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Are All Faculty Members Being Compensated Equally? A Multi-Method Approach to Investigating Faculty Salary

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ARE ALL FACULTY MEMBERS BEING COMPENSATED FAIRLY?

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ABSTRACT

Salary disparities between gender and race continue to exist (Baker, Drolet, 2010; Barbezat, 2010; Broyles, 2009; Fransen, Plantenga, & Vlasblom, 2012; Hurtado, & DeAngelo, 2009; Monroe, & Chiu, 2010; Sayers, 2011). The trend of men being paid more for doing the same job as women has been acknowledged and assessed for years, most notably through vigorous empirical studies (Cherry, Durden, & Gaynor, 2011; Grey-Bowen, & McFarlane, 2010; Monroe, & Chiu, 2010; Takahashi, & Takahashi, 2010). This problem exists in both the general labor market and within academia: despite comparative levels of human capital, women are earning less (Carter, 2010; LoSasso, Richards, Chou, & Gerber, 2011; McDevitt, Irwin, & Inwood, 2009).

The purpose of this study was to understand if faculty salary is fairly apportioned by gender and race, after controlling for rank, degree, discipline, tenure status, and time in rank. This study's sample included all faculty members at a New England university for two academic years. Data was provided by the provost's office as it is collected on an annual basis by the university. During the 2006-2007 academic period 604 full-time faculty members were employed and included in the study, while during the 2010-2011 year there were 571 active faculty members. To this end, five research questions were probed. The first research question focuses on how much impact gender and race have on salary. To determine this, a multiple regression analysis was developed to test the amount of variance gender and race has over salary. Two models were tested for each academic year. The second research question focused on each individual rank (e.g., assistant professor) and assessed if salary differences existed within rank, and across disciplines between men and

women. To assess these differences multiple analysis of variance (ANOVA) and analysis of covariance (ANCOVA) tests were run for each academic year. The third question investigated if differences within rank between men and women existed; a series of t-tests were used to run this analysis. The fourth question focused solely on faculty members who were hired within the past five years. To run this analysis, a series of segmented t-tests were completed to focus only on these recent hires. The final research question focuses on minority faculty members. First, differences between minority and non-minority professors are analyzed followed by an analysis of minority men compared to minority women. For both of these analyses segmented t-tests were used to understand the interrelationships of minority status and salary.

After running the multiple regression analysis on the two datasets, it was found that race and gender did not appear to be significantly associated with faculty salaries for both of these samples. Next, multiple analysis of variance tests were run and it was found that when examining each dataset, significant salary differences between men and women existed for the associate and full professor groups only. To get a better understanding of the most recent hires, the next analysis examined those who were hired in the past 5 years. In both datasets a significant salary difference existed between men and women; women in the Pharmacy department earned significantly more than men. The last two tests focused on minority and non-minority salary differences and minority men versus minority women salary inequalities. Non-minority faculty earned significantly more than minority faculty, only at the full professor level. This finding is true for both time intervals. And lastly, no significant salary differences were identified between minority men and minority women. This

is not to say inequalities did not exist, rather not enough statistical power was available to identify statistically significant differences.

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I am also very appreciative to Dr. Clifford Katz, who was kind enough to provide the data analyzed and without him this dissertation would not exist. His excitement for the topic was evident from the very beginning and a constant reminder that this project had practical applications and could be used in the future when determining salaries for faculty. He pushed me to think outside of the box and find acceptance in results that go against previous findings.

I would also like to thank Dr. Margie Rogers and Dr. Joseph Rossi for serving on my committee.

Last but certainly not least I must express how lucky I am to have such supportive parents, John and Margie. After moving back to the Washington, DC area, they continued to be a source of encouragement and helped me focus my energies back on the never ending dissertation.

TABLE OF CONTENTS

LIST OF TABLES

TABLE PAGE

LIST OF FIGURES

CHAPTER 1

Are All Faculty Members Being Compensated Fairly?

A Multi-method Approach to Investigating Faculty Salary

STATEMENT OF THE PROBLEM

The purpose of this study is to understand if faculty salary is fairly apportioned, after controlling for gender, race, college, department, degree, rank and year started in current position (e.g., instructor, assistant professor, associate professor or full professor). To gain a better understanding of the interrelationships between the identified variables, several analyses will be utilized to determine if salary inequality exists, and if so, where. The planned analyses include multiple regression, analysis of variance with a follow-up analysis of covariance, and multiple t-tests on segmented sub-samples.

LITERATURE REVIEW

Salary

Within society, disparities in salary and power between men and women exist. Men, as a whole, tend to consistently earn more and have increased levels of power. This stratification is present across occupations, regardless of race, level of education, and numbers of years working (Ash, Carr, Goldstein, & Friedman, 2004; Campos-Soria, Ortega-Aguzaz, & Ropero-Garcia, 2009; Compton, 2007; Cropsey, Masho, Shiang, Sikka, Kornstein, & Hampton, 2008; Fox, 1981; McDevitt, Irwin, & Inwood, 2009; Monroe & Chiu, 2010; Wright et al., 2007) with research indicating that

women tend to earn considerably less income (Ash, Carr, Goldstein, & Friedman, 2004; Barbezat, 2010; Bellas, 1994; Bellas, Ritchey, & Parmer, 2001; Blau & Kahn, 2007; Broyles, 2009; Hill & Warbelow, 2008; Hurtado & DeAngelo, 2009; Judge & Livingston, 2008; Monroe & Chiu, 2010; Shannon & Kidd, 2003; Toutkoushian, Bellas, & Moore, 2007). Previous findings suggested that women only earn 60 percent of what men earn (Bayer & Astin, 1968; Fox 1981), whereas more recent findings indicate that the average salary of women is closer to 84 percent of the salary earned by men (Bayer & Astin, 1968; Burkhauser & Larrimore, 2009; Carlin & Rooney, 2000; Fox, 1981). In 2010 the Institute for Women's Policy Research reported that the overall wage gap between men and women had slightly increased, with women earning 80.2 percent of what men had earned (Institute for Women's Policy Research, 2010). After discovering such a salary difference some researchers have simply concluded that women's work and achievements were devalued when compared to men (Bellas, Ritchey & Parmer, 2001; Cohen & Huffman, 2003; Wright et al., 2007). To further support the claim that female professors, associate and assistant professors only make a fraction of what their comparative male counterparts make, the Chronicle of Higher Education's report *What Professors Earn* illustrated the salary gap for the academic year 2009-2010 for four year institutions. According to the report, female professors make approximately 88 percent of what male professors earn (e.g., in The Chronicle study the sample of males earned $113, 556; whereas the sample of females earned $99,780). This gap extended across all levels of tenured faculty, but to varying degrees (What Professors Earn, 2010).

Over the past 50 years research has been conducted to better understand the status of women who work in academia, relative to their male faculty members (Ash, Carr, Goldstein, & Friedman, 2004; Bellas, 1993, Blau & Kahn, 2007; Krefting, 2003; Marthers & Parker, 2008; Umbach, 2006). Since the 1960's the total salary gap has declined, but gender stratification still exists within both higher education and the general labor market (Barbezat, 1987a; 2010; Compton, 2007; Toutkoushian, 1998).

Numerous studies have been conducted to investigate the salary distribution in higher education (Carlin & Rooney, 2000; Eckes & Toutkoushian, 2006; Guillory, 2001; Hurtado & DeAngelo, 2009; Marthers & Parker, 2008; Neithardt, 2007; Oaxaca & Ransom, 2002; Palmer & Griffin, 2009; Wright et al., 2007). In academia, salary is generally related to the numbers of years working, discipline, rank, and tenure status. These variables are interrelated with gender because women are more likely to have career interruptions for family distractions, thus resulting in fewer years worked. Additionally women are more likely to work in disciplines that are valued less like education, humanities or social sciences rather than disciplines that are male dominated such as engineering, business, and mathematics (Maton, & Hrabowski, 2004; Sonnert, & Holton, 1996). Salary is also impacted by the type of work done in higher education: for example, women are more likely to be teaching, whereas men tend to spend more time conducting research or taking on administrative tasks (Bayer & Astin, 1968; Bellas, & Toutkoushian, 1999; Krefting, 2003; Snell, Sorensen, Rodriguez & Kuanliang, 2009).

Using the 1999 National Study of Postsecondary Faculty Data, Barbezat and Huges (2005) found that the overall salary gap between men and women was almost 21%. This finding was very similar to the salary variation identified by Toutkoushian (19%) in 1993. Both of these studies utilized national data sets of faculty information (Barbezat & Huges, 2005; Toutkoushian & Hoffman, 2002). While these percentages may seem unusual, they follow previous trends of inequity. For example, the 1966 National Education Association study found that women who worked in higher education had a medium income of approximately $7,732, which was significantly (16.6 percent) less than the $9,275 earned by equally comparable men. In this study it was noted that the identified salary differentials did exist within each specific academic rank (Bayer & Astin, 1968). Even at full professor level, women only earned 91.2 percent of their male cohort salaries. Several years later, research was conducted to determine the salary variation for the academic year 1972-1973. These study findings indicated that equivalent men earned over $3,000 more than comparable women (Bayer & Astin, 1975). This study illustrated that salary variation existed mostly for women who had worked the longest and had achieved the highest ranks. This could be a reflection of being in the system from a time when sex discrimination was more apparent (Bayer & Astin, 1975; Bellas, Ritchey & Parmer, 2001). Since this study was conducted, new findings suggest that even though differences exist between the sexes, discrimination may not be the catalyst, but rather that various gender characteristics may be the cause of the differences.

In 2001 Bellas et al. found that the salary distribution difference existed within all levels of faculty; the higher the faculty position, the greater salary

differentiation by gender. For example, male full professors earned almost $10,000 more than comparable women, male associate professors earned in excess of $4,000 more and male assistant professors earned over $3,000 more than comparable female assistant professors. The authors of this study suggested that the salary differences existed because women had less years of experience and were less productive than men (e.g., published less). Previous research indicates that productivity or perceived productivity can be a significant predictor of salary (Barbezat & Huges, 2005; Bellas & Toutkoushian, 1999; Bellas, Ritchey & Parmer, 2001; Fox, 1992; Hunter & Leahey, 2010; Leahey, 2007; Long, 1992; Palmer & Griffin, 2009).

Recently, Santovec (2009) argued that these trends are continuing, and that the worst levels of inequality exist at the doctoral granting institutions. She pointed out that even female full professors are earning up to ten percent less than equally comparable men (Santovec, 2009). A similar trend was acknowledged in the general labor market (Compton, 2007). Compton identified evidence that showed as the individual's level of human capital increased (e.g., education, work experience), the salary gap widened between the genders (Compton, 2007).

Lower educational achievements have been suggested as a cause for lower salary levels; although Bayer and Astin (1968) found that in a study of women who earned doctorates, almost one third had reported discrimination regarding salary and promotions. More recently, the University of California (UC) was investigated to determine if discrimination was used when hiring and promoting female faculty members who held a doctorate (West, 2007). It was found that discrimination was used when hiring these women. After studying the trends of faculty hires at UC

Davis, they found that of the faculty members who were hired with tenure, only 25 percent were women, whereas 37 percent of the non-tenured hires were women. Overall, the percentage of women who were hired was significantly lower than the percentage of women earning doctorates (West, 2007), indicating discriminatory practices.

In the 2005 Barbezat and Huges study investigating the gender pay gap, it was found that regardless of rank, discipline and type of college, women are compensated less than equally comparable men. These findings mirror the results of the 1968 Bayer and Astin study which found evidence suggesting that men and women are paid differently. These findings were applicable across all occupational settings, ranks and fields, but women who worked in academia earned significantly lower average salaries than similarly qualified men As more researchers have investigated the issue of salary inequity, the initial findings by Bayer and Astin (1968) have been repeatedly supported (Baron, & Newman, 1990; Baunch, 2002; Carlin, & Rooney, 2000; Hurtado, & DeAngelo, 2009). Whether it occurred at a two or four year institution did not matter; average male salaries were significantly higher. Differences in salary variation increased when examining the largest research universities.

Earning a higher salary, rank, or tenure is dependent upon how productive the university perceives the faculty members are being. The current reward system in higher education places high emphasis on publishing, in which men may be more likely to be engaged (Barbezat, 2010; Bayer & Astin, 1975). Studies have shown that in the academic job market, men earn significantly more income than comparable

women (Barbezat, 2010, 1987a ; Bayer, & Astin, 1975; Bellas, 1993; Bellas, Ritchey, & Parmer, 2001; Fox, 1981; Monroe, & Chiu, 2010; Oaxaca, & Ransom, 2002; Toutkoushian, 1999), are perceived as being more productive (Barbezat & Huges, 2005; Bellas, Ritchey & Parmer, 2001; Bellas, & Toutkoushian, 1999; Fox, 1992; Hunter & Leahey, 2010; Long, 1992; Palmer & Griffin, 2009), and are more likely to be offered competitive jobs outside of the institution (Toutkoushian, 1999).

Within the largest educational institutions women earned less than 80 percent of the salary of men. This could be because institutions usually used differential pay scales for men and women. Various catalysts of salary differences have been identified including inability to take advantage of other opportunities because of geographic constraints (Kulis, & Sicotte, 2002; Marwell, Rosenfeld, & Spilerman, 1979; Rosenfeld, & Jones,1987), difficulty negotiating (Santovec, 2009; Stuhlmacher, & Walters, 1999; Watson, 1994), less productivity (Bellas, & Toutkoushian,1999; Fox, 1992; Hunter, & Leahey, 2010; Leahey, 2007; Long, 1992; Long, Allison, & McGinnis, 1993; McDevit, Irwin, & Inwood, 2009), and not enough focus on research (Barbezat, & Huges, 2005). Women may be less able to take advantage of opportunities that involved moving, particularly married women who must also consider their husband's careers. It is sometimes still expected that men are considered the breadwinner; when determining salary this may be taken into account and it may be assumed that men have a greater economic need to make more money than women (Bellas, 1992; Macpherson, & Hirsch, 1995). As mentioned previously, women are more likely to work in fields that are not valued as highly in the public market. Knowing this, women may find it more difficult to negotiate higher salaries

(Barbezat, 1991; Becker, & Toutkoushian, 2003; Marwell, Rosenfeld & Spilerman, 1979; Neithardt, 2007; Umbach, 2006; Santovec, 2009). Another perspective suggests that because men work in fields that are more in demand, they may receive more offers, from both private industry and higher education, which could result in negotiating higher salaries (Bellas, Ritchey & Parmer, 2001).

Numerous studies have indicated that women who do work in academia are less "productive" because they tend to focus more of their attention on teaching rather than producing research, grants and publishing (Ash, Carr, Goldstein, & Friedman, 2004; Bellas, & Toutkoushian, 1999; Carlin, & Rooney, 2000; Fox, 1992; Hunter & Leahey, 2010; Long, 1992; Long, Allison, & McGinnis, 1993; McDevit, Irwin, & Inwood, 2009; Palmer & Griffin, 2009; Santovec, 2009; Wright et al., 2007). Possible explanations for women being less productive include fewer supplies or space allotted by the university. For example, in 2005 Barbezat and Huges found that men were more likely to engage in research activities, suggesting that perhaps discrimination is not the cause of lower salaries for women in academia.

Minority Faculty

Affirmative action laws were passed in the United States to ensure that all workers would be treated fairly regardless of their personal attributes like race and gender (Blanchflower, 2009; Palmer & Griffin, 2009; Toutkoushian, 1998). More specifically, legislation in the early 1970s strengthened the legal status of female faculty at colleges and universities. The Equal Employment Opportunity Act of 1972 extended Title VII of the Civil Rights Act which protects against sex discrimination in the workplace to academic personnel (Megdal & Ransom, 1985). That same year

the 1963 Equal Pay Act was expanded to cover university and college faculty (Megdal & Ransom, 1985). In 2009 the Lilly Ledbetter Fair Pay Act was the first law signed by President Barack Obama. This law is an amendment to the 1964 Civil Right Act. This amendment states that the statute of limitations for filing an equal pay related suit resets after every pay check impacted by the discrimination (Pear, 2009). Equal opportunity, on the other hand, is to ensure that minority job candidates have equal access to positions in the labor market. Empirical studies have found that the salary differences between black and white faculty members are smaller than the differences identified in the general labor market (Suinn & Witt, 1982; Toutkoushian, Bellas, & Moore, 2007). In the academic labor market, salary differences are more likely to occur between genders than between race (Darbezat, 1999; Ransom & Megdal, 1993; Toutkoushian & Conely, 2005).

Very few minorities enter into higher education (Jan, 2010) and as a result universities must work hard to identify and retain these faculty members (Suinn & Witt, 1982; Tapia, 2010). Without quality minority faculty, universities may find it more difficult to attract a diverse student body (Jan, 2010; Tapia, 2010). At many universities the diversity of minority faculty is significantly lower than the student population. For example, at Boston University less than 4% of tenured or tenure-track faculty are Black or Hispanic (Jan, 2010), which is significantly less than the 10 percent of students who are currently enrolled and are Hispanic or Black (Boston University, 2010). Additionally, a national study conducted by the American Council of Education found that less than 10 percent of tenured or tenure-track faculty are considered a minority (Jan, 2010).

When assessing the salary and overall experience of minority faculty, institutions are having a difficult time because there are not enough minorities to provide reliable estimates. When they do examine pay equity most institutions simply dichotomize race, by either having black/ non-black or white/non-white categories (Toutkoushian, 1998). Only a couple of studies have attempted to categorize faculty into more than two groups (e.g., Gordon, Morton & Braden, 1974; Hallock, 1995).

It is important to pay faculty members adequate and equal salaries. Without a diverse set of faculty members, universities will have trouble recruiting an equally diverse student body (Jan, 2010). Additionally, since students are more apt to feel comfortable with those who share similar characteristics, minority professors are necessary to provide mentoring, serve as role models and encourage the minority students (Tapia, 2010). Previous studies that investigated salary variation by racial status have found many results that are sometimes inconsistent (Barbezat, 1989b; Beggs, 1995; Bellas, & Toutkoushian, 1999; Guillory, 2001; Reid, 1998; Renzulli, Grant, & Kathuria, 2006; Toutkoushian, Bellas, & Moore, 2007). With that being said, it should be noted that research has not indicated that Black faculty members earned significantly less than their Nonblack comparable faculty (Toutkoushian, 1998).

