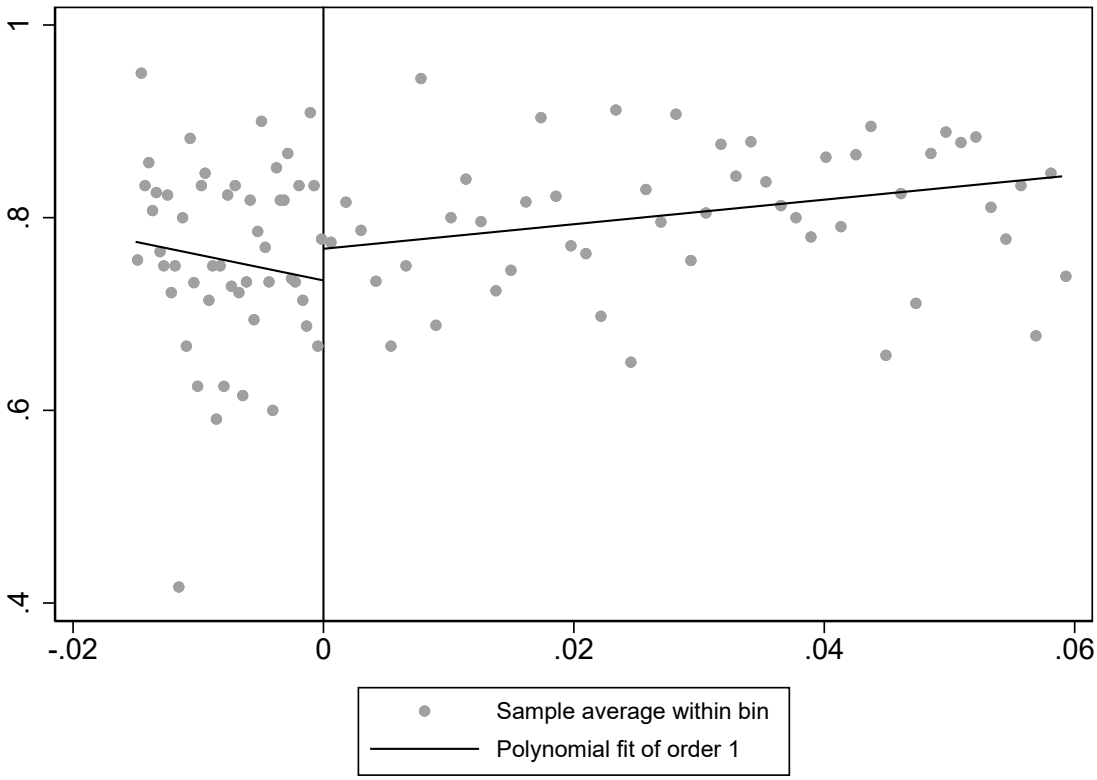


Figure 29: R1 Enrollment at Four Star Threshold

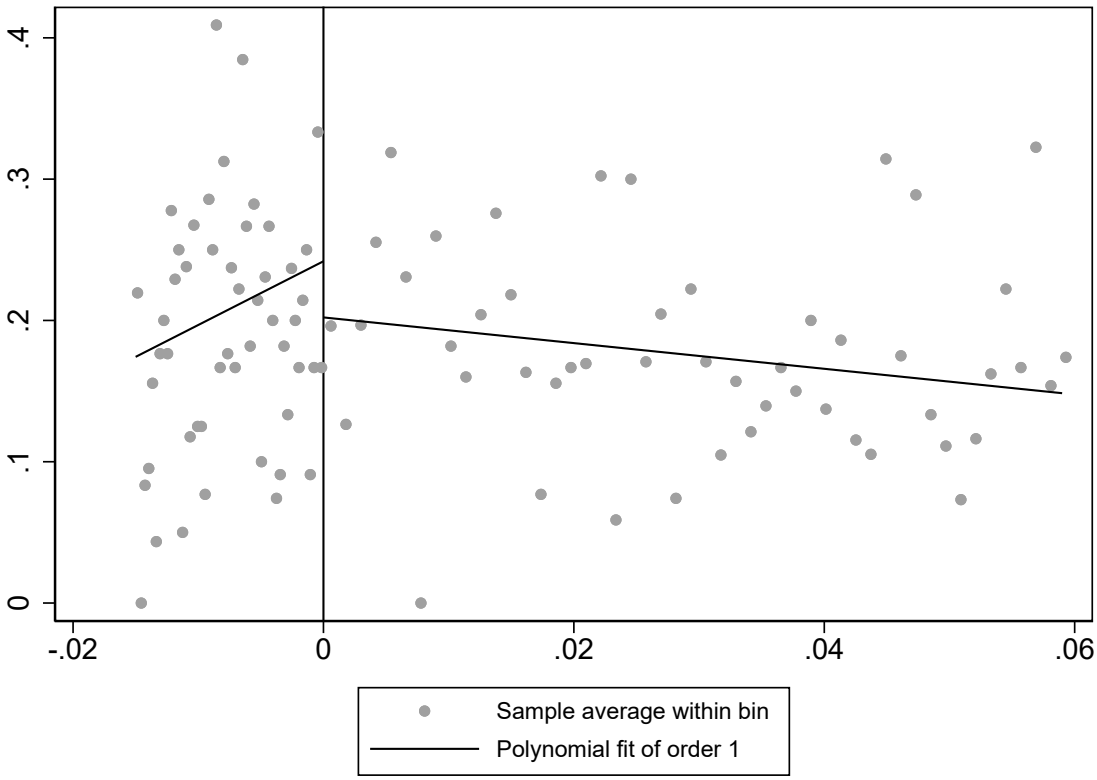


Figure 30: R2 Enrollment at Four Star Threshold

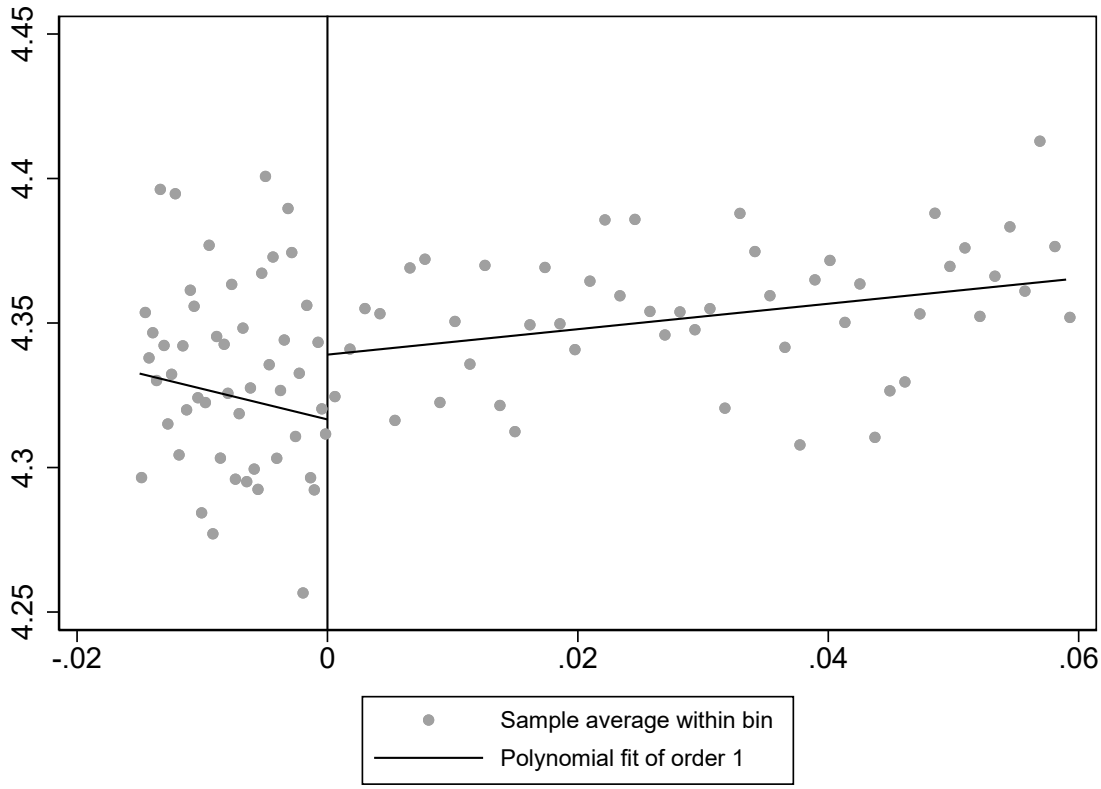


