

Summer 2019

# Equal Play, Equal Pay: Title IX Effects on Salary Gap at Division I Football Bowl Series and Football Championship Series Universities

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EQUAL PLAY, EQUAL PAY: TITLE IX EFFECTS ON SALARY GAP AT DIVISION  
I FOOTBALL BOWL SERIES AND FOOTBALL CHAMPIONSHIP SERIES  
UNIVERSITIES

A Thesis  
Presented to  
The Faculty of the Department of Sociology  
Western Kentucky University  
Bowling Green, KY

In Partial Fulfillment  
Of the Requirements for the Degree  
Master of Arts

By  
Kara Louise Hodges

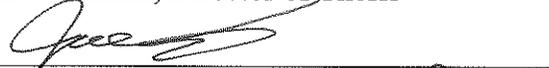
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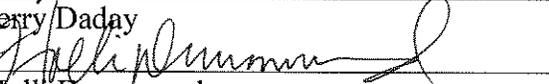
Date Recommended 6/7/19



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August 2019

48 Pages

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Department of Sociology

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This thesis examines the impacts of Title IX compliance on salary gap of Division I Football Bowl Series and Football Championship Series universities male and female associate professors. Title IX athletic proportionality requirements have been established since the 1980's and require that each university have an equal percentage of female student athletes as they do female undergraduates. This study uses the National Center for Education Statistics database, Integrated Postsecondary Education Data System to calculate salary gap between male and female associate professors and uses the Office of Civil Rights Equity in Athletics Database to calculate Title IX compliance. In this study paired *t*-tests and OLS regression are used to find the relationship between the salary gap and compliance of Title IX. This study found an inverse relationship between salary gap and Title IX compliance, refuting the hypothesis. Because Title IX compliance requires an equal proportion of student to athletes, the universities with significantly more female undergraduates were less likely to be Title IX compliant.

Keywords: Salary gap, equality, Division I, Football, Title IX

## Introduction

Women systematically earn less money than men. Studies in various countries with numerous control variables have found this to be true (Blau & Kahn, 2007; Bishu & Alkadry, 2017; Grybaite, 2006). This salary gap has been explained by economic discrimination where indistinguishable workers, beyond gender, are paid differently for the same work (Grybaite, 2006). This paper assesses the salary gap using the lens of human capital theory and labor discrimination theory. Title IX of the Educational Amendments Act of 1972 aimed to regulate the government-funded education system. This legislation made it illegal for schools to discriminate based on sex, and later for them to have equal opportunities in university-sponsored athletics. Failure to do so would allow the government to cut their funding. Title IX made it illegal for schools to hinder women opportunities, whether that be playing on a sports team or admission into a university or post graduate program. Thus, this act should minimize the salary and opportunity gap because it opened women's access to higher education and the higher paying jobs associated with higher education.

This study uses the Equity in Athletics Database's duplicated athletic participants and the total number of undergraduate full-time students reported to the Office of Civil Rights and compares the proportion of female students to female athletes in the Division I Football Bowl Subdivision (FBS) and Football Conference Subdivision (FCS) universities. There are three prongs established by the Title IX legislation. The first prong, which offers the most definitive results, requires that the male and female athletic participation be within five percent of their male and female student body ratio. Universities have found loopholes that allow them to continue to receive funding without

complying with the law in its original intent. One of these frequently used loopholes is counting duplicated participants instead of unduplicated participants, where a university counts one player on two teams as two different players, thus giving them the opportunity to double their female participation. Duplicated participants along with adding male practice players to the female basketball and soccer teams are loopholes universities have found to comply with the first prong of Title IX. The practice player loophole is noted at the bottom of each participant breakdown published by the U.S. Department of Education for each university, stating that up to half, and sometimes over half, of their female sports roster is actually male practice players. This most commonly happens for women's basketball and soccer teams. This study also uses averaged reported income from the Integrated Postsecondary Education Data System to look at salary gap. I suspect universities that comply with Title IX proportional representation in athletics will carry the same equity values across campus thus leading to a smaller salary gap between their male and female associate professors. The universities that have complied with the first prong of Title IX compliance guidelines listed by the Office of Civil Rights, will have a smaller salary gap between their male and female professors than the universities that have not complied due to the culture and priority of equality across the campus.

## Literature Review

### Salary Gap

#### Theories

There are two main theories commonly used to explain the gender salary gap: human capital theory and labor market discrimination theory (Grybaite, 2006; Blau &

Kahn, 2000). These two theories are most descriptive and explains the most variance in salary gaps. Discrimination theories offer a different explanation of more individual circumstances, these are discussed later. Human capital is the theory that centers on the premise that the skills you learn while in the work force become “assets” later (Goldin, 2014, p.1). The more work training you have, the more you can earn (Polachek, 2004). When women became a larger part of the work force in the 1960’s, the salary gap should have declined each year and women’s salaries grown in a similar pattern to men’s salaries in the time since due to the increase in human capital they received (Polachek, 2004). The increase in labor market participation along with some societal changes that allowed women to work outside the home, helped significantly decline the salary gap from the 1970’s to the 1990’s (Bar, Kim, & Leukhina, 2015). The gender gap was around -0.47 in the 1970’s, where women were making about half of the male salary (Bar, Kim, & Leukhina, 2015). It decreased to -0.25 in the 1990’s, where women were making two thirds of a male salary (Bar, Kim, & Leukhina, 2015). The salary gap decreased about half in those 20 years, but was still prominent. Human capital theory explains the “investment” employers make in workers by offering training, educational opportunities, and medical benefits (Russell, 2013, p. 2). These “investments” in workers, in turn, offer the employer a better, and healthy, worker that will benefit not only the company but the economy as well (Russell, 2013, p. 2). When employers do not see women as worthy of investing in, women lose the human capital benefits men receive.

Employers have cited many reasons for not believing women are worthy of investment. Companies are less likely to invest job and skills training in someone they believe might leave (Grybaite, 2006). Society expects women to prioritize motherhood

over career aspirations, but are punished for this in the work force. This expected priority makes them assumed flight risks to employers, thus decreasing the benefit the company receives from their investment in her (Polachek, 2004). Research done on women in the workforce after having a child justifies employers' assumptions. In 2017, over 40% of women with a child under the age of three stopped working; over 25% of women with a child between the ages of six and seventeen did not work (United States Department of Labor, 2018). When comparing these numbers with the 92.8% of men with children under the age of eighteen participating in the work force, it is clear to see the substantial difference gender has on workforce participation.

Participation in the workforce is different for single women without children and married women with children. Consequently, so are their salaries. Single women without children make close to 90% of a man's salary, while married women with children make between 60% and 70% what a man makes (Polachek, 2004). Single females and males have essentially the same labor market participation, thus decreasing the salary gap between them (Polachek, 2004). Married males and females have a more drastic salary gap, but smaller than that of married women and men with children (Polachek, 2004). Compared with men, who have been found to earn more with children than without, a gender bias is shown (Polachek, 2004). The ability to communicate has created the expectations for employees to always be available, which for mothers this is not always feasible due to the responsibilities of raising a child (Cha & Weeden, 2014). Women are less likely to choose jobs that require more than forty hours a week and are less likely to keep these jobs across the lifespan (Cha & Weeden, 2014). The greatest salary difference regarding "overwork" is in upper management roles that require one to work significantly

more hours per week. These jobs are those that, both, women are not a substantial proportion of, and that pay women significantly less (Cha & Weeden, 2014, p. 474).

These jobs that require overwork are the best benefit to the company's investment in a worker (Polachek, 2004).