A racial salary divide between White and Black Americans has been in decline since the 1960's, but research has indicated that the variation is significantly less within the academic labor market in comparison to the general labor market (Toutkoushian, 1998). Albeit small, the wage gap between White and Black faculty continues to exist. After controlling for discipline, tenure, and degree earned,

previous research has not been able to determine the cause of such a salary gap (Bellas, 1993). Interestingly, the results of the Carnegie Survey indicated very different findings (Barbezat, 1991); these findings suggested that in 1989, Nonblack men earned more than 10% less than Black men, even after controlling for academic achievements. While these findings seem unusual, the comparison between Nonblack and Black women was more surprising as the results indicated that there were no differences in salary. Seven years later, when Toutkoushian launched his own investigation into salary variation, he found that Black female faculty earned almost 7% more than Nonblack women. Additionally, his findings indicated that the Nonblack women were more financially disadvantaged than the Black women, particularly in the social sciences (Toutkoushian, 1998).

There have been few studies that have investigated salary variation of Hispanic or Asian faculty. Although limited, findings indicate that Hispanics may earn less than white faculty, whereas Asians may earn more than white faculty (Gwartney and Long, 1978; Toutkoushian, 1998). Interestingly, research has indicated that Hispanic, Asian and white women salaries are not statistically different from one another, whereas Hispanic males have been found to earn approximately 6% less comparable White male faculty. Toutkoushian's findings indicated that Hispanic men earned less in all fields, but the greatest inequality exists in the humanities and fine art disciplines (Toutkoushian, 1998).

Evidence showed that salary rates vary by race and gender of faculty members. It is particularly notable that Black faculty members have been shown to be paid almost equal amounts as White members, which is not a consistent trend in

the general labor market. As explained previously, attracting and keeping minority faculty members is quite important for attracting the most promising minority students (Toutkoushian, 1998).

Gender Differences in Academia

Over the past 50 years research has been conducted to better understand the status of women who work in academia, relative to their male faculty members (Ash, Carr, Goldstein, & Friedman, 2004; Bellas, 1993; Blau & Kahn, 2007; Krefting, 2003; Marthers & Parker, 2008; Umbach, 2006). During the 1950's legislation was passed in the United States to improve the status of women and minorities in the work force (Eckes & Toutkoushian, 2006; Megdal & Ransom, 1985; Oaxaca & Ransom, 2002; Palmer & Griffin, 2009). To help pass this legislation, research was used to illustrate the existing inequalities between men and women who worked not only in academia, but in the entire workforce, regarding salary differences (Bayer & Astin, 1975; Bellas, 1993; Compton, 2007; Marwell, Rosenfeld & Spilerman, 1979; Toutkoushian, 1999). To specifically deal with the issue of unequal pay for equal work, the Equal Pay Act of 1963 was developed to help remedy this inequality (Eckes & Toutkoushian, 2006). Since then the total salary gap has declined, but gender stratification still exists across all labor markets (Ash, Carr, Goldstein, & Friedman, 2004; Barbezat, 1987, 2010; Compton, 2007; Toutkoushian, 1998; Wood, Corcoran, & Courant, 1993; Wright et al., 2007).

Within higher education, salary, rank, or tenure is dependent upon how productive the university perceives the faculty members are being. It has been suggested that one reason women have more difficulty earning promotions is because

they may not be viewed as being as productive as male faculty (Barbezat, & Huges, 2005; Bellas, & Toutkoushian, 1999; Bellas, Ritchey & Parmer, 2001; Fox, 1992; Hunter & Leahey, 2010; Long, 1992; Palmer & Griffin, 2009). Women are more likely to be required to teach more courses, less likely to have research opportunities, and have less access to working in administrative positions (Renzulli, Grant & Kathuria, 2006; Santovec, 2009). Findings indicate that women engage in significantly less research; Bayer and Austin (1975) found that only 14 percent of women conducted research for more than 8 hours a week, whereas more than twice as many men engaged in the same activities every week. These differences can make it significantly more difficult for women to earn tenure or promotions in comparison to male faculty members (Toutkoushian, 1999). Studies have found that when male faculty members teach more it can have a negative impact on their salaries, but the same was not true for women (Bellas, & Toutkoushian, 1999; Cropsey, Masho, Shiang, Sikka, Kornstein, & Hampton, 2008; Fox, 1992; Long, 1992; Wright et al., 2007). To clarify, these findings indicate that because women spend more energy on teaching, and less on research or administrative duties, they earn less. This suggests that a compensation differential may exist between the genders. There are fewer financial rewards for teaching university level classes (Palmer & Griffin, 2009). On the other hand, male faculty members are more likely to participate in administrative activities and contribute to research efforts resulting in larger salaries. By engaging in administrative activities along with professorial duties, the male faculty members have the ability to earn significantly more (Bellas, 1993; Snell, Sorensen, Rodriguez & Kuanliang, 2009). The current reward system in higher education stresses

publications (e.g., publish or perish mentality), and conducting research, activities in which men may be more likely to be engaged (Barbezat, 2010; Bayer & Astin, 1975).

The previous research did not distinguish differences between married and unmarried women regarding salary, rank, and tenure status. Whereas there is much well documented information indicating the differences between men and women, far less research has investigated the differences between married and unmarried women. Generally speaking female faculty members are less likely to be married (Bellas, Ritchey & Parmer, 2001; Kulis, & Sicotte, 2002; Santovec, 2009). Marriage for female faculty members can have a negative impact on income and growth (e.g., promotion, tenure and rank). To put it simply, being a married female faculty member can be a disadvantage, but the opposite has been found for married academic men (Bellas, 1992; Korenman & Neumark, 1992; Kulis & Sicotte, 2002; Marwell, Rosenfeld & Spilerman, 1979). Academic women are more likely to have high levels of education and are likely to marry men who also have high levels of education, which translates into professional careers or careers in higher education (Kulis & Sicotte, 2002; Marwell, Rosenfeld & Spilerman, 1979; Mason & Goulden, 2004). Marrying another professional may force the faculty member to stay within a specific geographical area, which can potentially limit employment opportunities (Bellas, Ritchey & Parmer, 2001; Kulis & Sicotte, 2002; Marwell, Rosenfeld & Spilerman, 1979; Mason & Goulden, 2004).

Marwell et al. (1979) found that a significantly larger percent of women (49% women, 4% men) considered their spouse's career as a major reason for not accepting a position in another geographical area. When these highly educated women do move

for their husband's job they may have limited choices (e.g., not working, working at the university for less money or raise a family)(Marwell, Rosenfeld & Spilerman, 1979). More recently Whitaker (2011) found that 83% of relocations were centered around the husband's career. It was acknowledged that women often go along with their spouses even though they do so at high cost to their own career and success (Whitaker, 2011).

Social expectations may lead the institutions to offer a higher salary to married men because they may still be considered the breadwinners of their family and might be perceived as having a greater need for more money (Mason, & Goulden, 2004; Toutkoushian, 1998); while female faculty members may be perceived as being secondary breadwinners and as a result may not earn competitive salaries (Mason, & Goulden, 2004). It has been suggested that because women in academia are more likely to be restricted in certain areas, they may be more likely to accept a job because of the location (Brett, Stroh, & Reilly, 1993; Kulis, & Sicotte, 2002; Loprest, 1992; Mason, & Goulden, 2004; Rosenfeld, & Jones, 1987). It is with these restrictions that make it more difficult for married women in academia to earn higher salaries. Ferber (1974) found that that single women in academia earned significantly more than comparable married women. The salary difference could be because unmarried women in academia have fewer distractions (e.g., family) and can therefore focus all of their energy on their careers, resulting in greater productivity and a higher salary. In 2004, Mason and Goulden found that single women were more likely to be full-time or tenured faculty, whereas married female faculty members were more likely to hold lower ranked positions such as part-time or non-tenure track. Research suggests

that being married negatively affects women; men on the other hand, benefit from being married (Bellas, 1992; Blackburn, & Korenman, 1994; Hunter & Leahey, 2010; Toutkoushian, 1998). Such findings indicate that the academic labor market is quite similar to the general labor market regarding positive salary returns on marriage, but only for men (Bellas, 1992, 1993; Blau & Kahn, 2000; Toutkoushian, 1998; Wood, Corcoran & Courant, 1993,).

Studies have shown that in general men earn significantly more income than comparable women (Barbezat, 2010, 1987a ; Bayer, & Astin, 1975; Bellas, 1993; Bellas, Ritchey, & Parmer, 2001; Fox, 1981; Monroe, & Chiu, 2010; Oaxaca, & Ransom, 2002; Toutkoushian, 1999), are perceived as being more productive (Barbezat & Huges, 2005; Bellas & Toutkoushian, 1999; Bellas, Ritchey & Parmer, 2001; Fox, 1992; Hunter & Leahey, 2010; Long, 1992; Palmer & Griffin, 2009), and are more likely to be offered competitive jobs outside of the institution (Toutkoushian, 1999). It was found that years of experience, amount of time teaching, and time spent doing administrative work favor men over women of equal status (Bellas, 1993; Krefting, 2003). Previous findings indicated that these variables were significant predictors of salary but only for men in academia (Bellas, 1993). A potential reason for such a large discrepancy is that men who earn doctorates are more likely than female doctorates to seek employment outside of academia; not only does this increase the likelihood for more competitive offers, but it also gives the male doctorate more leverage for negotiations (Toutkoushian, 1999). Monroe & Chiu (2010) point out that by failing to negotiate salary, women lose on average a million dollars during the duration of their careers. Another suggested reason for such a

salary discrepancy is that men avoid going into fields that pay less (England et al., 2007). It was estimated that in 1969 male faculty earned approximately thirty percent more than the average female faculty. In 1994 the same differences were investigated and it was found that on average women earned approximately twenty-three percent less than male faculty members. A seven percent gain in salary over twenty-five years for women faculty, is illustrative of the salary discrepancies between men and women (Toutkoushian, 1999).

Numerous studies have indicated that women who work in higher education consistently earn, on average, considerably less than men who do the same job (Bayer & Astin, 1968; Bellas, 1993; Fox, 1981; Haberfeld & Shenhav, 1990; Hurtado & DeAngelo, 2009; Megdal, & Ransom, 1985; Toutkoushian, 1998). Not only do women earn less, but they are also overrepresented in the lower ranks, in non-tenured part-time positions (Monroe, & Chiu, 2010). Research has indicated that women who are in lower academic ranks and less prestigious positions tend to take longer to advance and earn significantly less than men (Marwell, Rosenfeld & Spilerman, 1979; Mason & Goulden, 2004).

Other findings indicate that the difference in gender salary distribution may be widening. In 1984, women reportedly earned almost 7% less than comparable men in higher education (Bellas, 1993). In another study it was found that women earned almost 25% less than comparable men; these findings suggest that the salary gap between men and women in higher education may be increasing (Bellas, 1993). To better understand salary variation between equally qualified faculty the researchers matched comparable men and women on a variety of attributes such as education,

years of experience, and rank. When the analysis was conducted, the researchers were able to determine more accurately whether gender differences in salary existed (Bellas, 1993). These researchers explained that the disparities between women and men existed because on average women had lower education levels, less professional experience, and "other" predictors of faculty salaries (Bellas, 1993). Understanding the other predictors for faculty salary would provide much needed insight for this continuing phenomenon. Unfortunately, these findings are consistent with other studies, which also suggest that the gender wage gap exists (Bellas, 1993; Haberfeld & Shenhav, 1990; Megdal, & Ransom, 1985). Recently (West, 2007) the University of California (UC) was investigated to determine if discrimination was used when hiring, and promoting female faculty members who held a doctorate. It was found that discrimination was used when hiring these women. After studying the trends of faculty hired at UC Davis it was determined that of the faculty members who were hired with tenure only 25% were women, whereas 37% of the non-tenured hires were women. Overall it was found that the percentage of women who were hired, was significantly lower than the percentage of women earning doctorates (West, 2007), indicating discriminatory practices.

One possible explanation for lower salaries (Bernard, 1964) is that there is an overrepresentation of women in lower level positions (Mason & Goulden, 2004; Monroe & Chiu, 2010). Monroe and Chiu (2010) pointed out that since women are more prevalent within the lower level positions it affects their overall worth, thus lowering their potential salary. At the top research institutions only 7.2% of women are apt to be full professors (Monroe, & Chiu, 2010).

Regardless of research indicating that women experience inequities in faculty salaries, it should be recognized that women have made significant progress in higher education attainment in the past forty years. In 2000 women made up more than half of the student body in graduate school and this percentage is expected to increase.

Departmental Gender Differences

It has been argued that because women tend to be more highly represented in the lower paying disciplines, sex segregation may still exist in academia (Bayer & Austin, 1975; Bellas, 1993; Bellas, Ritchey & Parmer, 2001; Fox, 1981; Renzulli, Grant & Kathuria, 2006; Toutkoushian, 1999). The proportion of doctorate degrees earned by women has increased significantly in the last twenty-five years, but there is evidence that female candidates are not completing their degrees in the math focused areas at the same rate as their male cohorts (England et al., 2007; Toutkoushian, 1999). With this in mind, women who are successfully earning doctorates are less likely to be in the business, mathematics, engineering or computer science fields in which higher salaries are more likely to occur (England et al., 2007; Jones, 2010).

If one were to merely look at the gender distribution of varying departments they would find that women who work in academia are more likely to be in disciplines focused on education, humanities, welfare, or health sciences with positions as lower level faculty members (Bayer & Austin, 1975; Fox, 1981). Studies have found evidence to support these assertions. Bayer and Astin (1968) found that women were promoted after a longer stay in comparison to male faculty. This finding does suggest that discrimination may exist when promoting men and women. Bellas, Ritchey and Parmer (2001) found that men were eight times more likely to

work in the department of engineering, whereas women were three times more likely to work in the education department. Additionally Renzulli et al. (2006) found that women are less likely to be equally represented in disciplines that pay the highest salaries such as science, business and law; and are significantly overrepresented in the lower paying disciplines such as education and English (Renzulli, Grant & Kathuria, 2006). For example, in 2010 it was reported by the Chronicle of Higher Education that Engineering at $90,208 and Business at $91,886 were the highest paid disciplines, both of which are male dominated areas of study (Laster, 2010).

Men who do work in academia have been traditionally more likely to work in the physical sciences, engineering, business and medical disciplines and they have tended to hold the higher level research, faculty and administrative positions (Bayer & Astin, 1968; Fox, 1981). It should be noted that men often have an advantage over their female faculty members: non-working spouses. Men whose spouses were acknowledged as being homemakers were found to make more than men who were either unmarried, or had working partners. Marriage to a homemaker provided an advantage over women, who if married tended to marry professionals. Bellas (1993) found that marriage to a homemaker was a significant salary predictor, which was an exclusive characteristic of men. It has been suggested that perhaps men are better at seeking outside offers because it is socially acceptable that the man's career should be considered most important (Bellas, Ritchey & Parmer, 2001). With this in mind, it could be assumed that men are evaluating multiple competitive offers, which could push the university to offer a higher salary.

Empirical findings (Bellas, Ritchey & Parmer, 2001) indicate that faculty members in the Science, Technology, Engineering, and Mathematics (STEM) disciplines, regardless of gender, make on average $7,000 more than faculty in the arts and science departments. It should also be noted that faculty in the music department made almost $4000 less than faculty in the arts and sciences (Bellas, Ritchey & Parmer, 2001). Although Bellas et al (2001) was unable to identify a salary disparity within the STEM disciplines, Xu (2008) identified a large salary discrepancy between male and female doctorates within the STEM discipline (Xu, 2008). Men were more likely to gross higher income within the science, technology, engineering and mathematic fields; the salary disparity exists because very few women were able to obtain senior faculty positions within science and engineering departments (NSF, 2005). The article goes on to explain that the main causes for fewer senior level females include a small proportion of women within the STEM departments, family demands, and encountering hostility while serving as a junior faculty member. To further support the idea that too few women enter the STEM field, in 2007 the National Science Foundation reported that low percentages of women are earning science and engineering degrees, both at the undergraduate and graduate level (NSF, 2007). Accordingly, Broyles (2009) has identified a significant salary gap between male and female chemists. Using the data from the American Chemical Society's Census, Broyle (2009) determined that female chemists earned 30 percent less than male chemists. According to Broyle, the findings indicated that the salary differential was the result of higher productivity by male chemists. Furthermore, Broyle suggested that men have higher salaries because they had higher

levels of human capital (e.g., more years of experience, higher levels of education); whereas women earn less because they had lower levels of human capital (Broyle, 2009).

On the other hand, Bellas et al. (2001) findings indicate that a potential reason for the pay discrepancy may have less to do with gender and more to do with discipline and overall marketability of the specific fields. Marketability variation of different fields may support faculty demands for higher salaries. Outside of academia, disciplines like English, literature and education are valued less, and obtaining a competitive offer outside of the university would be difficult. It has been suggested that because these fields are not in high demand outside of academia it is tough for these faculty members to negotiate higher salaries within the university (Bellas, Ritchey & Parmer, 2001). Additionally it has been argued that this variation is reflected within academia because universities need to offer competitive salaries to keep those high quality engineering, science, and mathematics professors. As a result the university pays the engineers more than English professors to keep them from leaving for more lucrative opportunities.

Faculty Degree, Rank & Tenure

In 2008 slightly more than 48,000 doctorates were awarded within the United States; women earned approximately 46 percent of those doctorates (NSF, 2009). With higher levels of education come higher salaries, more promotions and higher ranking positions for women at all post graduate levels (Bayer & Astin, 1968; Fox, 1981). Considering that women have been successful in breaking glass ceilings and other corporate barriers, it is disconcerting to learn that in the realm of higher

education it has been found that female faculty members are less likely than men to hold a Ph.D. or a professional degree which contributes to their overrepresentation in lower paying institutions and positions (Bellas, Ritchey & Parmer, 2001). Despite the high levels of education achieved, discrimination still exists for both women and minorities who have earned a Ph.D. or professional degree (Bayer & Astin, 1968; Monroe, & Chiu, 2010; West, 2007). In a study of women who had earned doctorates, findings suggested that a third of the women reported discriminatory practices regarding salary, promotions and tenure. If high level women are being discriminated against, then it should not be too surprising to acknowledge that less educated women who occupy the lower ranks are at risk for being discriminated against (Bayer & Astin, 1968).