Figure 31: Graduation Rate at Four Star Threshold

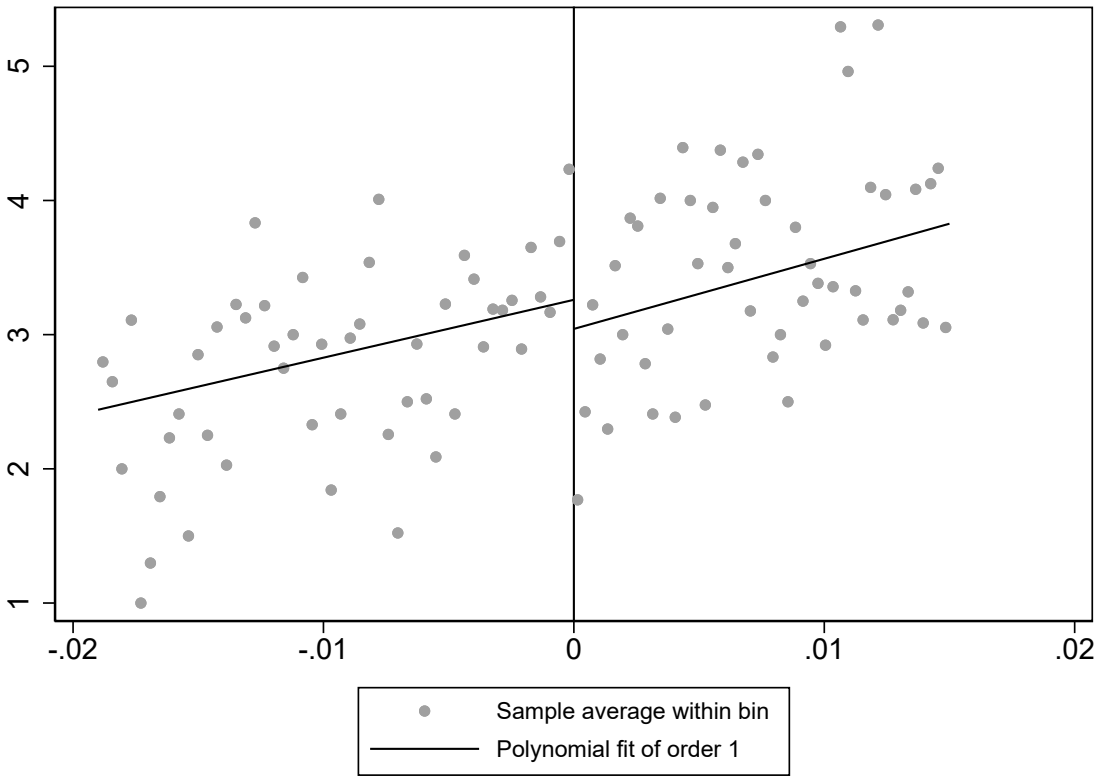


Figure 32: Average Scholarship Offers at Three Star Threshold

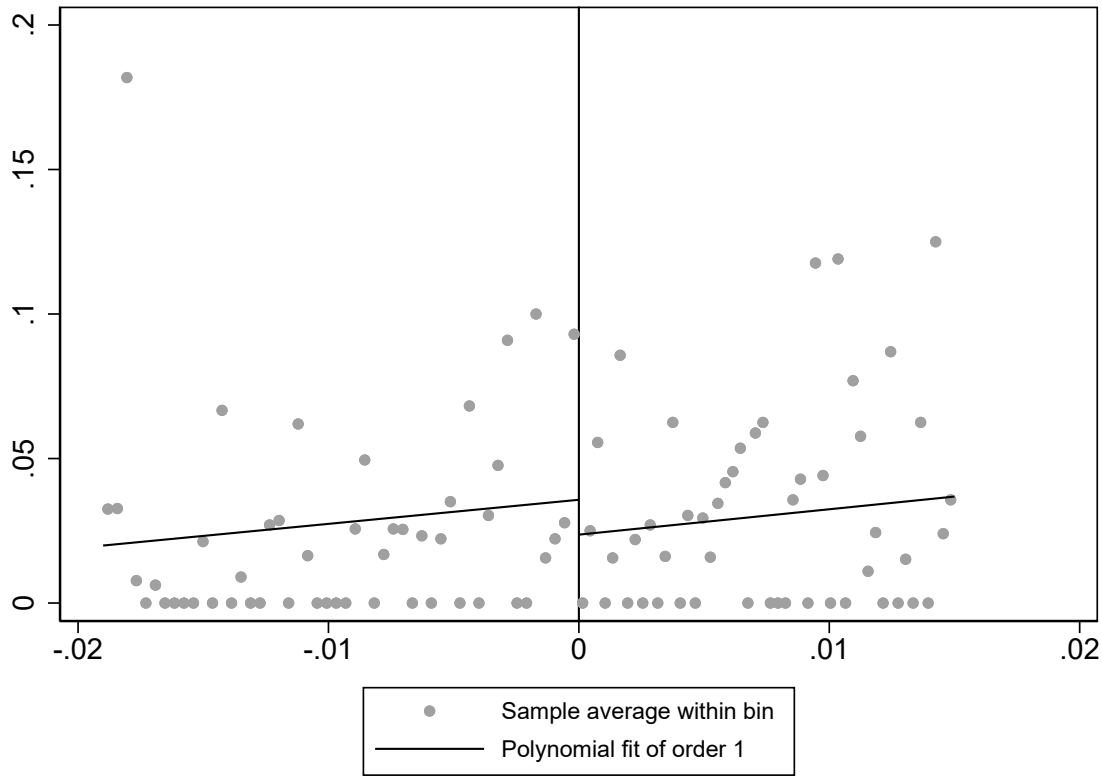