The human capital model explaining salary gap says that women have less work experience than men because women have more interruptions in their career, therefore bringing less economic value to their employer long term (Grybaite, 2006). Prestigious universities are less likely to hire women for this reason, as women are less likely to be able to fully commit to the university and research (Currie & Hill, 2013). When a woman suspends her career for motherhood, all her progress toward retirement and her steps toward earning a promotion at that company end (Blau & Kahn, 2000). This also creates an issue for how much money she will earn in her life, as men can increase their salaries at a much higher rate until age 35 than women are due to childbearing (Polachek, 2004).

Human capital theory also explains that women are less likely to be chosen over men for jobs that require significant on-the-job training because they are more likely to leave their career. Women are also less likely than men to seek careers that require significant training (Grybaite, 2006; Blau & Kahn, 2000). This might be because careers with significant training or schooling, such as a professor, were not as accessible for women before Title IX. Jobs that require significant training are those most sought after, and therefore the highest paid (Cha & Weeden, 2014). Being a professor and being granted tenure requires a significant amount of work due to the teaching load and publications required to get there. One study found that women needed to publish eleven more articles than a man in her discipline to have the same opportunity for promotion

(Binder, Krause, Chermak, Thatcher, & Gilroy, 2010). In the Binder et al. (2010) study, they found women in the 2004-2005 school year were less likely to be assistant, associate, or full professors than men and received significantly less grant money to do research than men. As expected, faculty at a lower rank receive less money. Tenured full professors, of which 68% are male across the country, earned on average more than \$97,000 and the instructors, made up of 59% women across the country, earned \$49,395 a year (Clery & Christopher, 2010). The average salary of different levels of professors, controlling for race, shows the devaluation theory, a higher proportion of women decreases the entire average salary of the entire group (Magnusson, 2009).

A few other theories regarding discrimination have explained the salary gap. Labor market discrimination encompasses many different types of discrimination including economic, value, and statistical discrimination (Grybaite, 2006). Becker (1971) explains that society has a discriminatory view on women in the workforce that employers understand. This view believes that women are less qualified for the workforce. This lowers the likelihood women will be chosen for jobs in predominately male fields simply due to preference of male workers (Becker, 1971).

Economic discrimination is the definition of the salary gap we see today where women, though similarly qualified, get paid less than men (Grybaite, 2006). Value discrimination is similar to Becker's (1971) theory and explains that predominantly male fields are held with higher prestige in society than predominately female fields and are subsequently paid more. Predominately female fields are those based on nurture and service, where predominately men's fields are based on technical skills (Magnusson, 2009). Statistical discrimination goes hand-in-hand with human capital theory, as it

explains that companies are less likely to invest in women. Statistical discrimination explains the idea that all members of a demographic group are viewed based on the entire group's stereotype (Grybaite, 2006; Fang & Moro, 2011). These are typically negative stereotypes that might precede the effects seen in the human capital model, as they are evaluated during the hiring process (Fang & Moro, 2011). Some negative stereotypes that largely affect women are the expectation to quit their job after having a baby, they are thought not to work as hard, they are expected to want to work fewer hours, and are generalized to be more emotional in the workplace (Grybaite, 2006). Based on this theory, these thoughts are in the front of companies minds when they are hiring someone and lower the likelihood for a woman to be hired over a man because of so (Fang & Moro, 2011). Because of these stereotypes, women find fewer opportunities to work in prestigious institutions and are less likely to receive a promotion, which applies to universities as well (Grybaite, 2006; Currie & Hill, 2013). The likelihood of receiving a promotion for a female professors is also delayed from the rate of males in the field due to the output of research required (Currie & Hill, 2013).

### Variables Explaining the Salary Gap

Interest in the gender salary gap started around the 1960's when women became a more significant part of the labor force. Since then, researchers have attempted to find the variable(s) that are responsible for the gap. Studies have controlled for age, race, location, education level, prestige of university, grade point average in university, years of experience, type of experience, industry, hours worked, marital status, number of children, socioeconomic status, family socioeconomic status, etc. to explain the gap (Blau

& Kahn, 2007; Bishu & Alkadry, 2017). The variables found to be most impactful are marital status and children (Polachek, 2004).

The gender salary gap decreased consistently between the years of 1970 until the first years of the 2000's, with a slight increase in the 1990's, but since, the salary gap has not significantly decreased (Cha & Weeden, 2014). The cause of the plateau has been said to be due to the lack of continual integration of women into predominately male fields (Cha & Weeden, 2014). Hiring and promotion is a large part of the salary gap, though there is no explanation, other than discrimination, that helps us understand why there are so few women in higher-paid positions. Of the top grossing 500 companies in the United States, women make up only around four percent of the CEO's (Gipson, et al., 2017). Overall, these variables researched have not explained the entire salary gap.

One way to explain the salary gap is to say women's personal preferences lead them to take jobs that are lower paying. One study found that women's job satisfaction was lower in a field that was predominately males (Lordan & Piske, 2016). Females are also likely to pick jobs that interact with people over jobs that do not (Lordan & Piske, 2016). The jobs they chose are predominately female fields and have a lower average salary (Currie & Hill, 2013). Women also choose jobs in predominantly female disciplines due to the beliefs they have about the discipline as a whole. Females expect to have less power and lower levels of feelings of belonging in predominately male fields than predominately female fields leading them to be less likely to choose these fields (Chen & Moons, 2015). Bensidoun and Trancart (2018), recently did a study to find out if personal preferences would explain the rest of the gender salary gap unexplained by the other theories. In their study, they found almost two percent of the total 21.6% salary gap

studied, was still left unaccounted for after accounting for preferences in the job market (Bensidoun & Trancart, 2018).

## Title IX

### History

Title IX was signed into law in 1972. Legislators and President Nixon intended Title IX to allow more women into secondary education institutions including undergraduate universities, law schools, doctoral programs, and medical schools (Anderson, 2013). Before Title IX, not admitting women into these programs due to their sex was legal, and it was common practice to have caps on women admitted (Anderson, 2013). In 1972, women were 43.1% of the enrolled undergraduate university students, currently women are about 56% of the undergraduates (U.S. Department of Education, 2012; U.S. Department of Education, 2018). Men's enrollment in post-graduate and professional degree programs stayed about the same before and twenty years after the law, but women's enrollment increased significantly (U.S. Department of Education, 1995). Since then, women are a majority of those earning associate, bachelors, and post-graduate degrees (Parker, 2015). Women in 1993 were earning 42% of law degrees, compared with two percent in 1960. Women earned 38% of medical degrees, compared with six percent in 1960 (U.S. Department of Education, 1995). For the last nine years, women have been the majority of those earning doctoral degrees (Okahana & Zhou, 2017). Women are most represented in arts and humanities doctoral programs and underrepresented in mathematics and science programs (Okahana & Zhou, 2018). In 1972, there were 462,257 female students across the country earning post graduate degrees compared with 810,164 male students. Ten years later, the male students rose

only about 50,000 students while the female students rose by 277,571 students. In 2015, women outnumbered men by half a million students in post graduate schools (U.S. Department of Education, 2017). Title IX has opened more career opportunities for women that were previously unavailable due to education restrictions.

Initially, the intent of Title IX began with no plans to involve sports until the Javits amendment was passed in 1974. Before the amendment, there were fewer than 30,000 females across the country involved in collegiate sports. This number has risen to 190,000 nearly forty years after the law (Yanus & O'Connor, 2016). Schools that receive federal funding through scholarships or direct funding are required to follow Title IX's regulations (National Collegiate Athletic Association, 2018). The law specifically states:

“No person in the United States shall, on the basis of sex, be excluded from participation in, be denied benefits of, or be subject to discrimination under any educational programs or activity receiving federal financial assistance” (Title IX Amendments, p. 92-318).