Earning tenure is extremely demanding, can take many years of hard work, and requires an exceptional commitment. Previous findings specify that recognition and tenure are based more on the quality of research rather than the quantity of publications or grants (Long, Allison & McGinnis, 1993). Research indicates that minorities and women encounter many barriers during their journey to tenure. As a result, minorities are more likely to leave the institution before earning tenure (Suinn, & Witt, 1982; Cropsey, Masho, Shiang, Sikka, Kornstein, & Hampton, 2008; Hurtado, & DeAngelo, 2009). While serving as faculty, women and men have been found to allocate their time differently. Women may be more likely to spend time on teaching while men may be more likely to spend the majority of their time on research (Hurtado, & DeAngelo, 2009). The variance of time allocation has an impact on perceived productivity and is a large determinant for recognition (Leahey,

2007) and tenure in their respective fields (Toutkoushian, 1999). Not only is this difference perceived, but some research has found that on average women produce less research than equivalent men (Leahey, 2007; Santovec, 2009).

Productivity is only one barrier. In a study conducted by Bayer and Astin (1968) they found that almost thirty-three percent of the women reported that they had been discriminated against by the university regarding promotions, and almost forty percent reported gross salary differences between equally comparable men. These findings support the notion that gender discrimination does exist within the higher education system for promotions and tenure. It should be pointed out that these patterns do still exist and it has been found repeatedly: women are disproportionately represented in the lower ranks, without tenure in traditionally female dominated disciplines (Bellas, 1993; Monroe, & Chiu, 2010). Critics may argue that women do not earn tenure because their attention is not focused on their scholarly activities, but rather they are busy raising a family. Mason and Goulden (2004) found that on average women were less likely to earn tenure regardless of parental or marital status. Although no "baby penalty" or "marriage penalty" was found, the researchers suggested that women who do have more children are able to remove themselves from tenure track positions to concentrate on family. These findings suggest that women may be putting family before their careers. Women who do earn tenure generally wait until later in life to start a family or have fewer children (Mason & Goulden, 2004).

Empirical studies have consistently identified significant differentials in rank between men and women. Previous studies indicate that earning a higher rank within

higher education is significantly easier for white males, who are best prepared to achieve success in academia. Gender, education, discipline, location, and racial status can be used to predict what rank faculty members fall into. According to the Chronicle of Higher Education (The National Faculty and Staff, 2009), female faculty members are less likely to be full professors, and more apt to be concentrated in the lower, non-tenured positions. In 2009 it was determined that 74% of the full professors were male, but as rank decreased more women were represented; at the lowest rank - instructor - women accounted for the majority of the population.

These ranking differences lead to unequal salary distributions (Bayer & Astin, 1968; Fox, 1981). The National Education Associate report investigated salary differences for the academic year 1965-1966 and found that men earned approximately 17 percent more than women. The study pointed out that although the salary differentials were reflective within each faculty ranking, women were clustered in the lowest ranking positions, which brought down the overall salary average for female faculty members. Even though hiring faculty members into lower than merited ranks – based on gender or race - is illegal, it is a practice that continues to happen (Bellas, Ritchey & Parmer, 2001; Eckes & Toutkoushian, 2006; Oaxaca & Ransom, 2002).

Historically, female faculty members have been overrepresented in the two and four year institutions within the lower ranked positions with no prospects for tenure (Bellas, 1993). It should also be noted that within the top ranked research institutions there tend to be far fewer female faculty members, in both upper and lower ranking positions (Toutkoushian, 1999). There are several reasons why

women are more likely to occupy lower status positions: traditionally, women have been less likely to earn doctorates and other professional degrees (Bayer & Astin, 1975), and may have had less significant work experience to earn higher ranks (e.g., women are more likely to take time out for family growth). It has been advised that women must deal with competing responsibilities from work and family life which might have an impact on their scholarly productivity (Renzulli, Grant & Kathuria, 2006). With these already anticipated shortcomings it has been suggested that women who enter academia do so with an already existing likelihood of being disadvantaged.

Earning a doctorate is generally a requirement for entering into faculty positions at higher educational institutions. The percentage of doctorates earned by women has dramatically increased in the past forty years, but a large difference continues to exist between women and men earning higher level degrees in engineering, business, mathematics and the physical sciences, with women on the losing end (Toutkoushian, 1999). Research indicates that although women are entering doctorate programs at an almost equal rate to men, less than half of them complete the requirements for graduation (Toutkoushian, 1999). Because women faculty members are less likely to hold a doctorate, this might contribute to their overrepresentation in lower ranking positions (Bellas, Ritchey & Parmer, 2001). Another potential reason for a large proportion of low ranking female faculty is that they are not provided enough support by their department or institution. Wasburn (2007) pointed out that female faculty members are less likely to have mentors. A previous study (Bova, 2000) found that mentors are more likely to work with

someone they can relate to, which means that women and minorities are less likely to be mentored by white males, which can have a negative impact on their career. Women and minorities in higher education may face more professional isolation than their male counterparts, which could lead to a greater likelihood of leaving the institution before earning a higher rank (Wasburn, 2007).

In 1968 research, Bayer and Astin found that generally speaking women were not equally likely to hold positions that are similar to comparably ranked men, and they do not have equal opportunities for promotion in higher education (Toutkoushian, 1999). It should be noted that Fox (1981) found that women were rewarded for their achievements, but not nearly at the same rate of male faculty members. Female faculty members may also be significantly disadvantaged when being considered for a promotion. Studies have found that when women in academia are promoted the process takes significantly longer than for comparable men (Bellas, Ritchey & Parmer, 2001; Long, Allison & McGinnis, 1993; Toutkoushian, 1999). In 1987 (Rosenfeld & Jones) a study was conducted to better understand promotions for female doctorates in higher education. They found that after six years from earning the doctorate, women were less likely than men to have earned associate or full professorship. Smart (1991) suggested that gender has an impact on direct and indirect effects of rank attainment. Long, Allison and McGinnis (1993) found that after controlling for all potential confounds, men are more likely to be promoted before women. This finding suggests that women are not evaluated the same as men, with research indicating that when evaluated they are held to higher standards. This could be a product of discrimination by the senior evaluators who tend to be non-

minority, males (Long, Allison & McGinnis, 1993). At top research institutes women are most likely to have negative experiences when being promoted, which often takes much longer than equally comparable men. Interestingly, findings suggest that while women may pay a greater price for working in academia, they earn a greater return for publications. It should be recognized that this return may be only for female scientists or researchers who publish the most (Barbezat, 2010; Long, Allison & McGinnis, 1993).

Whereas the above literature provides potential reasons why gender differences in rank still exist, questions still remain. It is still not clear whether men and women have equal opportunities to be successful in academia and if not, how might this impact society as a whole.

Not only are women clustered at lower ranked positions, but findings indicate that minority faculty members were more likely to be an assistant professor or have instructor positions (Stapp, 1979; Suinn & Witt, 1982). Academic contributions from both women and faculty of color may tend to be devalued, which could make gaining higher level rankings or salaries difficult to obtain (Bellas, Ritchey & Parmer, 2001).

Elucidating what characteristics might be valued more is tremendously important for better understanding why men and women consistently fall into certain ranks. Bayer and Astin (1975) assessed which attributes were significant for predicting rank. These variables included amount of time spent working in an administrative position, number of articles published, age of faculty member, years of work at current university and highest degree earned. A different study (Fox, 1981) found that level of achievement was the dominant attribute in predicting rank. Long,

Allison and McGinnis (1993) found similar results, which indicated that rank achievement is most strongly influenced by research productivity – specifically meaning the number of research articles published. It should be noted, that the amount of research productivity does not fully account for rank variation. For example, Ransom and Megdal (1993) found that after controlling for the number of journal articles and books published as well as experience, seniority and educational attainment, women were significantly less likely to be associate or full professors (Ransom, & Megdal, 1993; Toutkoushian, 1999). It has been suggested that women may not possess the attributes that universities are most likely to reward (Bellas, Ritchey & Parmer, 2001). There are numerous studies that have demonstrated that women may have lower levels of research output than men (Bellas, & Toutkoushian, 1999; Fox, 1992; Hunter, & Leahey, 2010; Leahey, 2007; Long, 1992; Long, Allison & McGinnis, 1993; Sax, Hagedorn, Arredondo, & Dicrisi, 2002; Stack, 2004; Toutkoushian, 1999). Research suggests that although both male and female faculty members are publishing more (Sax, Hagedorn, Arredondo, & Dicrisi, 2002), a gender gap remains. Faculty members are likely to publish more if employed at a research university; furthermore, Sax et al. (2002) found that women at research institutions were more likely than male faculty to publish one to four articles in a two year period. These findings are inconsistent with prior research regarding publishing productivity and gender differences. Previously Long et al. (1993) found that women produce fewer publishable articles, but the few who are successful at publishing receive increased visibility (Hunter & Leahey, 2010) within the academic community and then are more likely to be promoted quicker and earn higher salaries (Long, Allison &

McGinnis, 1993). In 2004 Stack investigated gender and research productivity and determined that overall women are continuing to publish fewer scholarly articles than male faculty. Stack explains that over 50 studies have been conducted in the last twenty years that indicate that women appear less productive in publishing research than men (Stack, 2004). For example, by focusing energy on teaching these faculty members may have less time to put towards their research, which may make them more vulnerable when they are evaluated for promotions (e.g., tenure) (Hurtado, & DeAngelo, 2009; Palmer & Griffin, 2009, Toutkoushian, 1999). Studies have found evidence to support this theory; on average women tend to devote larger amounts of time to teaching than men devote to teaching (Hunter & Leahey, 2010; Russell, 1991; Toutkoushian, 1999).

Hunter and Leahey (2010) suggest that because women are more apt to be overrepresented at less prestigious universities, fewer resources are available to devote towards research, and therefore more teaching is required. Russell (1991) found that research productivity differences were due to differences in rank and institution type. With these inconsistent findings one might be left to wonder why women in the lower ranks fail to publish at the same rate as their male cohorts, even though publishing would be a method to being promoted to a higher rank or a more prestigious college.

In recent studies, findings suggest that women scientists are publishing fewer scholarly articles than men scientists (Fox, 2007; Leahey, 2006; Sax, Hagedorn, Arredondo & Dicrisi, 2002; Snell, Sorensen, Rodriguez & Kuanliang, 2009; Stack, 2004; Toutkoushian, 1999). While the actual differences in number of articles

published vary, the direction of the empirical findings are consistent, with male academics publishing more research. For example, Snell et al. (2009) found that men tend to produced almost twice as many publications as female researchers during their lifetime as a scientist. It was pointed out that while the findings might indicate that men are more productive, it ignores the reasons why women may not be publishing as often. One potential reason is that female faculty members are more likely to play a nurturing role to students, such as mentoring, which can distract them from focusing on their research. Leahey (2006) identified a similar trend when studying sociologists and linguists. Her findings indicate that on average, male faculty members (specifically, sociologists and linguists) in her sample cumulatively produced 16 articles during their academic career, whereas women produce 10. Using a t-test this finding was statistically significant. Overall, her sample findings indicated that women tend to publish less, even though they have similar experience and training as male faculty. She points out that the lower levels of research productivity can negatively affect female scientists by allowing the gender gap in ranks and salary to continue. In a similar study, Stack (2004) found that women may publish significantly fewer articles than men. Specifically, he found that in his study, men, on average, publish almost 9 articles per year whereas women publish 5 articles per year. The trend of women scientists publishing less has been an issue for numerous years.

Being promoted to a higher rank is a highly public recognition of successful faculty achievement. But this can be a double edged sword. Faculty members who may not be promoted - meaning those who are not recognized for their work – may

leave. On the other hand, if tenure is granted to a faculty member who is unable to produce what is expected, the department will be stuck with that member for many decades.

Theoretical Framework: Salary Theories

Throughout the history of society many theories have been proposed to explain the concept and value of salary. With the continuous changes in society, some theories have been found to be outdated (e.g., subsistence theory and residual claimant theory) in their applications, while others continue to be appropriate for the needs of the current economic and financial trends. The economic theories that explain wage variation for professionals in academia or the general labor market that will be explored include human capital theory, bargaining theory, and efficiency wage theory.

Human Capital Theory. The idea behind human capital theory is that the more education, training, and years of experience creates a high quality individual who will be able to successfully do his or her job and as a direct result be paid more (Cohen, & Soto, 2007). This theory is particularly focused on the investments potential employers and employees making during their lifetime, which could lead to higher salaries. The most significant form of human capital is years of schooling. The investment in education does make a significant impact on potential salary earnings. Across most industries, large salary differences do exist between people who have earned a high school diploma in comparison with those who have earned a college degree. But earning a degree is not a guarantee for a higher salary because human capital differences exist between those who have earned college degrees in their twenties versus those who have waited until later in life (Cohen, & Soto, 2007).

People who have waited longer to earn a degree will not see as great of a return on their investment (i.e., not earn as much over a lifetime). And those who invest significantly towards their human capital, by earning graduate degrees, are more likely to have longer high paying careers (Ponomariov, & Boardman, 2010). Another form of human capital is training. Companies sometimes invest in employee human capital by offering training opportunities, but the type of training may cost the employee. For example, people who learn general skills on the job tend to pay for that training by earning lower wages during the training period. In general, companies prefer to hire employees who have already acquired the necessary skills for the position instead of paying for training out of pocket. According to human capital theory, people who invest more in their human capital (e.g., more years of schooling and experience) will earn a greater return on their investment.

Bargaining Theory. Bargaining theory utilizes the weight of unions to determine fair wages and benefits for employees and protect workers' rights. This method for wage determination is used by many sectors of the working population including teachers, the public workers sector (e.g., state employees), trade groups (e.g., labor unions) and in higher education (e.g., university professors, graduate students and general staff). The purpose of bargaining theory is to not only secure livable wages for employees, but also to negotiate other benefits like fringe benefits, retirement pensions and protection from the uncaring bureaucratic system. In the last 40 years, bargaining has become a greater part of the higher educational pay system (Ashenfelter, & Johnson, 1969). The bargaining movement began in the two-year community colleges, as four-year institutions both private and public paid attention to the outcomes. As the larger institutions began to unionize, it became apparent that

salaries at many of the unionized schools were keeping up with inflation if not slightly ahead (Marshall, 1979). Although not all institutional bargaining ended with salaries that were aligned with inflation, many of these schools were able to negotiate for benefits other than higher salaries. Bargaining theory uses the voice of all members of a union to negotiate more livable wages for employees. Critics point out that the only weapon available for such a model is striking against the employer, which can lead to other negative outcomes (e.g., loss of job); additionally critics point out that while most people who are employed at unionized colleges experience increases in salary and benefits, junior members are the least likely to reap benefits.

Efficiency Wage Theory. Efficiency wage theory is an incentive based salary system that offers employees more money if additional effort is made. This theory challenges the idea that wages are simply determined by supply and demand by offering the idea that wages can be increased by gains in efficiency or productivity. In this theory, more productive workers will earn more than those who do not work as hard. This is an incentive based wage structure that aims to create a more industrious work force. The success of this theory relies on the importance placed on monetary rewards. Money can indicate success, rank or power, and because money allows people to achieve a desired standard of living, it can motivate actions resulting in outcomes that satisfy needs (Taylor, & Taylor, 2011). Critics of this theory argue that encouraging workers to increase productivity by offering higher wages may make it more difficult for the unemployed to gain work (Basu, & Felkey, 2008; Yellen, 1984). It has been argued that companies do not hire the unemployed because they may harm work efficiency. The unemployed generally prefer to earn real wages than

not work at all, but companies will not offer them any wage because it is believed that any real reduction of wages will lower the efficiency of all the employees. While excluding the unemployed is problematic for this theory, there are benefits for employing this model including lowered employee turnover, increased employee morale, and improvement in the quality of potential job applications (Taylor, & Taylor, 2011).

Research Questions

Specifically five research questions are explored to understand the interrelationships among the variables of interest.

1. The first research question explores if gender and race are significantly related to current salaries, after controlling for rank and discipline (Q1).
2. The second question examines whether after controlling for other variation (e.g., rank, discipline), is gender significantly related to salary (Q2).
3. For the third question, it is investigated whether within each rank, female faculty members make significantly different salary amounts than equivalent male faculty (Q3).
4. Fourth, it is investigated whether male and female faculty members who work in the same colleges and who were hired within the last 5 years earn significantly different salaries (Q4).
5. The final research question explores whether minority faculty members make significantly different salary amounts than non-minority faculty. Additionally, it is explored whether minority females make different salary amounts than equally comparable minority males (Q5).

By understanding which variables are more important for salary prediction, faculty pay might be more equally distributed in the future. As previously explored, gender does appear to have had an association with salary in a number of studies,

although how it interrelates with the other variables (rank, discipline, tenure, etc.) is still questionable. To gain a better understanding of how these variables relate to salary, multiple statistical analyses are used in the current study.

CHAPTER 2
METHODOLOGY

Participants

The population being investigated includes faculty members at the University of Rhode Island, Kingston campus during the 2010-2011 academic year. Similar data from the 2006-2007 academic year indicate that the faculty was made up of 604 full time members. The gender distribution included 64 percent (n=385) male faculty and 36 percent female faculty (n=219) with no missing values. The age range of faculty was 27.3 to 78.3; four male assistant professors had missing age values. The racial mix included Caucasian (85.9%), Asian (7.9%), African American (3.3%), Hispanic (2%), and Native/ Indian American (.9%). The rank distribution is top heavy with 58.5% Full Professors, 21% Associate Professors, 20% Assistant Professors, and 0.5% Instructors.

The sample data on faculty salaries and related variables were provided by the provost's office to the investigator. To ensure that this sample is large enough, all current faculty members are included in the data set.

Data Collection Schedule and Variables

Early in the fall 2011 semester, the investigator requested a copy of the 2010-2011 faculty salary data from the Provost's office. The investigator verified the nature of the data with the Provost's office, with respect to the variables that are available (e.g., college, gender, salary, ethnicity, and years at institution). The archival institutional data was obtained without names and only aggregate data are reported in results. Further, the investigator will not share the data with others and any specific information regarding the data will be kept confidential.

Measures

Several measures were assessed for the faculty data and are briefly described below.

Salary: This is a continuous variable that is used primarily as a dependent variable in the current study. The range for this attribute is $46,058 – $156,794 for the 2006-2007 academic year and $50,000 – $164,181 during the 2010-2011 year.

Gender: This is a dichotomous variable collected by the University, where males =1 and females = 2.

Rank: A four-level variable indicates current rank status. The four levels include Full Professor = 4, Associate Professor = 3, Assistant Professor = 2 and Instructor = 1.