Figure 33: Draft Selection at Three Star Threshold

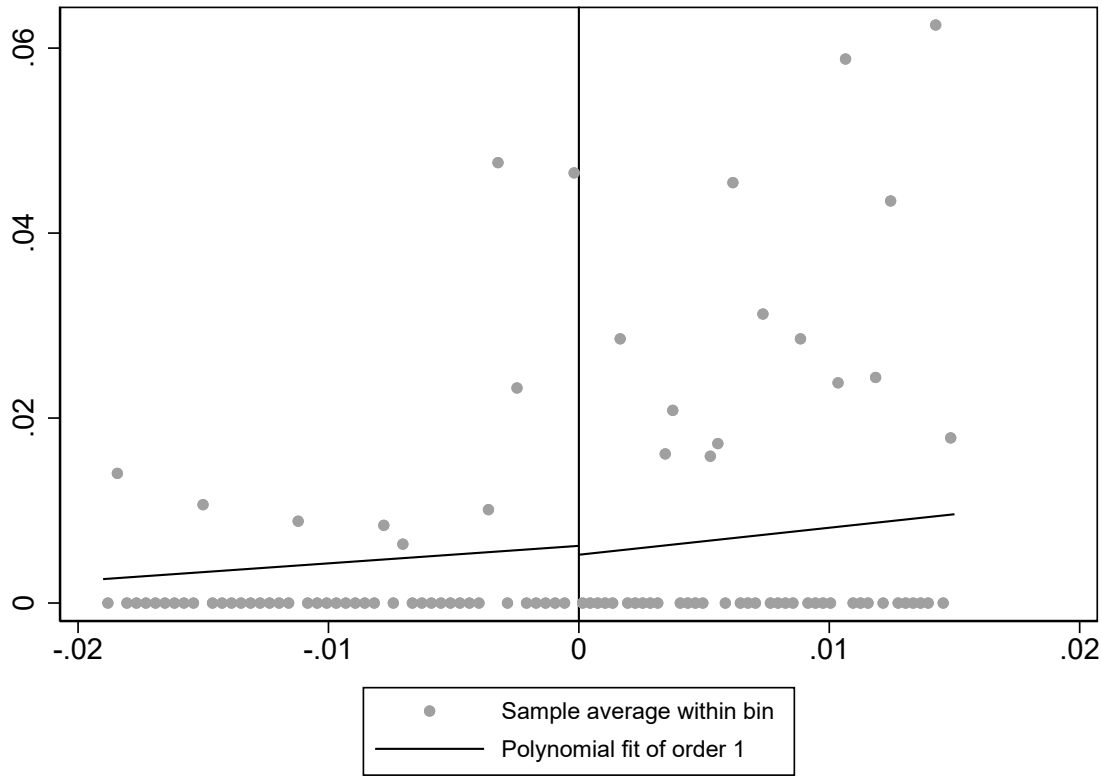


Figure 34: All-American Selection at Three Star Threshold

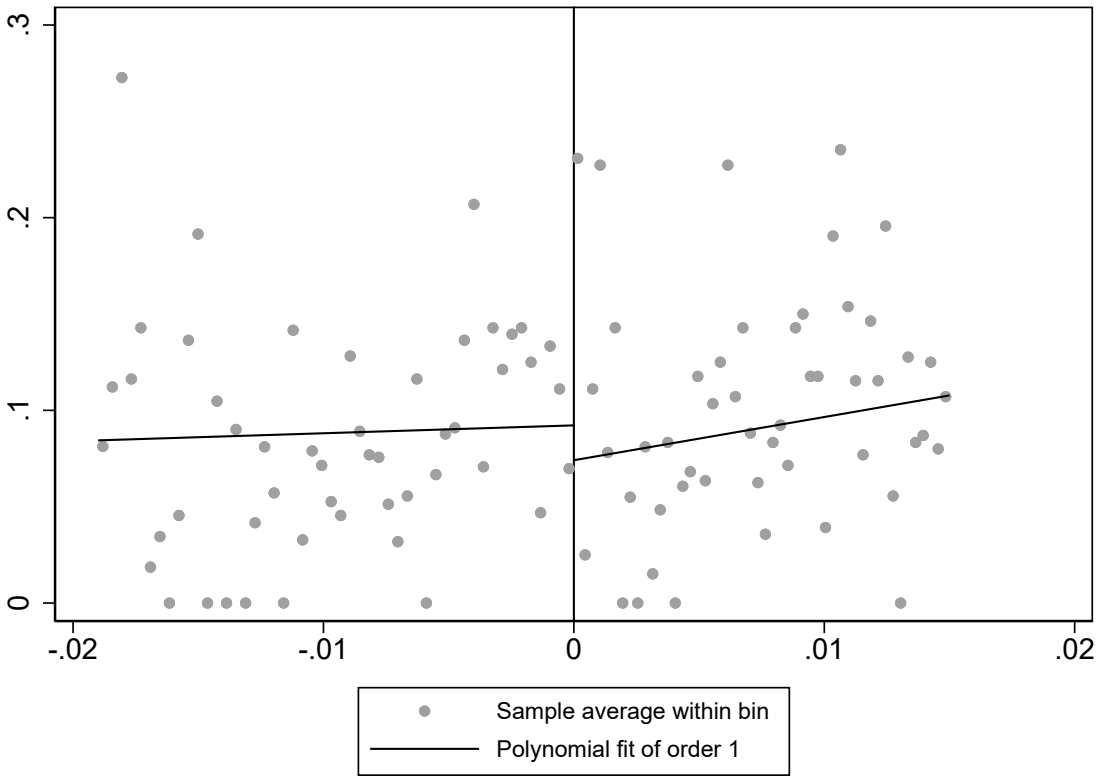