#### Compliance Guidelines

Federal funding is dependent on compliance to one of Title IX's three prongs. The three-prong test was established by the Office of Civil Rights, four years after, in 1979, in response to many schools seeking an understanding of what compliance entails (Yanus & O'Connor, 2016). Three prongs are: “substantial proportionality”, “history and continuing practice”, “effectively accommodating interests and abilities” (Office of Civil Rights, 2015; Anderson, Cheslock, Ehrenberg, 2006).

Substantial proportionality is the most definitive and is based on the number of male and female undergraduate full-time students registered at the university. This prong is the main focus of most universities (Ambrosius, 2012). The Office of Civil Rights

does not include students that are ineligible to participate in sports, such as those who are not degree seeking or do not take at least six credit hours a semester (NCAA, 2018). To comply with Title IX requires the university to have the same proportion of female student athletes as females in the student body but allows for a five percent plus or minus difference. While substantial proportionality is based solely on numbers, the other two prongs are less definitive to prove. The second prong, “history and continuing practice”, requires the university to keep expanding its female sports offered. This is a difficult feat forty years after the law has been established, as only so many sports exist. This prong was most important in the first decade or so to establish female sports.

The third prong requires that a university “effectively accommodate interests and abilities.” Universities and high schools are required to offer the sports that women in the area want to play. This prong is the reason high schools no longer play slow pitch softball. Universities in the area exclusively played fast pitch so the young women playing slow pitch were not being prepared for the college level sports and missing opportunities the third prong requires them to have (43 F. 3d 265 Horner v. KHSAA, 1994). The third prong has proven a constant issue deciding if high schools and universities are accommodating the interest. Presidents since 1972 have offered their suggestions in an attempt to make it easier to test compliance. President Bill Clinton focused heavily on substantial proportionality and offered high schools and universities a new status of “safe harbor” once they fully complied (Pieronek, 2012). Beginning in 2001, President George W. Bush established a survey to send to schools that would gauge interest of sport participation to compare with sports offered. This survey was found to have many methodological issues and was taken out soon after (Pieronek, 2012).

President Bush also changed the original intent of the three-part tests. The previous requirement was to have met all three to be fully compliant, after President Bush's changes, just one was required to be granted compliant (Pieronek, 2012). Only one prong must be followed by a university to be in compliance. As of 2016, no universities or high schools have lost government funding because of Title IX non-compliance (Yanus & O'Connor, 2016). Instead of losing their funding, historically, the university is sued and forced to reinstate or add sports teams by the State or United States Supreme Court (Ambrosius, 2012). In 2015, there were 1,200 complaints to the Office of Civil Rights from young women in athletics who were seeking help to get their protections promised to them under Title IX (U.S. Department of Education Office of Civil Rights, 2016).

As of 2010, most universities did not meet Title IX (Whiteside & Roessner, 2018). Title IX compliance is especially low throughout Division I universities, with between 17% and 29% of universities meeting proportional representation (Yanus & O'Connor, 2016). Division II and III universities have 10-16 percent lower rates of compliance to this prong of Title IX than do Division I universities, making their average compliance rate as low as 7% across all universities in Division II and III (Yanus & O'Connor, 2016). Universities in the south have a particularly low compliance rate, where the average difference of male and female student athletes is 12.9%, significantly higher than the 5% allowed (Yanus & O'Connor, 2016). This is over double the amount allowed by the Office of Civil Rights. There is also a difference in compliance based on conference.

The National Collegiate Athletic Association, or NCAA, regulates the amount of sports and scholarships a school is allowed to offer. A maximum of three hundred

scholarships in total are offered and divided throughout both male and female sports (Dudley & Rutherglen, 2002). Universities with football programs have a lower likelihood of complying with Title IX, due to the sheer magnitude of male participants (Yanus & O'Connor, 2016). The NCAA allows them to offer up to 85 male scholarships for football, which is over half their total male scholarship allotment, and close to 30 percent of their entire scholarship allotment (Dudley & Rutherglen, 2002).

Athletic department budgets seem to be the largest issue facing compliance. According to the substantial proportionality prong men's and women's sports must have the same budgets and access to equipment, facilities, and coaches (Office of Civil Rights, 2015). While this is what is required, it is not always what happens. Yanus and O'Connor's (2016) article found female sports have significantly less money for their teams than do male sports. The athletic programs that are profitable create revenue for universities to sponsor women's teams and offer more sports for men as well (Anderson, Cheslock, & Ehrenberg, 2006). The largest impacts on revenue for FBS universities are conference membership, amount of football games won, and attendance to football and men's basketball games (McEvoy, Morse, & Shapiro, 2013). It costs a lot of money to have a single successful sports program, universities have cut low profit men's sports to make room in the budget for female sports (Yanus & O'Connor, 2016). The act of cutting sports to comply with Title IX began in 1996, after the Federal court case *Cohen v. Brown University* (Ambrosius, 2012). Brown University was sued by the female volleyball and gymnastics teams that were cut due to budget constraints. The court ruled that universities were allowed to cut sports of the overrepresented sex to make opportunities for the underrepresented sex and comply with Title IX (Ambrosius, 2012).

While many universities have cut male sports citing compliance with Title IX, they have kept enough in their budget to sustain their football and men's basketball programs (Porto, 2005).

Title IX is the law that allowed for women to go to college, participate in sports, and get a job that requires higher education. Compliance with Title IX means equality for female student athletes and female undergraduates. A university complying with Title IX shows that equality is a priority. Because of the priority with the students, it is likely that these universities have the same equality with their professors as well and have no salary gap between the males and females.

#### Current Study

This study looks at the gender salary gap and Title IX substantial proportionality compliance of the Division I Football Bowl Subdivision (FBS) and Football Championship Subdivision (FCS). Because about 90% of the salary gap discrepancies in academia can be explained by difference in rank, this study uses only tenured associate professors (Chen & Crown, 2018). The gender salary gap is researched using averaged salaries of male and female associate professors at universities to first see if a salary gap exists at the school, and then to compare the salary gap between universities that meet Title IX proportional participation requirements and universities that do not. Division I universities have the most to lose and gain from compliance with Title IX due to the amount of media and fan attention they receive, especially when compared to Division II or III universities (Yanus & O'Connor, 2016). Division I universities have also been the main focus of all aspects of Title IX. Division I universities have had the most cuts to sport teams and programs (Yanus & O'Connor, 2016). Division I schools with football

programs have the most to overcome, as their football program must at least offer 88 football scholarships, so the athletics department is required to find a female sport of a similar size or have multiple female sports equating to the football team size. The Division I schools with football also have the best chance at Title IX compliance, as sports programs are expensive and the only programs whose athletics department reports a profit are Division I universities with football.

The salary gap is expected to be smaller between male and female associate professors at Division I FBS and FCS universities because gender equality across the entire campus is valued more highly than at universities that do not comply. Title IX compliance is a deliberate action that requires significant planning, the hiring of a Title IX coordinator. Consequences of non-compliance could include cutting funding; a relationship would be expected. This is because equality in Title IX is not an accident, rather, very purposeful. Specifically, my research looks at how well the Division I FBS and FCS, all universities with football programs, implement and adhere to the Title IX athletic participation guidelines, specifically prong one of the Office of Civil Rights established test. The Office of Civil Rights considers a school compliant if these two proportions are within 5 percent of each other. Since I am looking at Title IX athletic participation, I will only be using undergraduate or graduate level professors while excluding those who teach for the medical, law, or other professional degrees. This was chosen due to the eligibility rules required by the NCAA, as only students who are full-time undergraduate and graduate students can play on collegiate athletic teams.