Race: A six-category variable includes Caucasian, Hispanic, Asian, Native/ Indian American, and African American.

Discipline: Ten disciplines were created by combining multiple departments together. Every faculty member belongs to one of the ten disciplines. The number of departments combined for each discipline varies; for example the Arts & Sciences discipline has twenty-one departments, whereas Business only has one department. The eight other disciplines include: Continuing Education, the College of Environment & Life Sciences (CELS), Engineering, Human Science and Services (HSS), Library/Information Studies, Nursing, School of Oceanography, and Pharmacy. Later when analyzing the data, this variable is coded into nine dummy variables.

Degree Earned: A dichotomous variable indicates the faculty member's highest level of education, with Doctorate = 2 and Master's Degree = 1.

Tenured: A dichotomous variable indicates if that faculty member has already been granted tenure status within the university; those with Tenure = 1, and No Tenure = 0.

Time in Rank: This value is continuous and indicates the number of years that faculty members have been employed within their current rank at the University.

Procedures

Several processing procedures were used which include calculating a new value (year hired), grouping preexisting values into a dichotomy due to small numbers of minority faculty (e.g., race was dichotomized, see below), and creating a numerical value for categorical information (e.g., rank).

The value for "year hired," which indicates when that faculty member was hired and at what rank, was transformed to illustrate the number of years that person worked at the university. This makes comparing the data points more straightforward.

When assessing salary and overall experience of minority faculty, institutions are having a difficult time because there are not enough minorities to provide reliable estimates. When pay equity is examined most institutions simply dichotomize race (Toutkoushian, 1998). Due to the small number of faculty with varying races it was important to combine several minority categories into a single group, while still representing some minimal distinction in race. Clustering several ethnic groups together (e.g., Hispanic, African American, Native/Indian American), creates a more

appropriate sample size for analysis, while still representing some minimal distinction in race. For example, White and Asian faculty were combined into a non-minority category in this study that follows the standards set by the U.S. Department of Education (Association for Higher Education, 2003) and the National Science Foundation (NSF, 2000) regarding minority status. White and Asian faculty members were considered non-minority whereas Hispanic, Black and Indian/ Native American races were categorized as being minority (coding for non-minority = 1 and minority=2).

The discipline variable was recoded from 52 original departments into 10 disciplines (see Table A). The disciplines were created following the university's already existing categorizations.

Table A: Discipline Department Recodes:

Discipline	Department	Discipline	Department
Arts and Sciences	African and African-American Studies	Environmental and Life Sciences	Cell and Molecular Biology
	Art		Biological Sciences
	Chemistry		Community Planning
	Communication Studies		Environmental and Natural Resources Economics
	Cancer Prevention Center		Food Science and Nutrition
	Computer Science		Geosciences
	Economics		Natural Resources Science
	English		Plant Sciences
	History	Engineering	Chemical Engineering
	Journalism		Civil Environmental Engineering
	Language		Electrical Engineering
	Library and Information Studies		Mechanical Engineering and Applied Mechanics
	Mathematics		Ocean Engineering
	Music	Human Science and Services	Communicative Disorders
	Philosophy		Education
	Physics		Human Development and Families and Gerontology
	Political Science		Pediatrics
	Psychology		Physical Therapy
	Sociology		Textiles, Fashion Merchandising, and Design
	Theatre	Library Sciences	Library
	Women's Studies	Nursing	Nursing
Business	Business	Oceanography	Oceanography
Continuing Education	Labor Research Center	Pharmacy	Biomedical and Pharmaceutical Sciences
	College of Continuing Education		Pharmacy Practice

The degree earned variable was recoded from 25 potential categories (for example, Jurist Doctorate and Doctorate of Pharmacy were categorized as Doctorate) into a dichotomous variable which was an indicator of whether that faculty member had earned a doctoral or a master's level degree (see Table B).

Table B: Degree Recodes:

MFA = 1 (Master's)	MA = 1 (Master's)	MS = 1 (Master's)
MLA = 1 (Master's)	MAST = 1 (Master's)	MSLS = 1 (Master's)
MLS = 1 (Master's)	MMUS = 1 (Master's)	MUMS = 1 (Master's)
MM = 1 (Master's)	MN = 1 (Master's)	
DPHIL = 2 (Doctorate)	DENG = 2 (Doctorate)	DA = 2 (Doctorate)
DSC = 2 (Doctorate)	DNSC = 2 (Doctorate)	DBA = 2(Doctorate)
DSCI = 2 (Doctorate)	DOM = 2 (Doctorate)	PHMD = 2 (Doctorate)
JD = 2 (Doctorate)	PHARMD = 2 (Doctorate)	PHD = 2 (Doctorate)
		SCD = 2 (Doctorate)

A preliminary dataset (2006-2007) was received in an excel spreadsheet and all variables excluding salary and age required numerical recoding. For example, the rank variable originally included the categories: Full, Associate, Assistant, and Instructor. These categories were recoded into a numerical value with Full=4, Associate=3, Assistant=2, and Instructor=1.

CHAPTER 3
RESULTS

To gain a clearer picture of the salary trends at the University of Rhode Island, the two academic-year datasets (2006-2007, and 2010-2011) were analyzed separately, and then the results were compared. A total of five research questions were explored for both sets of academic information.

Comparability of Samples

The two samples that were analyzed, and then compared, included all faculty members from the University of Rhode from 2006-2007 and 2010-2011 academic years. Both samples had relatively similar distributions regarding gender (2006-2007: males = 63.7%, females = 36.3% and 2010-2011: males = 61.6%, females = 38.4%), race (2006-2007: minority = 6%, nonminority = 94%, and 2010-2011: minority = 6%, nonminority = 94%), rank (2006-2007: instructor = 0.5%, assistant = 20%, associate = 21%, full = 58.5%, and 2010-2011: instructor=0.2%, assistant = 20.1, associate=22.6%, full = 57.1%); and highest degree earned (2006-2007: PhD = 93% MA = 7%, and 2010-2011: PhD = 91%, MA = 9%).

Analyses

Three analyses were used to answer the five research questions posed. Initially, the traditional method for analyzing salary differences, multiple regression analysis, was used. The reason for selecting this methodology was because it allowed a singular dependent value to be evaluated against many potential predictor values (as listed in Figure 1 below). The purpose for using this analysis is to understand if the variance being predicted in the dependent variable (faculty salary) is related to the

nature of the independent variables (e.g., rank, college, degree earned, tenure, years at institution, as well as gender and race). More specifically, this project was attempting to understand if salary is dependent upon gender and race, as well as the other identified predictor variables. Additionally, by using such an analysis, it may be determined which specific variables were most and which are least related to salary. It is expected that rank, college, degree earned, and years in the institution will be significantly related to salary, by virtue of how salaries are allotted.

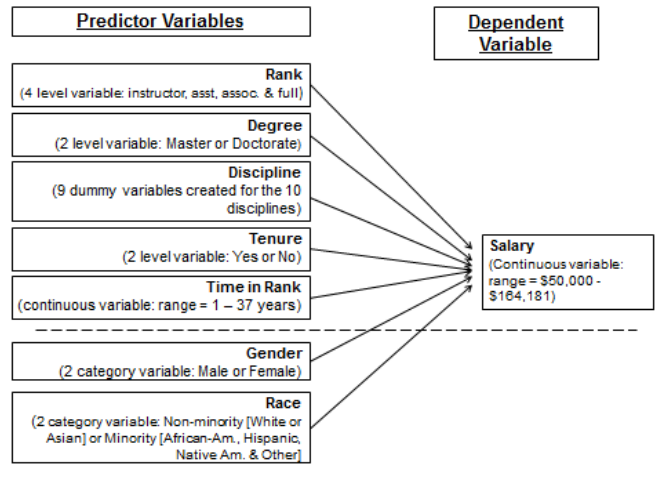
Multiple regression analysis has been used for previous studies and class action lawsuits investigating salary inequity (Eckes & Toutkoushian, 2006; Oaxaca & Ransom, 2002). By using this methodology, all participants can be analyzed simultaneously, and dummy variables can be created to focus each analysis on a specific subgroup. If used simultaneously, then the analysis can help determine if gender and race are significantly related to faculty salary, after controlling for other known predictors of salary.

The next analysis, a complementary method, analysis of variance (ANOVA), is used to determine if the average differences between certain groups of faculty are significant (e.g., across disciplines, and across gender). Moreover, descriptive statistics including levels of central tendency and frequencies are presented to illustrate current trends in salary distribution at the university. To assess the main effects and interactions of the independent variables, an analysis of covariance (ANCOVA) was conducted, parallel to each ANOVA, to determine if a covariate exists and if it was related to the outcome measures being studied. Generally speaking, this analysis questions if there would be any differences for the dependent

variables, if all the groups were affected by the same covariate equally. By using this additional analysis, it allows for increased sensitively of the ANOVA and reinforces the results from the ANOVA by reducing the amount of error in the F-statistic.

The final analysis included is the segmented t-test. For this analysis, each discipline is analyzed separately by controlling for rank and comparing male and female salaries. Not all disciplines were analyzed using this approach because there was not enough gender equality, in terms of sample size; for example, in the Nursing discipline there are no men working within this field at the University of Rhode Island where the data were gathered. It is expected that by approaching the data using distinct methodologies (e.g., multiple regression, analysis of variance, and segmented t-tests), the potential findings will be further validated. However, if the methods indicate very different results, then these findings will need to be investigated further because such inconsistencies could indicate either methodological problems are present, or patterns that exist within the pay system are not obvious catalysts for the questions being investigated.

Figure 1: Illustrative Model:



Race and Gender Effects on Salary Variance

The first research question was initially investigated using data from the 2006-2007 academic year; two separate multiple regression analyses were conducted using the data (Table 1.1). The first analysis included rank, degree, discipline, tenure and time in rank as predictors of faculty salary; the second analysis included these same variables with an addition of two more predictor variables: race and gender. For the first analysis overall results revealed a very large and significant relationship between the set of predictors and the outcome of faculty salary. Providing standardized regression coefficients within parentheses, the analysis indicated that the linear combination of Rank, Degree, Arts & Science Discipline, Business Discipline, CELS Discipline, Engineering Discipline, HSS Discipline, Library Science Discipline, Nursing Discipline, Oceanography Discipline, Pharmacy Discipline, Tenure and Time in Rank were significantly related to the outcome, salary. The findings suggest that the variables included accounted significantly for 82% of the variance in salary; additionally the β values are indicative of the degree and direction of association each variable has with the dependent variable. Therefore, meaning that Rank, Tenure and Time in Rank are the three variables most positively linked with salary in the model. Conversely, being a faculty in Arts & Sciences, CELS or HSS, among a few others, was negatively associated with salary (i.e., these faculty earned less than others).

The second analysis, again using 2006-2007 data, included Race and Gender in the model. It was found that the overall model was statistically significant (Table 1.1). Included in this combination were the following variables: Rank, Degree, Arts & Science Discipline, Business Discipline, CELS Discipline, Engineering Discipline,

HSS Discipline, Library Science Discipline, Nursing Discipline, Oceanography Discipline, Pharmacy Discipline, Tenure, Time in Rank, Race, and Gender. The findings indicate that by adding the variables race and gender, the full set of variables accounted significantly for 82% of the variance in salary – which is the same amount as in the first analysis. This finding suggests that race and gender were not significantly associated with faculty salaries for this sample.

Table 1.1 Questions 1: 2006-2007 Results:

Sample	Result
Salary = Rank + Degree + Discipline + Tenure + Time in Rank	
Model 1	R^2 = .83, F (13,588) =222.73, p< .001, adjusted R^2=.82.
β scores	Rank (β=.838), Degree (β=-.015), A&S (β=-.295), BUS (β=.192), CELS (β=-.122), EGR (β=.065), HSS (β=-.182), LIB (β=-.025), NUR (β=-.077), OCN (β=.125), PHARM (β=-.016), Tenure (β=.305), and Time in Rank (β=.273)
Salary = Rank + Degree + Discipline + Tenure + Time in Rank + Race + Gender	
Model 2	R2 = .83, F(15,586) =193.08, p < .001, and adjusted R2=.82
β scores	Rank (β=.834), Degree (β=-.016), A&S (β=-.291), BUS (β=.192), CELS (β=-.122), EGR (β=.064),: HSS (β=-.176), LIB (β=-.023), NUR (β=-.071), OCN (β=.124), PHARM (β=-.015), Tenure (β=.304), Time in Rank (β=.267), Race (β=.002), and Gender (β=-.026)

Next, the 2010-2011 data was analyzed using the same variables as in the first model, with race and gender not included initially. The first analysis using 2010-2011 data found an overall statistically significant model including (see values in Table 1.2): Rank, Degree, Arts & Science Discipline, Business Discipline , CELS Discipline, Engineering Discipline, HSS Discipline, Library Science Discipline, Nursing Discipline, Oceanography Discipline, Pharmacy Discipline, Tenure, and Time in Rank. The results indicate that the variables included accounted significantly for 76% of the variance in salary; additionally the β values are indicative of the degree of association each variable has with the dependent variable; meaning that Rank is by far the most important variable included in the model.

The second analysis using the 2010-2011 dataset included race and gender (Table 1.2). It was determined that these results were slightly lower although very similar to those from 2006-2007. This analysis, largely paralleling findings from the earlier data, resulted in the following standardized regression coefficients (see values in Table 1.2): Rank, Degree, Arts & Science Discipline, Business Discipline, CELS Discipline, Engineering Discipline, HSS Discipline, Library Science Discipline, Nursing Discipline, Oceanography Discipline, Pharmacy Discipline, Tenure, Time in Rank, Race, and Gender.

Table 1.2 Questions 1: 2010-2011 Results:

Sample	Result
Salary = Rank + Degree + Discipline + Tenure + Time in Rank	
Model 1	R2 = .767, F (13,554) = 140.607, p <.001, and adjusted R2=.762
β scores	Rank (β= .778), Degree (β=-.008), A&S (β= -.305), BUS (β=.214), CELS (β=-.134), EGR (β= .082), HSS (β= -.219), LIB (β= -.042), NUR (β= -.071), OCN (β=.106), PHARM (β= -.003), Tenure (β=.074), and Time in Rank (β=-.040)
Salary = Rank + Degree + Discipline + Tenure + Time in Rank + Race + Gender	
Model 2	R2 = .773, F(15, 552) = 125.045, p < .001, and adjusted R2=.766
β scores	Rank (β= .756), Degree (β=-.007), A&S (β= -.296), BUS (β=.212), CELS (β=-.133), EGR (β=.077), HSS (β= -.201), LIB (β= -.036), NUR (β= -.056), OCN (β=.106), PHARM (β= .001), Tenure (β=.068), Time in Rank (β=-.038), Race (β=.006), and Gender (β=-.080)

These findings support previous findings that race and gender added virtually no variance to the model and these two variables do not appear to be significant predicators when trying to understand faculty salary in these samples. There are several important findings from this analysis; first, about 80% of the variance can be explained by the predictor variables, and second, results across the two academic years are consistent. The findings from both 2006-2007 and 2010-2011 supported one another; as both analyses show that salary at this university had no significant relationship with race or gender. This finding could indicate that other, unexplored

variables may be useful to consider when attempting to understand predictors of salary.

One interesting difference is apparent between the two analyses across the two academic years. Whereas both are similar within year, when comparing across the two samples, there is a 6% decrease in variance. This discrepancy indicates that the two models are able to encompass overall variation to a greater degree for the first dataset, 2006-2007; suggesting that there are now slightly fewer explained factors related to salary. To elucidate, the amount of explained variance among the 2010-2011 faculty members was slightly lower. Other factors that could be considered for further research could include additional work faculty members do at the university (e.g., administrative duties), negotiations during the hiring process, or productivity of faculty.

Gender and Salary

The second research question explored if, after controlling for rank and discipline, the salary differences were significantly different between men and women. To get to the answer, multiple analyses of variance (ANOVA) tests were utilized. Following each ANOVA test an analysis of covariance analysis (ANCOVA) was run to assess if the covariate, time in rank, was related to the outcome. By using this analysis, the amount of error in the F statistic is reduced and the sensitivity and power are both enhanced. For both academic years, three sets of ANOVAs were conducted separately for each of the three active ranks (i.e., assistant, associate, and full professors). In total 6 analysis of variance tests were run:

Table 2.1: Groups to be tested

6 ANOVA Tests:		
2006-2007 Assistant Professors Only, n=121	2006-2007 Associate Professors Only, n=127	2006-2007 Full Professors Only, n=353
2010-2011Assistant Professors Only, n=115	2010-2011Associate Professors Only, n=129	2010-2011Full Professors Only, n=326

An alternative analysis, a two-way analysis using rank and gender as independent variables, was not used due to insufficient sample size. (It should also be noted that instructor level faculty members did not constitute a large enough sample size to be included in this analysis.) The first analysis, which included all assistant level faculty members (2006-2007: n=121) examined the differences between gender by discipline. For example, the first examination was between the male and female assistant level professors who work within the Arts & Sciences Discipline (refer to table 2.2 for all 2006-2007 results). To run this analysis all faculty members were recoded into a specific gender discipline category; for 2006-2007 the total number of groups included 20 groups, minus groups with no respondents (as described, below) which varied between ranks.

Initially 20 groups were included in the assistant professor rank analysis, but groups that did not have any respondents could not be included in the analysis. Such groups included both College of Continuing Education (CCE) males and females (minus 2 groups) were excluded since the sample size was zero, and within the Library Science and Nursing Disciplines there were no male respondents (minus 2 groups). Also, the Oceanography Discipline included no female assistant professors (minus 1 group). In total there were 15 valid groups included in the analysis for the assistant professor rank (refer to Table 2.5 to view groups included).

When examining the associate level professors, a similar issue became apparent; no women were working in the Business, Oceanography or the CCE Disciplines. Similar to the assistant professors, no male associate professors worked in either the Library or Nursing Disciplines. This left 15 active groups to be analyzed for the associate professor rank.

The full professor rank not only had the most faculty members, but also had the fewest invalid groups. Only three groups were removed from the analysis due to a sample size of zero. These groups included both male and female CCE groups (minus 2 groups) and Nursing had no men (minus 1 group) working at the full professor rank. After excluding these three potential groups from the full professor pool, in total there were 17 active groups available for analysis (refer to Table 2.5).