Figure 35: All-Conference Selection at Three Star Threshold

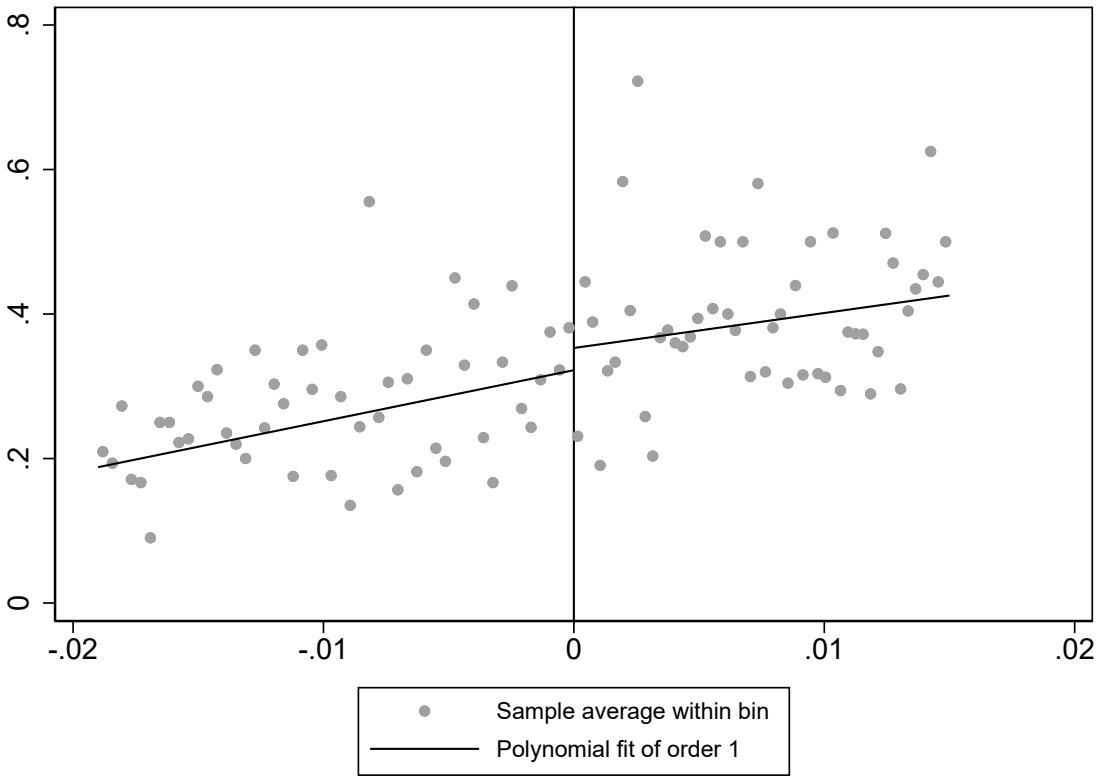


Figure 36: R1 Enrollment at Three Star Threshold

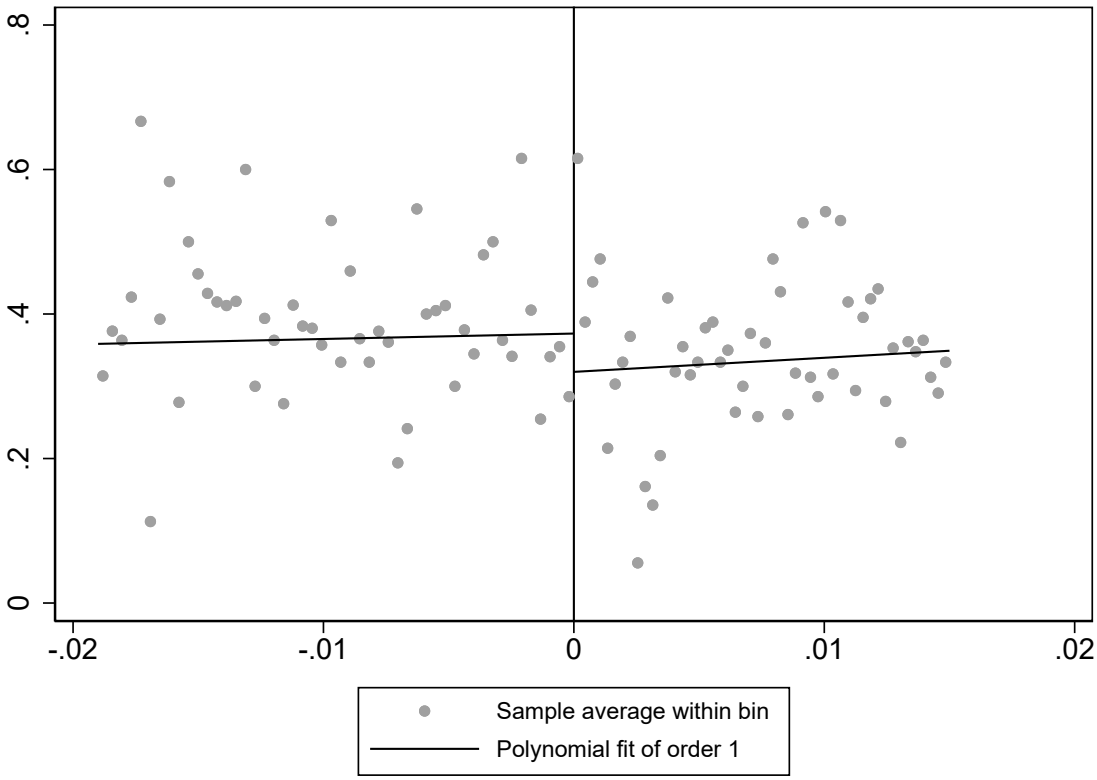


Figure 37: R2 Enrollment at Three Star Threshold