Research Question: Do universities that comply with Title IX athletic participation requirements have a smaller salary gap between male and female professors than universities that do not?

Hypothesis: Universities that comply with Title IX substantial participation requirements, then the salary gap between their male and female professors will be smaller.

## Methodology

### Data

To find evidence of a salary gap, the Integrated Postsecondary Education Data System (IPEDS) that includes the associate professors' salary organized by gender, rank, and university for the 2016-2017 school year is used. The data were collected in the Fall of 2016 by a survey sent out from the National Center for Education Statistics in August 2016 regarding statistics for the 2016-2017 school year from 7,479 universities that are Title IV eligible (Knapp, Kelley-Reid & Ginder, 2012). Title IV eligibility requires that a university is nonprofit, accredited, and certified by the U.S. Secretary of Education (U.S. Department of Education, 1994). The IPEDS database includes over 99% of all U.S. institutions that follow these requirements and 100% of all Division I FBS and FCS universities (n=250). This survey gathers data about all parts of the university, including university statistics such as admission rates, tuition rates, number of students, and graduation rates. The data regarding salary information is "collected data on the number of staff on the institution's payroll as of November 1, 2016" and is required information from all Title IV universities (Knapp, Kelley-Reid & Ginder, 2012, p. 5). This includes full-time staff whose main duties are instruction only or instruction and research. This

does not include instructors who are part-time or full-time medical school instructors. The data are divided by type of contract and includes those with less than nine-month contracts, equated nine-month, nine/ten-month, and 11/12-month contracts. The salary data are divided by gender and rank as well. For this study I have used average equated nine-month contract salaries of tenured Associate Professors divided by gender and number of associate professor instructors by race. The only data available in the IPEDS dataset that was consistent across all universities was the equated nine-month contract professors, so this type of contract was used to report average salary of associate professors.

Used also is the Equity in Athletics Database data from 2016-2017, published each fall by the Office of Postsecondary Education, to look at Title IX proportional participation compliance for all universities. Each school that receives Title IV funding and has an athletic program is mandated to report data through a web-based survey (U.S. Department of Education, 2018). The survey includes information regarding the number of undergraduates divided by gender, the number of student athletes by gender and by team, and the amount of money spent and earned by each team. The data are collected in October of each year about the current school year and current rosters for each sport (U.S. Department of Education, 2018).

## Measures

**Dependent Variable.** In this study, salary gap is defined by the salary difference in 2016-2017 between female and male tenured associate professors. Salary gap will be looked at as a percentage to show the amount of a male salary the female associate professors make. In this study the average female associate professor makes 94.6% of the

male associate professor. Though this is high, it is an average and accounts for both universities closer to 80% and those over 100%. This number still shows gender parity does not exist at these universities for these associate professors. The 30 universities where females made more than male associate professors were left in the model in order to get a full picture of each university's salaries. Associate-level professors were chosen for this study because they are midlevel professors above assistant professors and just below full professors. Associate professors have passed through the difficult task of advancing in the tenure system and are not considered entry level professors any longer. Using associate professors allows this study to look at professors in the middle of their career. Full professors were not included in this study as it is likely that many things, outside of the variables available, have impacted their salary. This could include being promoted to department head, accruing multiple raises over their tenure at the university, or taking on responsibilities that might offer extra compensation. Assistant-level professors were not used because they are new to the tenure system and their salary reflects an entry level position. It would not reflect the gendered differences in opportunities the same way an associate level professor salary could, as promotions and other leadership opportunities are more likely to increase later on in the career. These factors show inequality better than a base salary is able to.

Independent Variables. To analyze Title IX compliance, only proportional athletic participation will be looked at. There is a +/- five percent margin given by the Office of Civil Rights to grant compliance for this prong, this study follows that guideline as well. The survey requests both the duplicated and unduplicated participants be reported, but only the duplicated participants are used to calculate Title IX compliance by

the Office of Civil Rights. The duplicated participants allow for some athletes to be counted twice because they participate in two sports. Unduplicated participants were previously counted when calculating Title IX compliance but were switched to duplicate participants in 2001, causing the compliance rates to increase (Anderson, Cheslock, Ehrenberg, 2004). All but three universities of the 250 included female duplicate participants in their *grand total athletes* count. Males are not counted in the duplicate participants' count, as this is counterintuitive and makes Title IX compliance more difficult to achieve. Each university's percent of female student athletes is subtracted from the percent of female undergraduates (Sigelman & Wahlbeck, 1999).

$$\left( \frac{\text{Female Undergraduates}}{\text{Total Undergraduates}} - \frac{\text{Female Student Athletes}}{\text{Total Student Athletes}} \right) * 100 = \text{Proportionality Gap}$$

Universities where the proportionality gap equals zero means the athletic participation proportion is equal, there are equal proportions of female undergraduates and female student athletes. Universities where the difference in percentage of female undergraduates and female student athletes equals more than five percent is considered *non-compliant*. Based on this formula, the university is marked “*Compliant*” (0) or “*Non-Compliant*” (1).

Control Variables. *Race and Ethnicity* of associate professors was defined as *White* and *Non-White*. The *non-white* category includes those associate professors who identified themselves to their university as Black/ African American, Hispanic, Asian, American Indian, Alaskan, Hawaiian, Pacific Islander, Biracial, Unknown, or Non-resident Alien. IPEDS reports race based on the category reported to the government for paying the professor, it is impossible to decipher the true race of Non-resident Alien. For

this study, they will be grouped into the category for the purposes of this study. IPEDS reported the number of associate professors by race and gender for each university, from this the percentage of *Non-White* and *White* associate professors was calculated. The percentage of each race group of professors was calculated by dividing the number of each race group by the total number of associate professors and reported as *percentage of white associate professors* and *percentage of non-white associate professors*. *Percentage of female associate professors* was calculated by dividing the female associate professors by the total associate professors. *Total average salary* is a continuous variable that is an average salary for all associate professors at each university.

Variables also used include *historically black college or university* (1=Yes, 0=No), *public university* (1=Yes, 0=No), *university location* (1= Southern 0= Non-Southern), and *Football Subdivision* (1=FBS, 0=FCS). Studies have found much lower rates of Title IX compliance for historically black universities, universities in the south, and private universities. These variables are used to look at the variance in Title IX compliance for the universities in this study. *Profit*, categorized as (1=Yes, 0= No), was done so because the data is reported to the Office of Civil Rights in an essentially dichotomous manner. Athletic departments either report a zero-dollar profit or a profit of at least \$100,000. Only three universities reported a profit of less than \$10,000. There are no universities whose athletic departments reported a loss for 2016-2017. Because of this essentially “profit” or “breakeven” style of reporting, the profit of the athletic department was used as a dummy variable. Profit has also been found to have a large impact on Title IX compliance, as it allows for more money to the athletic departments to provide for more sports, both male and female.

Data Analytic Plan. First, a paired t-test was run to evaluate evidence of a salary gap between male and female associate professors. Next, a paired t-test was used to assess salary difference at universities based on their Title IX compliance. A correlation was run to assess the relationship of each of the variables. A logistic regression of the variables impacting Title IX compliance was used to assess the impact of the variables chosen on compliance levels. *Location of the university, football subdivision, institution type, historically black university, profitability of athletic department, and percentage of female undergraduates* were controlled for in this model. These variables were coded as categorical variables due to the reporting from the data source and the impact assessed from the literature on Title IX compliance. These variables, found to impact Title IX compliance alone, were not significant in explaining Title IX's impact on salary gap at Division I FBS and FCS universities. With this, two different regression models were used in an attempt to best describe the variance in each variable. The second regression model run included *salary difference*, and controlled for *Title IX proportionality gap, total number of associate professors, percent of non-white associate professors, and percent of female associate professors*.