Among all assistant professors across all disciplines, the finding indicates substantial differences between genders: $F(14,105) = 82.086$, $p < .001$, $\eta^2 = 0.916$. Running a post-hoc Tukey test was necessary to determine exactly where the differences existed. Although the overall F statistic and eta-squared are quite high, the small sample sizes for each discipline, split by gender, could be responsible for the lack of statistically significant differences between specific disciplines. Refer to Table 2.2 to see that the Arts and Sciences discipline had the largest sample of assistant professors (n=48), but only a $2,386 salary difference between the men and women. The next two largest samples were for the HSS (n=17) and CELS (n=16) Disciplines. Males in the HSS Discipline earned $532 more than the female assistant professors. While this sample size is small, the difference is quite minor as well. However, men in the CELS discipline earned $5,215 more than women. If this sample size were

larger it would be plausible to expect that statistically significant differences might be identified.

Next an ANCOVA was run which controlled for any potential covariance between the variable Years in Rank and the outcome, faculty salary (results in Table 2.2). The mean square error for the ANCOVA was less than the error for ANOVA (24258352.964 < 24332759.167). These results suggests that the amount of error declined when the Years in Rank covariate was introduced. The ANCOVA findings indicate that there is an overall main effect of gender on salary for assistant professors after controlling for the Years in Rank covariate. In addition, the eta-squared effect size (i.e., 27993933858.473/30518082221.592=.92), indicates that there is a large and significant main effect of gender on salary for associate professors after controlling for the covariate (Years in Rank).

Table 2.2: 2006-2007 Assistant Professors ANOVA and ANCOVA

ANOVA

Salary Amounts for Faculty 2007

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	27963142509.095	14	1997367322.078	**82.086**	**.000**
Within Groups	2554939712.497	105	**24332759.167**		
Total	30518082221.592	119			

ANCOVA

Dependent Variable:SAL7 Salary Amounts for Faculty 2007

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	27995213513.332	15	1866347567.555	**76.936**	**.000**
Intercept	125311551833.837	1	125311551833.837	5165.707	.000
YRSRANK7	32071004.238	1	32071004.238	1.322	.253
ASSTnova	27993933858.473	14	1999566704.177	**82.428**	**.000**
Error	2522868708.260	104	**24258352.964**		
Total	499287707427.000	120			
Corrected Total	30518082221.592	119			

Amongst the associate professor rank (2006-2007: n=127), it was found that the overall F statistic was statistically significant: F (14, 109) = 11.699, $p < .001$, $\eta^2 = .60$. However none of the gender differences within discipline were identified as

being statistically significant. As mentioned previously, several departments were missing active faculty members, making it impossible to analyze all potential differences (refer to Table 2.2 for all the data from this rank). The largest group of associate professors is within the Arts and Sciences discipline (n=53), with the men earning $1,235 more than women; although, no significant difference emerged. The next two largest sample sizes within this rank are the CELS (n=17) and HSS (n=16) Disciplines. Men who work in the CELS Discipline within the associate professor rank earn $3,361 more than women, whereas men in the HSS Discipline earn $14,122 more than the women. It would be expected that a statistically significant difference would exist for the HSS faculty members given the seemingly large discrepancy, although this was not the case. It is hypothesized that this difference is not being identified as statistically significant due to the small sample size. Only three men are included in this sample; after further inquiry it was identified that a single male faculty member's salary was an outlier ($94,641) and substantially increased the average salary for this group.

Immediately following the ANOVA, an ANCOVA was run (results in Table 2.3). This analysis was necessary to ensure that the potential covariate Years in Rank was controlled. The ANCOVA's mean square error was less than the ANOVA's error, which indicated that the amount of error decreased when the covariate, Years in Rank, was introduced to the analysis. The ANCOVA findings, including the F-test, probability value and eta squared effect size (i.e., 10524733367.121/ 18750929976.656=.56), suggest that there is a large and significant main effect of

gender on salary exists for associate professors during the 2006-2007 academic year even after controlling for the covariate Years in Rank.

Table 2.3: 2006-2007 Associate Professors ANOVA and ANCOVA

ANOVA

Salary Amounts for Faculty 2007

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	11363701234.704	14	811692945.336	**11.699**	**.000**
Within Groups	7562720269.901	109	**69382754.770**		
Total	18926421504.605	123			

ANCOVA

Dependent Variable:SAL7 Salary Amounts for Faculty 2007

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	12311747389.179	15	820783159.279	**13.511**	**.000**
Intercept	213038228611.147	1	213038228611.147	3506.975	.000
YRSRANK7	1116544000.514	1	1116544000.514	18.380	.000
ASSOnova	10524733367.121	14	751766669.080	**12.375**	**.000**
Error	6439182587.476	106	**60747005.542**		
Total	629302211616.000	122			
Corrected Total	18750929976.656	121			

The last analysis to be conducted for the 2006-2007 (n = 353) data set investigated salary differences among all the male and female full professors. Overall the analysis indicated that the F statistic was significant and the eta-squared effect size was rather large: $F\ (16, 334) = 16.465$, $p < .001$, $\eta^2 = 0.440$. Within the university, more full professors work throughout the various disciplines. This variation has a direct impact on the number of potential groups included in the analysis. Out of the 20 potential groups, full professors work in 17 of those groups, while both associate and assistant professors only work in 15 out of the 20 groups.

For this analysis, the only discipline that was identified as having statistically different salaries between men and women was the Arts and Sciences Discipline ($p<.05$); men made on average $6,483 more per year than women. Within the Library Science Discipline, men made $17,290 more per year than women. Although this is a

substantial amount, this difference was not identified as being statistically significant. It is suspected that if there was a larger sample size than the current 9 faculty members there could be enough power to acknowledge this difference as statistically significant. After further investigation it was found that the female faculty member (n=5) salaries had a greater range ($78,963 – $117,442) than the male faculty members (n=4), whose salary range was substantially narrower in comparison ($104,759 – $117,354). One interesting item that should be noted is that the highest paid full faculty member in the Library Science Discipline is a woman.

An ANCOVA followed the ANOVA to ensure that the covariate Years in Rank was being controlled (see results in Table 2.4). The mean square error for the ANCOVA was less than the error for ANOVA (66365270.120< 95544198.262). This decline and the significant probability value and moderate eta-squared effect size (i.e., 23238765929.212/57081360112.16= .41), suggest that there is an overall main effect of gender on salary for full professors after controlling for the Years in Rank covariate.

Table 2.4: 2006-2007 Full Professors ANOVA and ANCOVA

ANOVA

Salary Amounts for Faculty 2007

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	25169597892.509	16	1573099868.282	**16.465**	**.000**
Within Groups	31911762219.651	334	**95544198.262**		
Total	57081360112.160	350			

ANCOVA

Dependent Variable:SAL7 Salary Amounts for Faculty 2007

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	34981725162.335	17	2057748538.961	**31.006**	**.000**
Intercept	630706270191.358	1	630706270191.358	9503.559	.000
YRSRANK7	9812127269.826	1	9812127269.826	147.850	.000
FULLnova	23238765929.212	16	1452422870.576	**21.885**	**.000**
Error	22099634949.825	333	**66365270.120**		
Total	3448144351668.000	351			
Corrected Total	57081360112.160	350			

Table 2.5: 2006-2007 Mean Comparisons by Rank and Gender

ASSISTANT						ASSOCIATE						FULL					
Discipline & Sex	N	Avg. Salary	Std. Deviation	CI		Discipline & Sex	N	Avg. Salary	Std. Deviation	CI		Discipline & Sex	N	Avg. Salary	Std. Deviation	CI	
A&S Males	22	$54,016	$6,461	$51,948	$56,113	A&S M	22	$65,811	$11,780	$62,195	$68,791	A&S M	108	$94,721	$8,716	$90,808	$93,982
A&S Females	26	$51,630	$3,682	$49,778	$53,616	A&S F	31	$64,576	$5,717	$62,161	$67,722	A&S F	38	$88,238	$9,364	$88,449	$93,730
BUS Males	6	$102,000	$5,275	$97,755	$105,748	BUS M	11	$96,412	$8,313	$91,055	$100,395	BUS M	18	$108,988	$14,963	$102,413	$110,020
BUS Females	6	$102,460	$4,232	$98,618	$106,610	BUS F	0	--	--	--	--	BUS F	4	$104,201	$5,992	$98,542	$114,585
CCE Males	0	--	--	--	--	CCE M	2	$84,104	$20,647	$71,441	$93,351	CCE M	0	--	--	--	--
CCE Females	0	--	--	--	--	CCE F	0	--	--	--	--	CCE F	0	--	--	--	--
CELS Males	10	$62,401	$8,809	$59,146	$65,346	CELS M	10	$70,704	$7,774	$65,299	$75,083	CELS M	46	$97,288	$11,808	$95,208	$99,935
CELS Females	6	$57,186	$3,621	$53,174	$61,149	CELS F	7	$67,343	$9,937	$62,008	$73,699	CELS F	7	$91,417	$7,387	$88,345	$100,497
EGR Males	4	$74,981	$5,729	$69,815	$79,623	EGR M	8	$79,780	$6,182	$72,293	$84,033	EGR M	45	$109,160	$7,977	$105,517	$110,311
EGR Females	4	$74,667	$4,407	$69,602	$79,387	EGR F	2	$80,148	$3,538	$69,425	$91,279	EGR F	2	$106,676	$14,998	$99,293	$121,992
HSS Males	3	$54,053	$92	$48,507	$59,790	HSS M	3	$77,742	$16,951	$67,981	$85,840	HSS M	15	$90,983	$8,761	$87,281	$95,558
HSS Females	14	$53,521	$2,265	$50,823	$56,052	HSS F	12	$63,620	$4,713	$59,829	$68,773	HSS F	12	$85,427	$6,964	$85,921	$95,325
LIB Males	0	--	--	--	--	LIB M	0	--	--	--	--	LIB M	4	$113,729	$6,001	$104,708	$120,736
LIB Females	4	$57,248	$5,163	$52,456	$62,229	LIB F	3	$72,888	$0	$65,952	$83,894	LIB F	5	$96,438	$16,133	$94,157	$108,579
NUR Males	0	--	--	--	--	NUR M	0	--	--	--	--	NUR M	0	--	--	--	--
NUR Females	4	$57,055	$2,846	$52,263	$62,036	NUR F	4	$64,222	$2,541	$52,992	$70,957	NUR F	7	$90,851	$9,009	$88,772	$100,955
OCG Males	2	$70,338	$258	$62,256	$76,471	OCG M	2	$78,841	$0	$68,826	$90,696	OCG M	20	$115,246	$10,565	$113,910	$121,114
OCG Females	0	--	--	--	--	OCG F	0	--	--	--	--	OCG F	3	$121,836	$4,549	$110,017	$128,540
PHM Males	5	$70,328	$1,857	$66,117	$74,872	PHM M	4	$67,684	$5,258	$60,632	$76,097	PHM M	11	$94,522	$9,140	$92,210	$101,908
PHM Females	4	$79,600	$1,320	$74,891	$84,678	PHM F	3	$73,665	$11,197	$67,030	$85,006	PHM F	6	$104,150	$12,304	$99,959	$113,066

For the 2010-2011 data the same methodology was applied. Three analysis of variance tests were run, separated by rank of the faculty member, and then each discipline was compared between the two genders. For example, male assistant professors from the Pharmacy Discipline were directly compared to female assistant professors from the Pharmacy Discipline.

The findings for the first analysis, for assistant professors, indicated that there were significant differences and a very large overall eta-squared effect size between the gender groups: $F(15, 98) = 49.098$, $p < .001$, $\eta^2 = 0.882$. For this analysis a total of 17 groups contained valid data points, but since only a single male worked in the Oceanography Discipline, 16 groups were included in the analysis. Following the ANOVA the specific discipline differences were examined (refer to Table 2.9) to examine where significant salary differences existed. Although the overall eta-squared value is extremely high, after running the Tukey test, no statistically significant differences were found between men and women within the same specific discipline. With 43 assistant faculty member (males = 19, females = 24) the Arts and Science Discipline had the largest subsample of respondents. These men only earned on average $1,781 more than the assistant female faculty members. The CELS (n = 16) and HSS (n=16) groups had the second largest sample sizes. The CELS men made $1,742 more than CELS women and, conversely, the HSS women earned $411 more than HSS men. The remaining comparison groups had smaller sample sizes with 11 or fewer respondents.

Both the Nursing and Continuing Education Disciplines had no male assistant professors and Oceanography only had 1 male and thus these groups were not

included in the analysis. One notable finding was that the women faculty in the Pharmacy college made more than $8,300 per year more than comparable male faculty. Although $8,000 is a large number, the limited sample size (n=9) including three women and six men diminished the likelihood of identifying a significant difference.

The next analysis run was an ANCOVA; this was necessary to include as it could control for any potential covariation between faculty salary and the variable Years in Rank (see results in Table 2.6). The mean square error for the ANCOVA was less than the error for ANOVA (32525362.384< 37755428.233). These results suggests that the amount of error declined when the Years in Rank covariate was introduced. The findings, including a significant probability value and eta-squared of .87 (i.e., the sum of squares for ASSTnova over the corrected total sum of scores in Table 2.6 for ANCOVA) indicate that there is a very large and significant overall main effect of gender on salary for assistant professors, during the 2010-2011 school year, after controlling for the Years in Rank covariate.

Table 2.6: 2010-2011 Assistant Professors ANOVA and ANCOVA

ANOVA

Salary Amounts for Faculty 1011

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	27805942561.041	15	1853729504.069	**49.098**	**.000**
Within Groups	3700031966.793	98	**37755428.233**		
Total	31505974527.833	113			

ANCOVA

Dependent Variable:SAL1011 Salary Amounts for Faculty 1011

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	28504936549.485	17	1676760973.499	**51.552**	**.000**
Intercept	106774870093.355	1	106774870093.355	3282.819	.000
YRSRANK1011	545071815.582	1	545071815.582	16.758	.000
ASSTnova	27629173068.069	16	1726823316.754	**53.092**	**.000**
Error	3154960151.210	97	**32525362.384**		
Total	593398675032.000	115			
Corrected Total	31659896700.696	114			

The associate professor data were analyzed using the same approach and produced similar findings: $F(14, 112) = 23.4$, $p < .001$, $\eta^2 = 0.745$. Although the eta-squared acknowledged a very large effect size, specific significant group differences did not exist after running the Tukey test. For this analysis only 15 groups were considered appropriate for inclusion as these groups included 2 or more faculty members. The Arts and Science Discipline had 50 faculty members, with the men earning only $1,260 more than women. Only the HSS (n=19), CELS (n=14), and EGR (n=12) comparisons had sample sizes larger than 10 and included both male and female faculty members. The HSS men earned substantially more than the HSS women, almost $9,500 more (refer to Table 2.3). Even though there were only 6 males in the discipline the range of salaries was almost $30,000 (range: $65,729 – $95,384), whereas the women's salary range was less than $9,000 (range: $66,509 – $75,206). With 14 respondents (women = 6, men = 8) the CELS Discipline is the next largest group analyzed; men made $3,871 more than women. With the low sample sizes it is believable that such differences would not necessarily be recognized as being significantly different. The EGR group includes 12 associate level faculty members (women = 5, men = 7); in the 2010-2011 academic year these male faculty members earned $1,778 more than the comparable women. Again, not identifying a significant difference between the genders is not surprising considering the small salary variance and the limited sample size.

Following the ANOVA, an ANCOVA was run (results in Table 2.7). Seeing that the mean square error for the ANCOVA was less than the error for the ANOVA, the findings suggest that the amount of error declined when the Years in Rank

covariate was included. The findings, including the F-test, probability value and eta-squared effect size (i.e., 16146794807.442 / 22363718032.899 = .72), suggest that there is a large and significant main effect of gender on salary for associate professors after controlling for the Years in Rank variable.

Table 2.7: 2010-2011 Associate Professors ANOVA and ANCOVA

ANOVA

Salary Amounts for Faculty 1011

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	16437214979.370	14	1174086784.241	**23.400**	**.000**
Within Groups	5619549823.622	112	**50174551.997**		
Total	22056764802.992	126			

ANCOVA

Dependent Variable:SAL1011 Salary Amounts for Faculty 1011

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	17056879633.740	17	1003345860.808	**20.986**	**.000**
Intercept	239689453507.365	1	239689453507.365	5013.443	.000
YRSRANK1011	312711424.462	1	312711424.462	6.541	.012
ASSOnova	16146794807.442	16	1009174675.465	**21.108**	**.000**
Error	5306838399.160	111	**47809354.947**		
Total	835178721192.000	129			
Corrected Total	22363718032.899	128			

The same model was applied to the 2010-2011 data for all full professors found: $F(17, 306) = 15.01$, $p < .001$, $\eta^2 = 0.454$. In total 18 valid groups were included, and these groups had a minimum of at least 2 faculty members (refer to Table 2.8). For this academic year, there were no men in the Nursing Discipline and only 1 woman serving in the Continuing Education Discipline. Although the overall eta-squared is substantial, the Tukey test did not identify any specific statistical differences between men and women within a single discipline for the full professors among the 18 groups included.

By far the largest discipline investigated was the Arts and Sciences with 135 faculty members (men = 95, women = 40). Although the men earned slightly more than $5,000 annually than the women, this difference was not statistically significant

(p=.534). Interestingly the women's range ($85,086 – $146,089) in this discipline had higher values than the men's range (range: $61,705 – $126,177). The next largest discipline included 51 faculty members from the CELS college (men= 43, women = 8). These men earned approximately $4,000 more than equally comparable women in the sample discipline, but this difference was not identified as being statistically significant (p = 1.0). For the Engineering, Oceanography and Pharmaceutical Disciplines, women full professors earned more than men. Among the forty-one faculty members working in the Engineering Discipline, only two were women. Surprisingly these women earned almost $5,800 more than the men, on average. Twenty-two full professors worked in the Oceanography discipline during the 2006-2007 academic year, but only three of these professors were women. On average these women earned approximately more than $4,400 more than the men.

Among the full professors in the Pharmacy college, women earned on average $7,863 more than male professors. Men in the Business and Library Science Disciplines earned more annually than women in said departments. Men in Library Science made almost $17,000 more, on average, than female full professors. And in the Business college, men made at least $8,500 more than the average female faculty members.

The final analysis of covariance was run to test if a covariation between Years in Rank and faculty salary was impacting the results for the full professors (see results in Table 2.8). This analysis found that the mean square error for the ANCOVA was less than the error for ANOVA, which suggested that the amount of error decreased when the covariate Years in Rank was introduced to the analysis. These findings,

along with a significant F-test and p-value, and a large eta-squared (i.e., 30759256132.557 / 68289169060.923 = .45), suggest that that there is a significant overall main effect of gender on salary for full professors after controlling for the Years in Rank covariate.