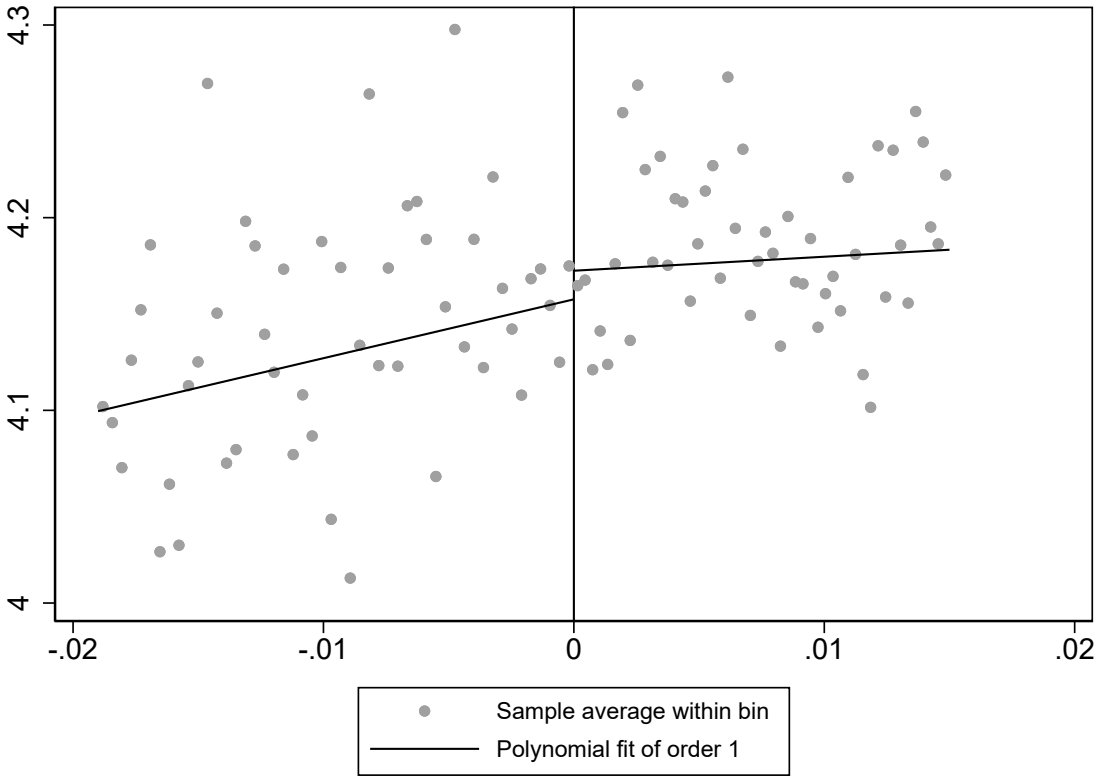


Figure 38: Graduation Rate at Three Star Threshold

Vita

Michael S. Charysh was born in Hinsdale, IL and spent his early years in Chicago. Upon graduating from St. Ignatius College Prep in 2011, he obtained a Bachelor of Arts in economics from the University of Chicago in 2015.

After graduation, he worked in the front office of the Kansas City Royals and Miami Marlins before beginning graduate school at the University of Tennessee. At the University of Tennessee, Michael taught undergraduate courses in introductory economics and trade. His research interests are education and college athletics.