## Results

The salary gap of Division I FBS and FCS universities was on average \$4,650.27. Described in terms of the salary gap, female professors made 94.68% of what male associate professors made in 2017. A paired t-test was run to look for evidence of a salary gap at Division I FBS and FCS universities. The results show the difference in salaries of male and female associate professors is significant  $t(248) = 15.179, p < .001$ . For those

universities where the females make more than male associate professors, the average difference in salary is not significant ( $p=1.000$ ).

Table 3: Paired T-Test Differences in Salary

Variable	Observations	Mean	Standard Error	Standard Deviation
Average Male Associate Professor Salary	250	\$87,525.75	1,136.38	17,967.79
Average Female Associate Professor Salary	250	\$82,875.48	1,014.84	16,046.01
Salary Difference	250	\$4,650.27	306.36	4,843.95

t=15.179  
Pr (T<t) = 1.000 Pr (T>t) =.000

The difference in salary found is almost 30% of one standard deviation, showing a moderate effect. The difference found is both statistically significant and substantively significant, as the difference is 67% of a female associate professor's month's salary. Meaning, the male associate professors in this study are being paid over half of a month's salary extra per year than female associate professors.

Table 4: Descriptive Statistics

Variables	Mean	Standard Deviation	Median	Min; Max
Associate Professors	219.203	143.385	202.5	23;1101
<i>Total</i>				
<i>Males</i>	148.502	119.933	113	11;654
<i>Females</i>	107.092	80.834	85.5	7; 447
Percent Female	42.93%	6.59%	42%	21%; 62%
Associate Professors				
<i>Percent of White Males</i>	40.26%	11.02%	42%	4%; 76%
<i>Percent of White Females</i>	30.30%	9.23%	31%	0%; 50%
<i>Percent of Non-White Male</i>	16.82%	9.87%	15%	0%; 58%
<i>Percent of Non-White Female</i>	12.64%	8.79%	11%	0%; 50%
Average Salary, Total Equated 9-month	\$85,560.44	\$17,091.62	\$83,276	\$40,457; \$150,174
<i>Males</i>	\$87,453.84	\$17,967.98	\$85,855.50	\$25,204; \$155,750
<i>Females</i>	\$82,801.20	\$16,057.07	\$81,166.50	\$53,862; \$140,994
Difference in Average Salary	\$4,650.27	\$4,843.95	\$4,871	-\$33,716; \$18,391
Difference in Average Salary of Compliant Universities (n=126)	\$5,882.92	\$4,160.42	\$6,352.50	-\$21,416; \$18,391
Difference in Average Salary of Non-Compliant Universities (n=124)	\$3,397.74	\$5,174.19	\$3,576.50	-\$33,716; \$16,828
Total Undergraduates	13,334.73	9,478.10	10,752.50	942; 46,592
<i>Females</i>	7,024.30	4,820.02	5,848	206; 22,451
<i>Males</i>	6,310.43	4,783.32	5,092	472; 24,141
Percent of Female Undergraduates	53.82%	6.93%	54%	9%; 69%
Total Athletes	571.77	185.51	526	262; 1354
<i>Females</i>	267.01	98.48	228.5	102; 626
Percent of Female Athletes	46.24%	5.81%	45.49%	26%; 62%
Title IX Compliant Universities (1=No, 0=Yes)	0.494	0.501	---	0,1
Average Proportionality Gap	7.52%	8.46%	5%	-17%; 34%

\*Other Races includes: African American, Hispanic, Asian, American Indian, Alaskan, Hawaiian, Pacific Islander, Biracial, Unknown, and Non-resident Alien.

The universities in this study had on average 219 associate level professors. There was an average of 107 female associate professors and 149 male associate professors. The average salary of associate professors at the Division I FBS and FCS universities is \$85,486.32. The average salary of female associate professors at these universities is \$82,875.48, and male associate professors is \$87,525.75. The average gap, calculated by subtracting the average female associate professor salary from the average male professor salary at each university equates to just over a five percent difference in salary.

There were 20 universities where female associate professors made at least \$1,000 more. These universities had a higher percentage (46.8%) of female associate professors than the average of all the universities. For the universities where there are a higher percentage of females in their total associate professors the female salary is higher than at universities with a lower percentage of female associate professors. Though, the average salary of total associate professors is lower at these universities than those with a smaller percentage of female associate professors. This aligns directly with the devaluation theory.

There are significantly more male associate professors than female associate professors ( $p=.000$ ). Universities with less than one third of female associate professors have an average salary difference of \$5,926, higher than the average salary difference of the sample. There are 32 universities with exactly half female associate professors, but only nine universities with 55% or more. Though women are 60% of those receiving post graduate degrees, they are not represented in academia at the same rate. These universities have an average salary difference between their male and female associate professors of just \$1,051.89, much less than the average difference of the entire sample.

There is a large range of female undergraduates and percent of female undergraduates. There are four universities with less than 40% female undergraduates in their student body. These universities average 33.5% female associate professors. The universities with more female undergraduates have more female associate professors, thus decreasing the salary gap and the total salaries for the associate professors at the university. The average salary for the entire university decreases as the percent of female associate professors increases, which aligns with the devaluation theory. With the average salary lower, there is less difference available between male and female associate professors. Thirty-two universities in this study had more than 60% female student body, but only six with more than 65%. More than 60% student body decreases the likelihood of being Title IX compliant, and also increases the amount of female associate professors at the university. These universities average 49% female associate professors and have an average 97.32% salary gap between male and female associate professors, lower than the salary difference of the total sample. Also leading to the previously mentioned conclusion that where there are more female associate professors, there is a lower gap between their male and female associate professors. Where there are less than half female associate professors, the salary gap is \$4,896. The average salary is \$87,181, equating to a 94.5% salary difference. At universities that have over half female associate professors total, the difference is \$3,250 in salary. The average salary at these universities is \$77,152, equating to a 95.9% salary difference. Though not statistically or substantially different in wage gap, the average salary is much lower at the universities with a higher percentage of females, supporting the devaluation theory.

Title IX athletic substantial proportionality compliance in Division I FBS and FCS is met at 50.4% of the universities. Of the 250 Division I FBS and FCS universities in the study, 126 are *compliant* and 124 are *non-compliant*. The breakdown of the FBS universities is divided in Table One and FCS universities in Table Two. Of the 127 FBS universities in the sample, 80 are *compliant* and 47 are *non-compliant* by the standard. Of the 123 FCS universities in the sample, 42 are *compliant* and 81 are *non-compliant* by the standard.

Title IX compliance varies widely across the universities in this study. There are 34 universities with more than a 20% proportionality difference. These universities have the highest percentage of female undergraduates (64%). There is a correlation of ( $r=.394$ ) between percent of female associate professors and percent of female undergraduates. This correlation is moderate. As there are more female undergraduates, there are more female associate professors. As mentioned earlier, the salary gap decreases as the percentage of female associate professors increases. There are 21 universities who exactly comply with Title IX, meaning they have zero difference between the percentage of female undergraduates and female student athletes. These universities have on average 50.20% female undergraduates. The percentage of female undergraduates is lower compared to those universities without Title IX compliance. The percentage of female associate professors is also a smaller portion of total associate professors and the salary gap (\$6,627.81) is higher than the average. There are 29 universities that are *over compliant* with Title IX, with a higher percent of female athletes than female student body. Five of the seven with more than five percent difference use practice players, increasing their proportion of female student athletes. These universities also have fewer

female undergraduates (36.57%). The use of practice players combined with a lower percentage of female undergraduates make Title IX compliance more difficult to achieve. Profitability of universities who comply versus those who do not are also staunchly different. Title IX *compliant* universities have reported an average profit of \$3,161,497 where Title IX *non-compliant* universities have reported an average profit of \$889,449. Because of the reported profit of Title IX compliant universities being much higher than that of non-compliant universities the importance of profit explained in the literature is evident here, as athletic departments with more money have more money to spend on female sports.