Table 2.8: 2010-2011 Full Professors ANOVA and ANCOVA

ANOVA

Salary Amounts for Faculty 1011

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	31022878394.353	17	1824875199.668	**15.005**	**.000**
Within Groups	37214820642.620	306	**121617060.924**		
Total	68237699036.972	323			

ANCOVA

Dependent Variable:SAL1011 Salary Amounts for Faculty 1011

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	31525771816.168	19	1659251148.219	**13.766**	**.000**
Intercept	1097651862198.710	1	1097651862198.710	9106.444	.000
YRSRANK1011	451423397.864	1	451423397.864	3.745	.054
FULLnova	30759256132.557	18	1708847562.920	**14.177**	**.000**
Error	36763397244.756	305	**120535728.671**		
Total	3863497930181.000	325			
Corrected Total	68289169060.923	324			

Table 2.9: 2010-2011 Mean Comparisons by Rank and Gender

ASSISTANT						ASSOCIATE						FULL					
Discipline & Sex	N	Avg. Salary	Std. Deviation	CI		Discipline & Sex	N	Avg. Salary	Std. Deviation	CI		Discipline & Sex	N	Avg. Salary	Std. Deviation	CI	
A&S Males	19	$60,922	$7,301	$58,480	$63,675	A&S M	24	$73,157	$8,784	$70,481	$76,078	A&S M	95	$102,345	$9,785	$100,225	$104,663
A&S Females	24	$59,141	$3,821	$56,759	$61,380	A&S F	26	$71,897	$5,917	$69,255	$74,629	A&S F	40	$97,155	$11,398	$93,599	$100,436
BUS Males	5	$111,703	$7,378	$107,252	$117,394	BUS M	13	$107,391	$10,520	$102,906	$110,573	BUS M	17	$122,684	$14,124	$117,386	$127,866
BUS Females	6	$111,235	$5,145	$106,104	$115,359	BUS F	0	--	--	--	--	BUS F	5	$114,164	$8,600	$104,382	$123,706
CCE Males	0	--	--	--	--	CCE M	1	$77,846	--	--	--	CCE M	2	$118,630	$8,659	$103,182	$133,736
CCE Females	0	--	--	--	--	CCE F	0	$75,966	--	$61,284	$89,004	CCE F	1	$115,226	--	--	--
CELS Males	7	$69,289	$11,571	$63,855	$72,481	CELS M	8	$72,095	$6,869	$70,535	$80,263	CELS M	43	$106,159	$12,533	$102,713	$109,384
CELS Females	9	$67,547	$7,820	$62,811	$70,411	CELS F	6	$89,801	$4,130	$66,254	$77,448	CELS F	8	$102,103	$7,591	$96,071	$111,793
EGR Males	7	$81,455	$4,625	$75,824	$84,474	EGR M	7	$88,023	$4,678	$83,480	$93,971	EGR M	39	$120,228	$8,208	$116,686	$123,607
EGR Females	2	$83,452	$7,314	$75,807	$91,818	EGR F	5	$79,831	$4,189	$82,536	$94,834	EGR F	2	$125,987	$1,312	$110,586	$141,140
HSS Males	2	$57,810	$1,129	$50,165	$66,176	HSS M	6	$79,831	$10,847	$74,034	$85,226	HSS M	10	$101,482	$7,143	$94,550	$108,215
HSS Females	14	$58,221	$1,652	$55,907	$61,998	HSS F	13	$70,360	$2,829	$66,722	$74,327	HSS F	13	$95,643	$5,636	$89,507	$101,494
LIB Males	2	$64,742	$7,901	$58,357	$74,445	LIB M	2	$78,875	$0	$70,323	$89,786	LIB M	2	$123,536	$25,925	$108,225	$138,777
LIB Females	2	$64,743	$7,901	$56,450	$72,460	LIB F	3	$83,256	$3,794	$75,991	$91,845	LIB F	6	$106,628	$22,979	$97,687	$115,329
NUR Males	0	--	--	--	--	NUR M	0	--	--	--	--	NUR M	0	--	--	--	--
NUR Females	2	$68,744	$16,592	$63,567	$79,829	NUR F	5	$74,825	$3,410	$69,240	$81,526	NUR F	5	$105,732	$4,766	$95,932	$115,257
OCG Males	1	$82,243	--	--	--	OCG M	2	$99,901	$13,555	$90,861	$110,265	OCG M	19	$127,385	$16,135	$122,319	$132,234
OCG Females	4	$71,828	$1,516	$65,879	$77,201	OCG F	1	$62,006	--	--	--	OCG F	3	$131,844	$4,923	$119,326	$144,273
PHM Males	6	$75,865	$245	$71,812	$81,071	PHM M	3	$82,137	$1,138	$75,275	$91,186	PHM M	10	$109,337	$6,557	$102,372	$116,038
PHM Females	3	$84,216	$8,258	$77,609	$90,680	PHM F	4	$87,055	$5,120	$81,147	$94,933	PHM F	6	$117,200	$12,779	$108,275	$125,916

Within Rank Salary Differences

The third research question explored each rank individually to determine if female faculty members were making significantly different salary amounts than comparable male faculty. For each dataset, all three ranks were analyzed separately using a t-test.

Using the 2006-2007 data, three separate t-tests were conducted (refer to Table 3.1), one for each rank (assistant, associate, and full). There were no statistically significant differences identified between all male and female assistant professors. This finding was encouraging although not too surprising as these are generally the newest members and as a result of more recent initiatives, the newest faculty members are more likely to be paid equally. Statistically significant ($p < .001$) and moderately large differences were identified for the associate professor group. Women made on average almost $9,000 less than men. One possible reason for this difference would be that this group of faculty members have been on campus for a longer time and may be subject to artifacts such as academia being historically male dominated. Another possible reason for this difference is that by this point, men and women may have been identified as focusing their faculty efforts in differently profitable ways. Lastly, the full professors were analyzed using the same methodology. Male full professors made significantly more than female professors ($p < .001$). A surprising finding, however, is that the difference between male and female associate professors was greater than the difference between male and female full professors. It would be expected that the greatest salary discrepancies would exist among those who served at the university the longest: full professors.

Table 3.1 Questions 3: 2006-2007 Results

Sample	Result	Average Male Salary	Average Female Salary	Salary Difference *	Male Std. Deviation	Female Std. Deviation
Assistant Professors	t (119) = 1.47, p = .143, Cohen's *d* = 0.269, CI = 1,471 - 10,045	$64,930	$60,644	$4,286	$16,136	$15,662
Associate Professors	t (125) = 4.08, p < .001, Cohen's *d* = 0.755, CI = 4,422 - 12,747	$75,144	$66,559	$8,585	$14,623	$8,116
Full Professors	t (351) = 5.05, p < .001, Cohen's *d* = 0.630, CI = 4,727 - 10,757	$100,147	$92,404	$7,743	$12,344	$12,213

*Salary difference = Average Male Salary - Average Female Salary

The findings from the 2010-2011 data mirror the first analysis. Assistant professors did not make significantly different salaries. The difference between these groups was only slightly more than the difference identified in the 2006-2007 data. During the 2010-2011 academic year (refer to Table 3.2) male assistant professors made, on average, $4,592 more than women, whereas during the 2006-2007 year the same group made $4,289 more, a mere $300 difference. Statistically significant and large differences were identified among the associate professors group. The men in this group made almost $10,000 more than the women. Again, this difference is very similar to the trends in the 2006-2007 findings. The final set of faculty to be analyzed using this methodology was the full professors in the 2010-2011 data set. A medium sized statistically significant difference was identified among this group. Within this group the male professors made $7,800 more on average annually.

Table 3.2 Questions 3: 2010-2011 Results

Sample	Result	Average Male Salary	Average Female Salary	Salary Difference *	Male Std. Deviation	Female Std. Deviation
Assistant Professors	t (113) = 1.47, p =.145, Cohen's *d* = 0.276, CI = 1,602 - 10,789	$72,526	$67,934	$4,592	$16,926	$16,320
Associate Professors	t (127) = 4.42, p < .001, Cohen's *d* = 0.828, CI = 5,312 - 13,923	$84,075	$74,457	$9,618	$15,559	$7,668
Full Professors	t (323) = 4.44, p < .001, Cohen's *d* = 0.554, CI = 4,345 - 11,253	$110,199	$102,399	$7,800	$4,345	$11,253

*Salary difference = Average Male Salary - Average Female Salary

Gender Differences for Faculty Hired Recently

The fourth research question focused solely on faculty members who had been working at the University for 5 years or less. For the 2006-2007 faculty members only five disciplines, listed below, were included in the analysis. The other disciplines were not included for two reasons: either the sample size was too small – meaning there were less than 10 faculty members (this included Oceanography, Library Science, Engineering and the College of Continuing Education) or there was not a comparable group between the genders (i.e., for Nursing, there were no men). The Arts and Science, Business, Environment and Life Sciences, Human Science and Services and Pharmacy Disciplines were included in this analysis (see Table 4.1 for these results). Surprisingly only a single, very large and significant difference was identified – for the pharmacy college (Cohen's *d* = 4.27). The Cohen's *d* value indicates that there were more than four standard deviations different between the female and male salaries, which represent extremely discrepant values. It unusual that a single college was identified as having a statistical difference, but what makes this finding more unusual is that it is the women who made significantly more than the

men. Women who had been employed in the Pharmacy college for five years or less made on average $10,500 more than comparable men. Not only was this finding statistically significant but it also indicated an extremely large effect size. Another interesting point to take away from this analysis is that, although there were not statistically significant differences, there were trends with women making more than the men: within the Business ($860 more for women than men), Human Science and Services ($3,880 more for women than men) and, as noted, in Pharmacy colleges. In contrast, in the Arts and Science Discipline, men made on average $2,200 more than women, whereas in Environment and Life Sciences men made almost $6,000 more than women, although again, these were not statistically significant differences.

Table 4.1: Questions 4: 2006-2007 Results

Sample	Result	Average Male Salary	Average Female Salary	Salary Difference *	Male Std. Deviation	Female Std. Deviation
0-5 years in Arts & Sciences	t (44) = 1.43, p = .16, Cohen's *d* = 0.425, CI = 914 - 5,359	$53,852	$51,629	$2,223	$6,751	$3,682
0-5 years in Business	t (10) = -.31, p = .76, Cohen's *d* = -0.181, CI = -7,013 - 5,289	$101,597	$102,459	-$862	$5,274	$4,232
0-5 years in CCE	No recent hires	--	--	--	--	--
0-5 years in CELS	t (13) = .72, p = .49, Cohen's *d* = 0.389, CI = -11,415 - 22,707	$67,587	$61,941	$5,646	$16,208	$12,783
0-5 years in Engineering	t (5) = .93, p = .39, Cohen's *d* = 0.925, CI = -24,521 - 52,480	$89,142	$75,163	$13,979	$24,950	$5,257
0-5 years in HSS	t (13) = .53, p = .61, Cohen's *d* = -0.622, CI = -19,752 - 11,993	$54,053	$57,933	$3,880	$92	$12,373
0-5 years in LIB	1 male hired in past 5 years, 3 females	$64,992	$54,666	$10,326	--	$0
0-5 years in Nursing	1 male hired in past 5 years, 9 females	$60,740	$61,598	-$858	--	$14,838
0-5 years in Oceanography	1 male hired in past 5 years, no females	$70,520	--	--	--	--
0-5 years in Pharmacy	t (8) = -6.56, p < .001, Cohen's *d* = -4.272, CI = -14,262 - -6,840	$70,328	$80,880	$10,552	$1,857	$3,082

*Salary difference = Average Male Salary - Average Female Salary

To analyze the 2010-2011 data the same methodology was used. The Oceanography and Nursing Disciplines were excluded from the analysis due to limited gender distributions (i.e., no men in nursing, and only a single male working in oceanography); and the College of Continuing Education had not hired anyone in the previous five years. In the academic sample, seven disciplines were analyzed, and two statistically significant findings were identified (see Table 4.2 for these results). Men in the Human Science and Services college earned more than the comparable women and this analysis carried a large effect size (Cohen's d = .930). Another notable difference existed again with the Pharmacy Discipline, where similar to 2006-2007 findings, women were earning significantly more than men; to be exact women earned $8,300 more than men. For the Arts and Science, and Engineering Disciplines, men earned more than women, although not significantly. The differences between male and female salaries in the Business Discipline were not statistically significant but the analysis carried a medium effect size. No significant difference was identified for the faculty members in the Library Science Discipline; meaning, on average both men and women who worked at the university for less than 5 years made an approximate salary of $64,743 annually. Women in the Environment and Life Sciences college made almost $800 more per year, than men; this was not statistically significant, but was worthy of mention.

Table 4.2: Questions 4: 2010-2011 Results

Sample	Result	Average Male Salary	Average Female Salary	Salary Difference *	Male Std. Deviation	Female Std. Deviation
0-5 years in Arts & Sciences	t (41) = 1.298, p = .202, Cohen's *d* = 0.397, CI = -2,010 - 9,241	$63,704	$60,088	$3,616	$10,168	$8,020
0-5 years in Business	t (11) = .889, p = .393, Cohen's *d* = 0.574, CI = -8,814 - 20,763	$117,209	$111,235	$5,974	$15,664	$5,144
0-5 years in CCE	No recent hires	--	--	--	--	--
0-5 years in CELS	t (13) = .72, p = .49, Cohen's *d* = -0.063, CI = -14,081 - 12,505	$69,916	$70,704	-$788	$12,999	$11,745
0-5 years in Engineering	t (7) = .238, p = .819, Cohen's *d* = 0.227, CI = -28,468 - 34,843	$88,362	$85,175	$3,187	$22,080	$5,971
0-5 years in HSS	t (15) = 2.15, p = .048, Cohen's *d* = 0.93, CI = 50 - 11,400	$63,946	$58,221	$5,725	$10,659	$1,651
0-5 years in LIB	t (2) = .000, p = 1.0, Cohen's *d* = .00, CI = -33996 - 33996	$64,743	$64,743	$0	$7,901	$7,901
0-5 years in Nursing	9 females hired in past 5 years, no males	--	$74,599	--	--	$17,360
0-5 years in Oceanography	1 male hired in past 5 years, 5 females	$82,243	$69,863	$12,380	--	$4,584
0-5 years in Pharmacy	t (7) = -2.679, p = .032, Cohen's *d* = -1.96, CI = -15,576 - -969	$75,864	$84,137	-$8,273	$245	$8,162

*Salary difference = Average Male Salary - Average Female Salary

Minority Faculty

The final analysis explored salary differences between minority and non-minority faculty members, by rank. The distribution of minority versus non-minority faculty between the 2006-2007 and 2010-2011 datasets was negligible: the 2006 distribution included 94% (n=568) non-minority and 6% (n=36) minority; similarly, the 2010-2011 distribution was 94% (n=537) non-minority and 6% (n=33) minority. A secondary analysis focused only on minority faculty members and differences between male and female salaries by rank.

For the first analysis (refer to Table 5.1) using 2006-2007 data, it was determined that statistically there was no significant difference between salaries for

minority and non-minority assistant faculty members, but there is a small to medium effect (Cohen's *d* = -0.337). It should be acknowledged that, on average, minority faculty members did earn $5,500 more than non-minorities among assistant professors. Since there were only nine assistant level minority faculty members (and assistant level non-minority faculty n=112), it is suspected that there was not enough power to identify the difference. No significant difference was identified between associate level minority and non-minority faculty, although Cohen's d suggests that there was a near-medium effect (Cohen's *d* = 0.462). Within the full professor rank, the non-minority faculty earned on average $14,000 more than minority faculty; this is supported by the results which indicate a large statistically significant effect size (Cohen's *d* = 1.13). Although not identified as substantially different, assistant level minority faculty earned about $5,500 more than non-minority faculty within the assistant rank, whereas the associate level non-minority faculty earned about $4,800 more than minority associate level faculty.

Table 5.1 Questions 5: 2006-2007 Minority vs. Non-minority

Rank	Result	Average Non-Minority Salary	Average Minority Salary	Salary Difference*	Non-Minority Std. Deviation	Minority Std. Deviation
Assistant Professors	t (119) = -.997, p = -.32, Cohen's *d* = -0.337, CI = -16,453 - 5,429	$62,112	$67,624	$5,512	$15,890	$16,739
Associate Professors	t (125) = 1.26, p = .21, Cohen's *d* = 0.462, CI = -2,736 - 12,317	$71,338	$66,548	$4,790	$12,902	$7,801
Full Professors	t (351) = 4.33, p < .001, Cohen's *d* = 1.13, CI = 7,751 -20,647	$98,888	$84,687	$14,201	$12,413	$12,718

*Salary difference = Average Non-Minority Salary - Average Minority Salary

When just focusing on minority faculty, none of the ranks showed statistically significant differences between men and women of equal ranks. This finding could be a result of samples that are too small, which would not allow enough power to find

effects that may be present (see Table 5.2). Although the findings are not statistically significant, it is interesting to note that for the full professors, there is less than a $200 difference, whereas both assistant ($3,000 difference between men and women) and associate professors ($5,700 difference between men and women) have much higher differences.

Table 5.2 Questions 5: 2006-2007 Minority Men vs. Minority Women

Rank	Result	Average Minority Male Salary	Average Minority Female Salary	Salary Difference*	Minority Male Std. Deviation	Minority Female Std. Deviation
Assistant Professors	t (7) = .244, p = .81, Cohen's *d* = 0.191, CI = -26,719 - 32,871	$69,675	$66,598	$3,077	$12,679	$19,500
Associate Professors	t (10) = .69, p = .51, Cohen's *d* = 0.721, CI = -12,836 - 24,369	$71,834	$66,067	$5,767	--	$7,993
Full Professors	t (13) = .02, p = .97, Cohen's *d* = 0.009, CI = -21,477 - 21,838	$84,711	$84,530	$181	$11,413	$26,486

*Salary difference = Average Minority Male Salary - Average Minority Female Salary

After running the same analyses using the 2010-2011 data, no significant difference was identified between assistant level (refer to Table 5.3) minority and non-minority faculty, although a medium effect size was found (p = .191, Cohen's *d*=.629). A large salary difference, although not significant, existed within the assistant level faculty members, with non-minority faculty earning $9,100 more annually than minority faculty. This non-significant although apparent finding could be a product of the small number of minority faculty members (i.e., assistant minority n= 6 and assistant non-minority n = 109), especially as the effect size is reasonable (i.e., Cohen's *d*= .629, which is a medium effect size). When testing the difference between associate level minority versus non-minority faculty, a significant difference was again not identified (p = .288, Cohen's *d* = 0.389). For this subgroup non-minority faculty earned $4,100 more than minority associate faculty members,

although the effect size was small to medium and there was not a large enough minority subsample to provide adequate power. A significant salary difference was identified between minority and non-minority full professors (p=.004, Cohen's *d* = 0.965). The large difference between non-minority and minority full professors revealed that minorities earned $11,500 less than non-minorities.