A paired t-test was run to show significance of the *salary gap* by *Title IX compliance*. As shown in Table Five, there is a significant salary gap difference for universities that comply with Title IX versus those who do not. These differences are significant for all levels of Title IX compliance  $n=250$ ,  $F(3,246) = 10.56$ ,  $p < .000$ . About 11% of the variance in salary gap can be explained by the difference in Title IX proportionality differences.

$$n^2 = r^2 = \frac{666718002}{5842500000} = .1141$$

Table 5: Paired T-Test Differences in Salary by Title IX Compliance

Group	Observations	Mean	Standard Error	Standard Deviation
<i>Compliant</i>	126	\$5,882.91	370.64	4,160.42
<i>Non-Compliant</i>	124	\$3,397.74	464.65	5,174.12
Combined	250	\$4,650.27	306.36	4,843.95
Difference		\$2,485.17	593.34	

$t=4.188$

$\Pr (T < t) = 1.000$   $\Pr (T > t) = .000$

The analysis shows the opposite relationship than the hypothesized relationship. Compliant universities have a larger salary gap between their male and female associate professors. At compliant universities, female associate professors make 93.72% of the male associate professor salary. At non-compliant universities the female associate professors make 95.82% of the male associate professor salary. The correlation values of the variables in the regression model are presented in Table Six.

Table 6: Simple Correlation Matrix of Regression Variables

	Sal Gap	Title IX	% Female Profs	% Non- White	Total Prof	Profit	Total UG's	Total Sal	Public
Salary Gap	1	-0.307*	-0.182*	-0.208*	0.327*	0.087	0.258*	0.417*	-.014
Title IX			0.270*	0.274*	-0.451*	-0.186*	-0.431*	-0.449*	.098
% Female Profs				0.071	-0.210*	-0.109	-0.168*	-0.247*	-.021
% Non-White					-0.071	-0.106	-0.034	-0.039	-.173*
Total Professors						0.329*	0.853*	0.435*	-.250*
Profit							0.309*	0.077	-.250*
Total Undergrads								0.260	-.480
Total Average Salary									.346*
Public University									

p<.000\*

The relationship between salary gap and Title IX proportionality differences is as previous results have shown and is the opposite of the hypothesis ( $r = -.307$ ). There is a negative moderate relationship between *salary gap* and *Title IX compliance*. *Title IX compliance* is positively correlated to *percent of female associate professors* ( $r = .270$ ), *percent non-white associate professors* ( $r = .274$ ). *Title IX compliance* is negatively correlated to *total number of associate professors* ( $r = -.451$ ), *athletics department profitability* ( $r = -.186$ ), *total number of undergraduates* ( $r = -.431$ ), and *total average salary for associate professors* ( $r = .449$ ). *Salary gap* is positively correlated to *total number of associate professors* ( $r = .327$ ), *average total salary* ( $r = .417$ ) and *total number*

*of undergraduates* ( $r=.258$ ). *Salary gap* is negatively correlated to *percent of female associate professors* ( $r=-.182$ ) and *percent of non-white associate professors* ( $r=-.208$ ). *Total number of associate professors* is positively correlated to *athletics department profitability* ( $r=.329$ ), *total number of undergraduates* ( $r=.853$ ), and *average total salary* ( $r=.435$ ). *Total number of associate professors* is negatively correlated to *public university* ( $r=-.250$ ) and *percent of female associate professors* ( $r=-.210$ ). *Percent of female associate professors* is negatively correlated to *total number of undergraduates* ( $r=-.168$ ) and *average total salary* ( $r=-.247$ ). *Public university* is negatively correlated to *percent non-white associate professors* ( $r=-.173$ ) and *athletics department profitability* ( $r=-.250$ ). *Public university* is positively correlated to *total average salary* ( $r=.346$ ).

Title IX impacts salary gap, but the factors that influence variance on Title IX do not impact the variance in salary gap in any significant manner. To fully explain both variables, Title IX variance is looked at separately using logistic regression. Variables controlled for in this model were *university location*, *football subdivision*, *control of institution*, *historically black categorization*, *profitability of athletic department*, and *percent of female undergraduates*. Table Seven shows these regression statistics.

Table 7: Logistic Regression Statistics for Title IX Compliance

Title IX Non-Compliance	Coefficient	<i>z</i>	P> <i>z</i>
Location			
<i>South</i>	1.136	3.20	.001***
<i>North, West (base)</i>			
Football Subdivision			
<i>FBS</i>	-.931	-2.47	.014*
<i>FCS (base)</i>			
Institution Control			
<i>Private</i>	.318	.78	.433
<i>Public (base)</i>			
Historical Classification			
<i>Historically Black</i>	-15.963	-.01	.990
<i>Not Historically Black (base)</i>			
Reported Profit			
<i>Yes</i>	-.195	-0.56	.573
<i>No (base)</i>			
Percent Female			
<i>Undergraduates</i>	21.457	5.46	.000***
Constant	-11.128	-3.5	.001***

R<sup>2</sup>=.282 p<.05\* p<.01\*\* p<.001\*\*\*

*n*= 250

This model explained 28.2% of the variance in Title IX compliance for Division I FBS and FCS universities. Universities in the *South*, compared to those in the *North* and *West*, have a 1.136 (*p*=.001) higher odds for being *Title IX non-compliant*. FBS member universities have a .931 (*p*=.01) lower odds of being *Title IX non-compliant* compared to FCS member universities. For one unit increase in *percent of female undergraduates*, the odds for being *Title IX non-compliant* over Title IX compliant increases by 21.457 (*p*=.000).

A regression model including the control variables *Title IX compliance*, *total number of associate professors*, *percent of non-white associate professors*, and *percent of*

*female professors* was used to explain *salary difference* for the universities in this study.

These results are shown in Table 8.

Table 8: Hypothesis Regression Statistics

Salary Difference	Coefficient	Standard Error	P> t
Title IX Proportionality Gap	-86.418	37.161	.021*
Total Number of Associate Professors	7.970	2.163	.000***
Percent of Non-White Professors	-42.109	16.368	.011**
Percent Female Associate Professors	-54.452	45.165	0.229
Constant	8713.361	2153.597	.000***

R<sup>2</sup>= .1703 p<.05\* p<.01\*\* p<.001\*\*\*  
n= 250

Seventeen percent of the variance in salary gap can be explained by the *Title IX proportionality gap*, the *total number of associate professors*, the *percentage of non-white professors*, and the *percentage of female associate professors*,  $F(4, 245) = 12.58$ ,  $p < .000$ . The relationship between *salary gap* and *Title IX compliance* is negative and statistically significant ( $p = .021$ ), which is in the opposite relationship proposed in the hypothesis, true. Each single percentage point increase of the *proportionality gap* decreases the *salary gap* by \$86.42 ( $p = .021$ ). Each percentage point increase in *total associate professors* increases the salary gap by \$7.97 ( $p = .000$ ). Each percentage point increase in *non-white associate professors* decreases the *salary gap* by \$42.11 ( $p = .011$ ). This is aligned with the literature, as people of races and ethnicities other than *white* are the lowest paid members of society when compared to white men and white women (Bishu & Alkadry, 2017). The higher percentage of total associate professors that are

non-white, the lower the average salaries become. The largest impact on the salary gap is the *total number of associate professors* at a university,  $R^2 = .052$ ,  $p < .001$ .

## Discussion

This research found that the Title IX athletic participation proportionality gap has an inverse relationship with the salary gap between male and female associate level professors. The results suggest that a university complies with Title IX or has a smaller salary gap but is less likely to achieve both. This study found evidence of a salary gap at Division I FBS and FCS universities. The salary gap in this study was consistent with the American Association of University Professors annual report for the 2016-2017 school year, as they found an average salary gap of .961, equating to female associate professors making 96% of an equivalently ranked male across all universities in the United States (American Association of University Professors, 2017). The nationally representative salary gap found was only two percent different than the salary gap found in this study.

The results supported the opposite relationship proposed in the hypothesis. This is likely due to the size of the university and the percentage of females, both undergraduates and associate professors, on the campus. The percentage of female undergraduates has the biggest impact on both variables, Title IX compliance and salary gap. Percentage of female undergraduates is half of the equation to deciding compliance, based on the formula used by the Office of Civil Rights. As the literature shows, where there are more female undergraduates, Title IX compliance is difficult to achieve for a plethora of reasons, different for each university. The percentage of female undergraduates also impacts the percentage of female associate professors, as this study found, where there were more female undergraduates, there were more female associate professors on the

campus. This relationship offers a result in itself, showing evidence that as the female undergraduates increases to at least half of the student body, the percentage of female associate professors increases as well. As devaluation theory explains, where there are more females, the average salary decreases. This study found where the average salary was lower, the salary gap was much lower as well when compared to higher average salary universities. It is possible that percentage of female undergraduates has the biggest impact on both of these variables, superseding the Title IX compliance all together.

Both human capital and labor market discrimination theory explain the results of this study. Human capital theory, explaining that women are less likely to be invested in or promoted in the work force due to the likelihood they might leave to have children, gives theoretical background to the results in this study. This study found the lowest percentage of female associate professors at universities that are prestigious and likely require more dedication to the job than smaller teaching colleges. Being a professor requires significant years of training, education specifically, that the theory says women are less likely to choose this path. Labor market discrimination also helps explain lower percentages of female associate professors found in this study and the salary gap also found. Academia is, historically, a male dominated field. This theory expresses that it is more difficult for employers to want to hire females in such a field due to the stereotypes of females in the workforce. This combined with devaluation theory, gives a more complete picture of the salaries at these universities. This study found that where the percentage of female associate professors is highest, the average salary is lower than at universities with the lowest percentage of females. Combined with the finding that

females are less likely to work at the most prestigious universities in this study, leads the conclusion that aligns well with labor market discrimination theory.

This research found that for the 2016-2017 school year, half of the universities in Division I FBS and FCS universities were not compliant with the Office of Civil Rights proportionality requirements. Previous research estimated the Division I compliance rates to be as low as 17% (Yanus & O'Connor, 2016) but this study found the rates for Division I FBS and FCS universities to be 49%. Though this study did not look at the entire Division I, it did include all Division I schools with a football program, which may account for the difference. Title IX proportionality was achieved at 50.4% of the Division I universities with football in this study. The Title IX proportionality was achieved at a much higher rate, 71.43% at universities without football. From prior research, we know that universities in the south or that are Historically Black have the lowest compliance rates (Stafford, 2004). The Historically Black universities included in this study had an average proportionality difference of 20.27. Comparatively, the proportionality difference average of all other universities was 6.32. The HBU's have a more difficult time complying with Title IX because of the history of financial instability these universities and colleges have seen over the past 50 years (Dees, 2004). Also, an issue for just these universities is that students want to participate in a wide variety of sports, as over half of Black women participate in only track or basketball (Dees, 2004). These universities are less likely to have large revenue television contracts, which offer the biggest portion of athletic budgets (Dees, 2004). Only three of the 113 universities that reported an athletics department profit were HBU's. As previously mentioned, universities are less likely to comply with Title IX when their student body is more than 60% female, HBU's in this

study have an average of 60.95% female undergraduates where those not in this classification average only at 53.13%. It is the combination of these factors that hinders the Title IX compliance of HBU's.

Universities in the South had an average proportionality mean of -11.11%, higher than the 4.52% average of the Northern universities included in the study. Meaning, the average university in the South had about an -11% difference between the percentage of female student athletes and the percentage of female undergraduates, showing an underrepresentation of female student athletes. These universities in the South are more likely to have a profitable athletics department and have an average of 55% female undergraduates, but the lowest rates of Title IX proportional compliance. This has been found true in many studies but none have offered an explanation (Dees, 2004; Anderson, Cheslock, & Ehrenberg, 2006; Yanus & O'Conner, 2016). This might be the case due to the culture of sports and universities in the South. The universities and athletic departments have a large emphasis on football at universities in the South. Looking at the recruitment efforts and budgets for female sports, as well as the culture on the campus at these specific universities might offer some explanation. Greek life might also play a part in this as well. Universities in the South have around half of their female undergraduate body participating in a sorority (U.S. News, 2017). Because of this, females might be less likely to choose to play sports and instead opt for a sorority.

The universities where the proportionality difference is below the Office of Civil Rights margin, at less than a five percent difference of female undergraduates than female student body use practice players consistently on their major female sports, such as basketball and volleyball. These universities also all had a female only track team with

the same or similar number of players as the football team. This combined with the universities having less than 50% female student body allows for an easier time complying with Title IX (Anderson, Cheslock, & Ehrenberg, 2006). The seven universities with the largest proportionality gap between female athletes and female undergraduates do not use any male practice players on female sports and offer no large female only sports that could counteract the effects of their large male football teams on Title IX compliance. All seven also have a male only football team larger than the 88-player scholarship minimum, set forth by the NCAA.

Title IX compliance is directly related to the number of female students a university has. Anderson, Cheslock, and Ehrenberg (2006) found that universities with more than 60% female undergraduates had rates of compliance less than three percent. Of the 36 universities in this study with more than 60% female undergraduates, only two were compliant. Of the 12 universities with less than 45% female undergraduates, only one was non-compliant with the Title IX standards.

Of the 21 universities with a zero percent proportionality difference between female athletes and female undergraduates, 11 universities reported a profit in their athletics department for the 2016-2017 school year. Because these universities have on average only about 50% female undergraduates, it is much easier to achieve Title IX compliance than universities with over 60% female undergraduates. These specific universities also have more money to spend on sports, as their athletics departments report a much higher profit than almost every other university in the country. This profit comes from television contracts, direct funds from the sporting events, and alumni donations (Dees, 2004). Athletic department profitability has a direct relationship to

meeting Title IX proportionality requirements, as this profit can be used to offset the costs of larger female sports programs (Agathe & Billings, 2000). Larger male only sports, such as football or basketball, that do not make a profit use more of the budget each year, potentially taking some of the budget for female sports and decreasing the ability to achieve Title IX compliance (Agathe & Billings, 2000).