Table 5.3 Questions 5: 2010-2011 Minority vs. Non-minority

Rank	Result	Average Non-Minority Salary	Average Minority Salary	Salary Difference*	Non-Minority Std. Deviation	Minority Std. Deviation
Assistant Professors	t (113) = 1.316, p = .191, Cohen's *d* = .629, CI = -4,636 - 22,964	$70,369	$61,205	$9,164	$16,783	$12,335
Associate Professors	t (127) = 1.067, p =.288, Cohen's *d* = 0.389, CI = -3,522 -11,769	$79,794	$75,670	$4,124	$13,669	$7,514
Full Professors	t (323) = 2.927, p =.004, Cohen's *d* = 0.965, CI = 3,763 -19,190	$108,557	$97,080	$11,477	$14,525	$9,253

*Salary difference = Average Non-Minority Salary - Average Minority Salary

The follow up analysis showed that minority men and women do not make significantly different salaries (refer to Table 5.4), although the actual salaries did differ. Among the assistant level minority faculty, men earned approximately $5,200 more than women. To keep this in perspective, it should be noted that the total sample size was six, including three men and three females. It should be acknowledged that since there was such a small and statistically insignificant t-value, that the near-medium effect size (Cohen's *d* = 0.419) suggests low power. Similarly, there was a large difference between salaries for the associate level minority faculty members, but the $14,600 difference was not identified as significant due to the limited sample size; only a single male and twelve females were included in this sample. The very large Cohen's *d* effect size (i.e., *d* = 2.21) revealed that the salaries were more than two standard deviations apart, which indicates an extremely large

difference. The non-significant findings were possibly due to wide discrepancies in the salaries and very clearly due to low power with the small sample sizes. Male minority full professors made virtually $10,200 more than females, but, again, the difference was not identified as being statistically significant, even with a large Cohen's *d* effect size of more than one standard deviation difference. It is clear that the limited sample size has affected the potential for identifying statistically significant differences between these groups as there was only a single female versus thirteen males.

Table 5.4 Questions 5: 2010-2011 Minority Men vs. Minority Women

Rank	Result	Average Minority Male Salary	Average Minority Female Salary	Salary Difference*	Minority Male Std. Deviation	Minority Female Std. Deviation
Assistant Professors	t (4) = .473, p= .661, Cohen's *d* = 0.419, CI = -25,241 - 35,609	$63,796	$58,613	$5,183	$17,596	$7,114
Associate Professors	t (11) = 2.128, p = .057, Cohen's *d* = 2.21, CI = -504 -29763	$89,174	$74,545	$14,629	--	$6,606
Full Professors	t (12) = 1.064, p = .308, Cohen's *d* = 1.104, CI = -10651 - 30981	$97,807	$87,640	$10,167	$9,207	--

*Salary difference = Average Minority Male Salary - Average Minority Female Salary

CHAPTER 4
CONCLUSIONS

Discussion

These investigations illustrate how difficult it can be to gain a full picture of salary inequities between men and women. If one were to only examine the results from research question one, they might be left with the impression that race and gender have little or minimal impact on overall salary predictability. The findings from the first analysis do not support previous studies, which have shown that race and gender are sometimes predictors of salary (Broyles, 2009; Palmer, & Griffin, 2009).

This research was conducted to see if using multiple methodological approaches with this specific sample of faculty would yield consistent findings; that indicate that race and gender are predictors of an individual's salary (Alkadry & Tower, 2006; Oaxaca & Ransom, 2002). The initial results, from research question one, can be viewed in either a positive or negative manner; knowing that race and gender are not significant predictors of salary at the university being investigated is excellent news for the school under the microscope. However, since these results are inconsistent with previous findings, it would be fair to want to investigate how the samples being analyzed may differ; for example, what industries were the other studies sampled from? Were there educational gender differences in the other samples? Did the size of the samples being investigated make a difference on the significance of the results, as seemed to be the case for this research? Moreover, for the current study, we can easily see that the entire sample has obtained a graduate degree, with most earning doctorates in their respective fields. Thinking back to the

human capital theory, it could be argued that women and minority faculty members may be earning salaries similar to white male faculty members because they have earned competitive degrees and years of experience.

Understanding the salary differences between men and women, after controlling for rank and discipline, proved difficult as most of the comparisons had limited sample sizes or were missing one of the genders (e.g., Nursing had no male faculty). The results could be considered limited in scope even though some overall statistically significant differences were identified between males and females across ranks, when attempting to identify differences between the disciplines. For assistant and associate level professors, no salary differences were identified as being statistically significant between the various disciplines. When examining the full professors, a notable difference was identified between faculty members in the Arts & Sciences Discipline; this finding supported previous research that argued that among the most senior faculty members, men made more. Senior level males making the most could be seen as an artifact of previous policies in which more men were hired in years past, and now are at the top rank and pay scale. Another potential reasoning for this difference is efficiency wage theory. Perhaps people from these groups are being viewed as being the most productive members of the university, in terms of conducting research, obtaining grants and publishing empirical journal articles. the other hand, the efficiency wage theory argues that people get paid. When analyzing the assistant professors (the group of faculty members who were hired most recently) it was found that people within this segment were more likely to earn relatively equal salaries, across genders. This could suggest that the newest faculty members earned

the most comparable salaries, and that pay inequality may not be as major an issue for recently hired college faculty members.

The third research question only focused on employees who were hired in the past 5 years; the most unusual finding was that women in the Pharmacy Discipline earned significantly more than men, during both academic years. These women who earn more would be considered an anomaly, as previous research has indicated that particularly within the physical and environmental sciences, men continue to earn substantially more income. It is possible that the larger salaries for the women were a result of specific negotiations by these faculty members, perhaps due to a previous inequity that was subsequently rectified. Another possible reason behind this trend is bargaining theory. Bargaining theory uses the weight of a union to assist in paying generally equal wages to employees.

The final analysis, which first focused on salary differences between minority and non-minority faculty, identified no significant differences for the assistant and associate level faculty, but did acknowledge a large difference between full professors, with non-minority members making more. This finding was not surprising; historically, non-minority faculty members have commanded higher incomes. It should be noted that when in high demand, minority faculty members have been able to command higher salaries (Suinn, & Witt, 1982). The second part of the final analysis, solely focusing on minority faculty members, did not identify any significant differences between minority men and women, although there were notable effect sizes in some cases. It is probable that this analysis failed to identify differences due to limited sample size.

Limitations and Contributions

Several limitations existed for this study, including the sample available, limited information collected, flexibility and small number of minority faculty members included. The population studied was from an archival sample of already existing faculty members at a large public university in the Northeast. Unless other types of secondary level schools, both private and for profit, from different areas were included in a future study it would be difficult to say that the findings are generally applicable to all college faculty members. In addition to a wider sample pool, it would be helpful to have demographic information from the faculty member's life outside of the university; for example, marital or parental status and if present, how many children and their ages. It would be useful to consider productivity variables; for example, how many students one was advising, how many committees the member serves on and how many publications or professional presentations outside of the university were made. Another limitation is the inability to collect additional, more in depth information (e.g., degree of faculty involvement and any awards related to teaching, research and service, etc.). We were limited by the information that was available, which is a problem with all archival studies. The final limitation that made it difficult to understand minority faculty trends was the limited sample size. This specific university has a relatively small percentage of faculty of color which makes understanding such trends quite difficult.

Although the population being studied may be considered too narrow in scope to make generalizations to other groups of employees, it should be acknowledged that having access to all of the salary information for two academic years made this study

possible and provided fairly consistent findings across the two different years within this university.

Future Directions

The future directions for this project are almost limitless. First and foremost, the previously stated limitations could be addressed going forward. These models could be tested on data sets from other universities and colleges from different locations across the United States. By applying these models to other groups of faculty members, it could better identify salary trends in the US. Next, the type of information collected should be increased. Although this study included many of the most important variables, it also did not have the ability to analyze other potentially important variables such as number of hours professors devote towards their research, or how many classes they teach per year or how many students they advise. Previous research has found that all of these factors can influence salary in higher education. Non-academic related activities could also be explored, such as pay negotiations, grant success, and taking on administrative duties. Additional personal information would add more insight to such findings such as marital status, if that faculty member had children or other dependents.

Whereas these findings suggest that salaries may be evening out in some cases, it did not clearly demonstrate that faculty members were all paid equally. In future research, it would be useful to determine the robustness of the models and findings from the current study by investigating analyses further using additional and more diverse datasets.

Bibliography

Acker, J. (1990). Hierarchies, jobs, and bodies: A theory of gendered organizations. *Gender and Society*, *4*, 139-158.

Alkadry, M., & Tower, L. (2006). Unequal pay: The role of gender. *Public Administration Review*, *66*(6), 888-898.

Ash, A., Carr, P., Goldstein, R., & Friedman, R. (2004). Compensation and advancement of women in academic medicine: Is there equity? *Annuals of Internal Medicine*, *141*, 205-212.

Association for Higher Education (2003). *Retaining minority students in higher education: A framework for success*. Retrieved October 4, 2010 from Educational Policy Institute Web site: http://www.educationalpolicy.org/pdf/Swail_Retention_Book.pdf

Astin, H.S., & Bayer, A. E. (1972). Sex discrimination in academia. *Educational Record*, *53*, 101-118.

August, L., & Waltman, J. (2004). Culture, climate, and contribution: Career satisfaction among female faculty. *Research in Higher Education*, *45*(2), 177–192.

Bagilhole, B., Cross, S. (2006). "It never struck me as female": Investigating men's entry into

female-dominated occupations. *Journal of Gender Studies*, *15*, 35-48.

Baker, M. (2010). Career confidence and gendered expectations of academic promotion. *Journal of Sociology*, *46*(3), 317-334.

Barbezat, D. (1987a). Salary differentials or sex discrimination? Evidence from the academic labor market. *Population Research and Policy Review, 6,* 69-84.

Barbezat, D. (1987b). Salary differentials by sex in the academic labor market. *Journal of Human Resources, 22,* 413-428.

Barbezat, D. (1989a). The effect of collective bargaining on salaries in higher education. *Industrial and Labor Relations Review, 42,* 443-455.

Barbezat, D. (1989b).Affirmative action in higher education: Have two decades altered salary differentials by sex and race? *Research in Labor Economics, 10,* 107-156.

Barbezat, D. (1991). Updating estimates of male-female salary differentials in the academic labor market. *Economic Letters, 36(2),* 191-195.

Barbezat, D. (2010). Differentials by sex in the academic labor market. *The Journal of Human Resources, 22(2),* 422-428.

Baron, J. N., & Newman, A. E. (1990). For what it's worth: organizations, occupations, and the value of work done by women and nonwhites. *American Sociological Review, 55,* 155-175.

Baunch, D. (2002). Trends in occupational segregation and inequality, 1950 to 1990. *Social Science Research, 31,* 77-98.

Bayer, A., & Astin, H. (1968). Sex differences in academic rank and salary among science doctorates in teaching. *Journal of Human Resources, 3,* 191-201.

Bayer, A., & Astin, H. (1975). Sex differentials in the academic reward system. *Science, 188,* 796-802.

Becker, W., & Williams, A. (1986). Assessing personnel practices in higher education: A case study in the hiring of females. *Economics of Education Review, 5*(3), 265-272.

Beggs, J. (1995). The institutional environment: Implications for race and gender inequality in the US labor markets. *American Sociological Review, 60*, 612-633.

Bellas, M (1992). The effects of marital status and wives' employment on the salaries of faculty men: The (house) wife bonus. *Gender & Society, 6(4),* 609-622.

Bellas, M. (1993). Faculty salaries: Still a cost of being female? *Social Science Quarterly, 74*(1), 62-75.

Bellas, M. (1994). Comparable worth in academia: The effects on faculty salaries of the sex composition and labor market conditions of academic disciplines. *American Sociological Review, 59*(6), 807-821.

Bellas, M. (1997). Disciplinary differences in faculty salaries: Does gender bias play a role? *Journal of Higher Education, 68,* 299-321.

Bellas, M., & Toutkoushian, R. (1999). Faculty time allocations and research productivity: Gender, race, and family effects. *The Review of Higher Education, 22*(4), 367-390.

Bellas, M., Ritchey, P., & Parmer, P. (2001). Gender differences in the salaries and salary growth rates of university faculty: An exploratory study. *Sociological Perspectives, 44*(2), 163-187.

Biernat, M., & Fuegen, K. (2001). Shifting standards and the evaluation of competence: Complexity in gender based judgment and decision making. *Journal of Social Issues, 57,* 707-724.

Billard, L. (1994). Twenty years later: Is there parity for academic women? *Thoughts and Action 10*(1), 115-144.

Blackburn, M., & Korenman, S. (1994). The declining marital status earnings differential. *Journal of Population Economics, 7,* 249-270.

Blanchflower, D. (2009). Minority self-employment in the United States and the impact of affirmative action programs. *Annals of Finance, 5*(3-4), 361-396.

Blau, F.D., & Kahn, L. M. (1994). Rising wage inequality and the U.S. gender gap. *American Economic Review, 84*(2), 23-28.

Blau, F.D., & Kahn, L. M. (2000). Gender differences in pay. *The Journal of Economic Perspectives, 14*(4), 75-99.

Blau, F.D., & Kahn, L. M. (2006). The US gender pay gap in the 1990s: Slowing convergence. *Industrial and Labor Relations Review, 60,* 45-66.

Blau, F.D., & Kahn, L. M. (2007). The gender pay gap: Have women gone as far as they can? *Academy of Management Perspectives, 21,* 7-23.

Becker, W., & Toutkoushian, R. (2003). Measuring gender bias in the salaries of tenured faculty members. *New Directions for Institutional Research, 117,* 5-20.

Blee, K. M., & Tickamyer, A. R. (1995). Racial differences in men's attitudes about women's gender roles. *Journal of Marriage and Family, 57,* 21-30.

Boston University (2010). *Common data set*. Retrieved October 5, 2010 from Boston University's Institutional Research Web site: http://www.bu.edu/oir/files/2010/04/cds0910-B.pdf

Bova, B. (2000) Mentoring revisited: The Black woman's experience, *Mentoring & Tutoring for Partnership in Learning*, *8*(1), 5–16.

Brett, J. M., Stroh, L. K., & Reilly, A. H. (1993). Pulling up roots in the 1990s: Who's willing to relocate? *Journal of Organizational Behavior, 14*, 49-60.

Broyles, P. (2009). The gender pay gap of STEM professions in the United States. *International Journal of Sociology and Social Policy, 29*(5/6), 214-226.

Budig, M., & England, P. (2001). The wage penalty for motherhood. *American Sociological Review, 66*, 204-225.

Budig, M. (2002). Male advantage and the gender composition of jobs: Who rides the glass escalator? *Social Problems*, *49*, 258-277.

Burkhauser, R., & Larrimore, J. (2009). Using internal CPS data to reevaluate trends in labor-earnings gaps. *Monthly Labor Review*, *132*(8), 3-18.

Burr, J., Galle, O., & Fossett, M. (1991). Racial occupational inequality in southern metropolitan areas, 1940-1980: Revisiting the visibility discrimination hypothesis. *Social Forces*, *69*, 831-850.

Campos-Soria-J., Ortega-Aguaza, R., & Ropero-Garcia, M. (2009). Gender segregation and wage difference in the hospitality industry. *Tourism Economics*, *15*(4), 847-866.

Card, D., & Krueger, A. B. (1993). Trends in relative black-white earnings revisited. *American Economic Review*, *83*(2), 85-91.

Card, D.,& Lemiex, T. (1994). Changing wage structures and black-white wage differentials. *American Economic Review, 84*(2), 29-33.

Carlin, P., & Rooney, P. (2000). Am I paid fairly? A university assesses pay equity for its faculties. *Change*, March/April, 40-49.

Carter, S.D. (2010). Pushback: The Negative HRD experiences Afforded to Post-Tenure Female Faculty in the United States 1988-2004. *Proceedings of the Academy of Human Resource Development Annual International Conference*, February 19-22, 2009. February 24 - 28, 2010, Knoxville, Tennessee, USA.

Cartern J., & Borch, C. (2005). Assessing the effects of urbanism and regionalism on gender-role attitudes, 1974-1998. *Sociological Inquiry, 75*, 548-563.

Catanzarite, L. (2002). Dynamics of segregation and earnings in brown-collar occupations. *Work and occupations, 29*, 300-345.

Chauvin, K., & Ash, R. (1994). Gender earnings differentials in total pay, base pay, and contingent pay. *Industrial and Labor Relations Review, 47*, 634-649.

Cherry, T., Durden, G., & Gaynor, P. (2011). Individual and institutional determinants of the male female wage gap among U.S. economics faculty. *Economics Bulletin, 31*(1), 245-254.

Ciabattari, T. (2001). Changes in men's conservative gender ideologies: Cohort and peer influences. *Gender and Society, 15*, 574-591.

Cohen, P., & Huffman, M. (2003). Individuals, jobs, and labor markets: The devaluation of women's work. *American Sociological Review, 68*, 443-463.

Cohen, P., & Huffman, M. (2003). Occupational segregation and the devaluation of women's work across U.S. labor markets. *Social Forces, 81*, 881-907.

Compton, M. (2007). The gender pay gap. *Women in Business, 59*(6), 32-34.

Corrigall, E., & Konrad, A. (2007). Gender role attitudes and careers: A longitudinal study. *Sex Roles, 56*, 847-855.

Cotton, J. (1993). Color or culture? Wage differences among non-Hispanic black males, Hispanic black males and Hispanic white males. *Review of Black Political Economy, 21*(4), 53-67.