There is a correlation of (.394) between female undergraduates and female professors in this sample. As mentioned earlier, the more female undergraduates, the more difficult it is to comply with Title IX (Anderson, Cheslock, & Ehrenberg, 2006). Consistent with devaluation theory research, a part of the discrimination theory research, if there are more female associate professors the salary of the entire profession goes down, decreasing the salary gap and total salaries over time (Schieder & Gould, 2016). This is consistent with the sample, as total average salary of associate professors was \$87,181.31 at universities with less than 50% female associate professors, but only \$77,152.97 at universities with more than 50% female associate professors. The devaluation theory explains that decreasing of occupational salary occurs as the percentage of women increases (Magnusson, 2013). On the basis of value discrimination theory, the entire occupation is valued lower, and paid lower, because there are more women. It is because of this theory and its evidence that I believe is the reason that as Title IX compliance goes up, the salary gap between male and female associate professors goes down.

### Conclusion and Limitations

There were a few limitations to this study. First, the availability of complete and exhaustive data regarding the factors that affect salary gap for professors was a limitation

to the study. The data desired would include factors such as length of service, previous job experience, number of publications, administrator duties, year granted tenure status, department, etc. The availability of this data would likely allow for a more complete model and variables, thus allowing for a more complete understanding of the variance in salary gap. The measure of the salary data from IPEDS would also be a limitation, as the only the average of each contract is reported. This does not include any stipends, grants, or additional income so it does not include an entire picture of the average earnings of an associate professor at one of these universities. The data are also reported for an entire state by one coordinator, so mistakes are likely to have occurred. This data are reported as an average for all associate level professors depending on contract and gender, but it is not reported as an average for each department. Having data based on department would be invaluable as associate professors in hard sciences can sometimes make drastically different salaries than those in the social sciences or liberal arts disciplines.

The data also do not include any variables regarding pay raises or pay cuts for the entire university or specific disciplines, this would also have been a good control variable that might have given us a better explanation of the salary gap variance. Further research should include the additional Divisions or testing the devaluation theory longitudinally since females have integrated into academia once Title IX was passed. Since there are three prongs of Title IX that include more theoretical evaluations of a university's sports program, a qualitative study of the compliance of the other prongs would be beneficial.

While Title IX compliance does not positively impact the salary gap, the findings in this study give some evidence to show that a salary gap between male and female associate professors exists at significant levels. This study also was able to evaluate the

compliance levels of the biggest football programs in the country to find that half were compliant, and half were non-compliant. This study was also able to find a relationship between the percentage of female undergraduates and female professors. This is important to look at with a good understanding of Title IX, as this law was the main reason females are a significant proportion of the undergraduate student body.

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APPENDIX

Table 1 FBS Title IX Compliance

Compliant Universities	Non-Compliant Universities
<p>Auburn University, Ball State University, Boston College, Brigham Young University, Clemson University, Colorado State University, Florida State University, Indiana University, Iowa State University, Louisiana Tech University, Marshall University, Mississippi State University, North Carolina State University, Northern Illinois University, Northwestern University, Ohio State University, Ohio University, Pennsylvania State University, Rice University, Rutgers University, San Jose State University, Southern Methodist University, Stanford University, Temple University, Texas A &amp; M University, Texas Tech University, The University of Alabama, The University of Tennessee, The University of Texas at Austin, Tulane University of Louisiana, University at Buffalo, University of Arizona, University of Arkansas, University of California-Los Angeles, University of Central Florida, University of Cincinnati, University of Colorado Boulder, University of Georgia, University of Idaho, University of Iowa, University of Louisville, University of Maryland, University of Nebraska, University of Nevada- Las Vegas, University of Notre Dame, University of Oklahoma, University of Pittsburgh, University of South Carolina, University of Tulsa, University of Washington, University of Wyoming, Utah State University, Virginia Polytechnic Institute and State University, Washington State University, Baylor University, Boise State University, California State University, Georgia Institute of Technology, Kansas State University, Miami University, Michigan State University, New Mexico State University, Oklahoma State University, Oregon State University, Purdue University, San Diego State University, University of Connecticut, University of Hawaii at Manoa, University of Illinois at Urbana-Champaign, University of Kansas, University of Michigan, University of Minnesota, University of Nevada-Reno, University of North Texas, University of South Florida, University of Southern California, University of Utah, University of Wisconsin, West Virginia University, Western Michigan University</p>	<p>Arizona State University, Arkansas State University, Bowling Green State University, Central Michigan University, Duke University, Kent State University, East Carolina University, Eastern Michigan University, Florida Atlantic University, Florida International University, Louisiana State University, Middle Tennessee State University, Syracuse University, Texas Christian University, The University of Texas at El Paso, Troy University, University of Akron, University of Alabama at Birmingham, University of California-Berkeley, University of Florida, University of Houston, University of Kentucky, University of Louisiana at Lafayette, University of Louisiana-Monroe, University of Memphis, University of Mississippi, University of Missouri, University of New Mexico, University of North Carolina at Chapel Hill, University of Oregon, University of Southern Mississippi, University of Toledo, University of Virginia, Vanderbilt University, Wake Forest University, Western Kentucky University</p>

Table 2 FCS Title IX Compliance

Compliant Universities	Non-Compliant Universities
<p>Brown University, Bryant University                      Bucknell University, California Polytechnic State University-San Luis Obispo, California State University-Sacramento, Central Connecticut State University, Citadel Military College of South Carolina, Colgate University, College of the Holy Cross, College of William and Mary, Columbia University in the City of New York, Dartmouth College, Duquesne University, Eastern Washington University, Harvard University, Idaho State University, Illinois State University, Indiana State University, Iona College, James Madison University, Lehigh University, Liberty University, Missouri State University-Springfield, Montana State University, Murray State University, North Dakota State University-Main Campus, Robert Morris University, Southern Illinois University-Carbondale, Tennessee Technological University, Towson University, University of Dayton, University of Delaware, University of Maine, University of New Hampshire-Main Campus, University of North Dakota, University of Rhode Island, University of Richmond, Villanova University, Virginia Military Institute, Weber State University, Wofford College, Yale University</p>	<p>Abilene Christian University, Alabama A &amp; M University, Alabama State University, Alcorn State University, Austin Peay State University, Bethune-Cookman University, Butler University, Campbell University, Charleston Southern University, Cornell University, Davidson College, Delaware State University, Drake University, East Tennessee State University, Eastern Illinois University, Eastern Kentucky University, Elon University, Florida Agricultural and Mechanical University, Fordham University, Furman University, Gardner-Webb University, Georgetown University, Grambling State University, Hampton University, Houston Baptist University, Howard University, Jackson State University, Jacksonville State University, Jacksonville University, Lafayette College, Lamar University, Marist College, McNeese State University, Mercer University, Mississippi Valley State University, Monmouth University, Morehead State University, Morgan State University, Nicholls State University, Norfolk State University, North Carolina A &amp; T State University, North Carolina Central State University at Raleigh, Northern Arizona University, Northwestern State University of Louisiana, Portland State University, Prairie View A &amp; M University, Presbyterian College, Princeton University, Sacred Heart University, Saint Francis University, Sam Houston State University, Samford University, Savannah State University, South Carolina State University, South Dakota State University, Southeast Missouri State University, Southeastern Louisiana University, Southern University and A &amp; M College, Southern Utah University, Stephen F Austin State University, Stetson University, Stony Brook University, SUNY at Albany, Tennessee State University, Texas Southern University, The University of Montana, The University of Tennessee-Chattanooga, The University of Tennessee-Martin, University of Arkansas at Pine Bluff, University of California-Davis, University of Central Arkansas, University of Northern Colorado, University of Northern Iowa, University of Pennsylvania, University of San Diego, University of South Dakota, University of the Incarnate Word, Valparaiso University, Wagner College, Western Carolina University, Western Illinois University, Youngstown State University</p>