Cotter, D., DeFiore, J., Hermsen, J., Kowalewski, B., & Vanneman, R. (1997). All women benefit: The macro-level effect of occupational integration on gender earnings inequality. *American Sociological Review, 62*, 714-734.

Cotter, D., DeFiore, J., Hermsen, J., Kowalewski, B., & Vanneman, R. (1998). The demand for female labor. *American Journal of Sociology, 103*, 1673-1712.

Cox. T. H. & Harquail, C. V. (1992). Career paths and career success in the early career stages of male and female MBAs. *Journal of vocational Behavior, 39*, 54-75.

Cropsey, K., Masho, S., Shiang, R., Sikka, V., Kornstein, S., & Hampton, C. (2008). Why do faculty leave? Reasons for attrition of women and minority faculty from a medical school: Four-year results. *Journal of Women's Health, 17*(7), 1111-1118.

Curtis, J. (2005). Inequities persist for women and non-tenure track faculty: Economic status of the profession, 2004-2005. *Academe, 91*(4), 19-98.

Dorceta, T. (2007). Employment preferences and salary expectations of students in science and engineering. *Bioscience, 57*(2), 175-185.

Deutsch, F. M. & Saxon. S. E. (1998). The double standard of praise and criticism for mothers and fathers. *Psychology of Women Quarterly*, *22*, 665-683.

Eagly, A. H. & Karau, S. J. (2002). Role congruity theory of prejudice toward female leaders. *Psychological Review, 109,* 573-598.

Eckes, S., & Toutkoushian, R. (2006). Legal issues and statistical approaches to reverse pay discrimination in higher education. *Research in Higher Education, 47*(8), 957-984.

England, P., Reid, L., & Kilbourne, B. (1996). The effect of the sex composition of jobs on starting wages in an organization – Findings from the NLSY. *Demography, 33,* 511-521.

England, P., Allison, P., Li., S., Mark, N., Thompson, J., Budig, M., & Sun, H. (2007). Why are some academic fields tipping toward female? The sex composition of U.S. fields of doctoral degree receipt, 1971-2002. *Sociology of Education, 80*(1), 23-42.

Ferber, M. (1974). Professors, performances, and rewards. *Industrial Relations, 13,* 69-77.

Firestone, J. M. Harris, R. J., & Lambert, L. C. (199). Gender role ideology and the gender based differences in earnings. *Journal of Family and Economic Issues, 20,* 191-215.

Fossett, M., & Cohen, S. (1995). Why racial employment inequality is greater in northern labor markets: Regional difference in white black employment differentials. *Social Forces, 74*, 511-542.

Fox, M. (1981). Sex, salary, and achievement: Rewards dualism in academia. *Sociology of Education, 54*, 71-84.

Fox, M. (1992). Research, teaching, and publication productivity: Mutuality versus competition in academia. *Sociology of Education, 65*, 293-305.

Fox. M. (2007). Social organizational characteristics of work and publication productivity among academic scientists in doctoral-granting departments. *The Journal of Higher Education, 78*(5), 542-571.

Goldberg, C., Finkelstein, L. M., Perry, E. L. & Konrad, A. M. (2004). Job and industry fit: The effects of age and gender matches on career progress outcomes. *Journal of Organizational Behavior, 25*, 807-830.

Gordon, N., Morton, T., & Braden, I. (1974). Faculty salaries: Is there discrimination by sex, race, and discipline? *American Economic Review, 64*(3), 419-427.

Gray, P. (1983). Using scientific citation analysis to evaluate administrative accountability for salary variance. *American Psychologist, 38*(1), 116-117.

Greenhaus, J. H. & Parasuraman, S. (1993). Job performance attributions and career advancement prospects: An examination of gender and race effects. *Organizational Behavior and Human Decision Processes, 55*, 273-297.

Grey-Bowen, J., & McFarlane, D. (2010). Gender compensation discrimination: An exploration of gender compensation gap and the higher education connection. *Journal of Business Studies Quarterly, 2*(1), 65-82.

Guillory, E. (2001). The black professoriate: Explaining the salary gap for African-American female professors. *Race Ethnicity and Education, 4*(3), 225 – 244.

Gutek. B. A., Searle, S., & Klepa, L. (1991). Rational versus gender role explanations for work-family conflict. *Journal of Applied Psychology, 76*, 560-568.

Gwartney, J. & Long, J. (1978). The relative earnings of blacks and other minorities. *Industrial Relations Review, 31*, 336-346.

Haberfeld, Y., & Shenhav, Y. (1990). Are women and blacks closing the gap? Salary discrimination in American science during the 1970s and 1980s. *Industrial Labor Relations Review, 44*(1), 68-82.

Haberfeld, Y., Semyonov, M., & Addi, A. (1998). A hierarchical linear model for estimating gender based earnings differentials. *Work and Occupations, 25*, 97-112.

Hagedorn, L. (1996). Wage equity and female faculty job satisfaction: The role of wage differentials in a job satisfaction causal model. *Research in Higher Education, 37*(5), 569-598.

Hill, C., & Warbelow, S. (2008). Tenure denied: Cases of sex discrimination in academia. *American Academic, 4*, 65-104.

Hirsch, B., Schumacher, E. (1992). Labor earnings, discrimination, and the racial composition of jobs. *Journal of Human Resources, 27*, 602-628.

Hunter, L., & Leahey, E. (2010). Parenting and research productivity: New evidence and methods. *Social Studies of Science, 40*(3), 433-451.

Hurlbert, J., & Roseneld, R. (1992). Getting a good job: Rank and institutional prestige in academic psychologists' careers. *Sociology of Education, 65,* 188-207.

Hurtado, S., & DeAngelo, L. (2009). Keeping senior women at your college. *Academe, 95*(5), 18-20.

Hyde, J. S. (2005). The gender similarities hypothesis. *American Psychologist, 60,* 581-592.

Hyer, P. (1985). Women faculty at doctorate-granting universities: A ten-year progress report. *Journal of Educational Equity and Leadership, 5*(3), 234-249.

Hyllegard, D. & Lavin, D. E. (1992). Higher education and challenging works: Open admissions and ethnic and gender differences in job complexity. *Sociological Forum, 7,* 239-260.

Institute for Women's Policy Research. (2010). *The gender wage gap: 2009*, March 2010 (No. C350). Washington, D.C.

Jacobs, J. (1992). Women's entry into management – trends in earnings, authority, and values among salaried managers. *Administrative Science Quarterly, 37,* 282-301.

Jacobs, J. (1996). Gender inequality and higher education. *Annual Review of Sociology, 22,* 153-185.

Jan, T. (2010, February 16). Colleges lagging on faculty diversity: Numbers trail makeup of Hub's student bodies. *The Boston Globe.*

Jones, J. (2010). Closing the gender gap. *Civil Engineering, 60*(7), 60-63.

Judge, T. & Livingston, B. (2008). Is the gap more than gender? A longitudinal analysis of gender, gender role orientation, and earnings. *Journal of Applied Psychology, 93*(5), 994-1012.

Kelly, E. & Dobbin, F. (1999). Civil rights law at work: Sex discrimination and the rise of maternity leave policies. *American Journal of Sociology*, *105*, 455-492.

Kilbourne, B., England, P. Farkas, G., Beron, K., & Weir, D. (1994). Returns to skill, compensating differentials, and gender bias: Effects of occupational characteristics on the wages of white women and men. *American Journal of Sociology*, *100*(3), 689-719.

Korenman, S., & Neumark, D. (1992). Marriage, motherhood, and wages. *Journal of Human Resources, 27*, 233-255.

Krefting, L. (2003). Intertwined discourses of merit and gender: Evidence from academic employment in the USA. *Gender, Work and Organization*, *10*(2), 260-278.

Kulis, S., & Sicotte, D. (2002). Women scientists in academia: Geographically constrained to big cities, college clusters, or the coasts? *Research in Higher Education, 43*(1), 1-30.

Kulis, S., Sicotte, D., & Collins, S. (2002). More than a pipeline problem: Labor supply constraints and gender stratification across academic science disciplines. *Research in Higher Education, 43*(6), 657–690.

Landau, J. C., Shamir, B., & Authur, M. B. (1992). Predictors of willingness to relocate for managerial and professional workers. *Journal of Organizational Behavior*, *13*, 667-680.

Laster, J. (2010). One-third of faculty members see dip in their salaries. *Chronicle of Higher Education, 55*(26), A10.

Leahey, E. (2006). Gender differences in productivity research specialization as a missing link.

Gender & Society, 20(6), 754-780.

Leahey, E. (2007). Not by productivity alone: How visibility and specialization contribute to academic earnings. *American Sociological Review, 72,* 533-561.

Leslie, L., McClure, G., & Oaxaca, R. (1998). Women and minorities in science and engineering. A life sequence analysis. *Journal of Higher Education, 69*(3), 239–276.

Levy, F., & Murnane, R. (1992). U.S. earnings levels and earnings inequality: A review of recent trends and proposed explanations. *Journal of Economic Literature, 30,* 1333-1381.

Long, J.S. (1990). The origins of sex differences in science. *Social Forces, 68*(4), 1297-1315.

Long, J.S. (1992). Measures of sex differences in scientific productivity. *Social Forces, 71*(1), 159-178.

Long, J. S., Allison, P.D., & McGinnis, R. (1993). Rank advancement in academic careers: Sex differences and the effects of productivity. *American Sociological Review, 58,* 703-722.

Loprest, P. (1992). Gender differences in wage greater and job mobility. *American Economic Review, 82,* 526-532.

Lyness, K., & Thompson, D. (1997). Above the glass ceiling? A comparison of matched samples of female and male executives. *Journal of Applied Psychology, 82*(3), 359 – 375.

Macpherson, D., & Hirsch, B. (1995). Wages and gender composition – why do women's jobs pay less? *Journal of Labor Economics, 13*, 426-471.

Marthers, P., & Parker, J. (2008). Small colleges and new faculty pay. *Academe, 94*(4), 45-49.

Marwell, G., Rosenfeld, R., & Spilerman, S. (1979). Geographic constraints on women's careers in academia. *Science, 205*(21), 1225-1231.

Mason, M., & Goulden, M. (2004). Marriage and baby blues: Redefining gender equity in the academy. *The Annals of the American Academy of Political and Social Science, 596*, 86-103.

Maton, K., Kohout, J., Wicherski, M., Leary, G., & Vinokurov, A. (2006). Minority students of color and the psychology graduate pipeline. *American Psychologist, 61*(2), 117-131.

Maton, K., & Hrabowski, F. (2004). Increasing the number of African American PhDs in the sciences and engineering. *American Psychologist, 59*(6), 547-556.

McCall, L. (2001). Explaining levels of with-in group wage inequality in U.S. labor markets. *Demography, 37*, 415-430.

McClelland, G. H. & Judd, C. M. (1993). Statistical difficulties of detecting interactions and moderator effects. *Psychological Bulletin, 114*, 376-390.

McDevit, C, Irwin, J., & Inwood, K. (2009). Gender pay gap, productivity gap and discrimination in Canadian clothing manufacturing in 1870. *Eastern Economic Journal*, *35*(1), 24-36.

McDowell, J., & Smith, J. (1992). The effect of gender sorting on propensity to coauthor: Implications for academic promotion. *Economic Inquiry, 30*, 68-82.

McElrath, K. (1992). Gender, career disruption, and academic rewards. *Journal of Higher Education, 63*(3), 269-281.

McNabb, R., & Wass, V. (1997). Male-female salary differentials in British universities. *Oxford Economic Paper*, *49*, 328-343.

Megdal, S., & Ransom, M. (1985). Longitudinal changes in salary at a large public university: What response to equal pay legislation? *American Economic Review*, *75*(2), 271-274.

Monroe, K., & Chiu, W. (2010). Gender equity in the academy: The pipeline problem. *Political Science and Politics, 43*, 303-308.

Mooney, C. (1991). A long-time critic crusades to expose the flaws of the faculty reward system. *The Chronicle of Higher Educatio*n, *37*(36), 13-17.

Morgan, L. (1998). The earnings gap for women engineers, 1982 to 1989. *American Sociological Review, 63*, 479-493.

Morrison, A. M., von Glinow, M.A. (1990). Women and minorities in management. *American Psychologist*, *45*, 200-208.

National Science Foundation (1999). *Despite increases women and minorities still underrepresented in undergraduate and graduate S&E education.* Retrieved

August 12, 2010 from National Science Foundation Web site: http://www.nsf.gov/statistics/databrf/sdb99320.pdf

National Science Foundation (2000). *Indicators 2000: Chapter 3 science and engineering workforce*. Retrieved October 4, 2010 from National Science Foundation Web site: http://www.nsf.gov/statistics/seind00/access/c3/c3s2.htm

National Science Foundation (2005). *More women receive Ph.D.s, but female senior faculty are still rare.* Retrieved August 12, 2010 from National Science Foundation Web site: http://www.nsf.gov/news/news_summ.jsp?cntn_id=104363

National Science Foundation (2007). *Women, minorities, and persons with disabilities in science and engineering*. Retrieved August 24, 2010 from National Science Foundation Web site: http://www.nsf.gov/statistics/wmpd/pdf/nsf07315.pdf

National Science Foundation (2009). *Numbers of U.S. doctorates awarded rise for sixth year, but growth slower*. Retrieved August 25, 2010 from National Science Foundation Web site: http://www.nsf.gov/statistics/infbrief/nsf10308/nsf10308.pdf

Neithardt, L. (2007). Gender inequities persist on U.S. campuses. *Academe*, *93*(1), 18.

Nelson, D. (2005). *A national analysis of diversity in science and engineering faculties at research universities.* University of Oklahoma, Department of Chemistry. Retrieved on 16 August 2010 from

http://cheminfo.ou.edu/~djn/diversity/briefings/diversity%20report%20final.pdf

Oaxaca, R., & Ransom, M. (2002). Regression methods for correcting salary inequities between groups of academic employees. *New Directions for Institutional Research, 115,* 91-103.

O'Neill, J. (1990). The role of human capital in earnings differences between black and white men. *Journal of Economic Perspectives, 4*(4), 25-46.

Palmer, R., & Griffin, R. (2009). Desegregation policy and disparities in faculty salary and workload: Maryland's historically black and predominately white institutions. *The Negro Education Review, 60*(1-4), 7-21.

Pear, R. Justices' ruling in discrimination case may draw quick action by Obama. (2009, January

4). *The New York Times,* A13.

Perna, L. W. (2005). Sex differences in faculty tenure and promotion: The contribution of family ties. *Research in Higher Education, 46*(3), 277–306.

Peterson, N., Friedman, R., Ash, A., Franco, S., & Carr, P. (2004). Faculty self-reported experience with racial and ethnic discrimination in academic medicine. *Journal of General Internal Medicine, 19,* 259-265.

Powell, G.N., & Mainiero, L.A. (1992). Cross-currents in the river of time: Conceptualizing the complexities of women's careers. *Journal of Management, 18,* 215-237.

Ransom, M., & Megdal, S. (1993). Sex differences in the academic labor market in the affirmative action era. *Economics of Education Review, 21*(1), 21-43.

Reid, L. (1998). Devaluing women and minorities: The effects of race/ethnic and sex composition of occupations on wage levels. *Work and occupations*, *25*, 511-536.

Renzulli, L. A., Grant, L. & Kathuria, S. (2006). Race, gender, and the wage gap: Comparing faculty salaries in predominately White and historically Black colleges and universities. *Gender and Society*, *20*, 491-510.

Rice, T. & Coates, D. (1995). Gender role attitudes in the southern United States. *Gender and Society*, *9*, 744-756.

Riggs, G., & Dwyer, L. (1995). Salary discrimination by black males? Evidence from a historically black university. *American Journal of Economics and Sociology*, *54*, 231-237.

Rogers, M. R., & Molina, L. E. (2006). Exemplary efforts in psychology to recruit and retain graduate students of color. *American Psychologist*, *61*(2), 143-156.

Rosenfeld, R. (1981). Academic men and women's career mobility. *Social Science Research*, *10*, 337-363.

Rosenfeld, R., & Jones, J. (1986). Institutional mobility among academics. *Sociology of Education*, *59*, 212-226.

Rosenfeld, R., & Jones, J. (1987). Patterns and effects of geographic mobility for academic women and men. *Journal of Higher Education*, *58*, 493-515.

Russell, S. (1991). The status of women and minorities in higher education: Findings from the 1988 national survey of postsecondary faculty. *CUPA Journal*, *42*, 1-11.

Russo, N. F., Olmedo, E.L., Stapp, J., & Fulcher, R. (1981). Women and minorities in psychology. *American Psychologist, 36,* 1315-1363.

Santovec, M. L. (2009). Navigating the treachery of promotion and tenure. *Women in Higher Education, 18*(12), 26-27.

Sasso, A., Richards, M., Chou, C. & Gerber, S. (2011). The $16,819 pay gap for newly trained physicians: The unexplained trend of men earning more than women. *Health Affairs, 30*(2), 193-201.

Sax, L. J., Hagedorn, L. S., Arredondo, M., & Dicrisi, F. A. III (2002). Faculty research productivity: Exploring the role of gender and family-related factors. *Research in Higher Education, 43*(4), 423–446.

Settles, I., Cortina, L., Malley, & Stewart, A. (2006). The climate for women in academic science: The good, the bad, and the changeable. *Psychology of Women Quarterly, 30,* 47–58.

Shannon, M. & Kidd, M. (2003). Projecting the U.S. gender wage gap 2000-40. *Atlantic Economic Journal, 31,* 316-330.

Sicilian, P., & Grossberg, A. (2001). Investment in human capital and gender wage differences: Evidence from the NLSY. *Applied Economics, 33,* 463-471.

Singell, L.D. Jr., Lillydahl, J., & Singell, L.D. (1996). Will changing times change the allocation of faculty time? *Journal of Human Resources, 31*(2), 429-449.

Smart, J. (1991). Gender equity in academic rank and salary. *Review of Higher Education, 14,* 511-525.

Snell, C., Sorensen, J., Rodriguez, J., & Kuanliang, A. (2009). Gender differences in research productivity among criminal justice and criminology scholars. *Journal of Criminal Justice, 37*(3), 288-295.

Sonnert, G., & Holton, G. (1996). Career patterns of women and men in the sciences. *American Scientist, 84*(1), 63-71.

Stack, S. (2004). Gender, children and research productivity. *Research in Higher Education, 45*(8), 891-920.

Stapp, J. (1979). Minorities and women: Caught in an academic revolving door. *APA Monitor*, November, 14.

Stuhlmacher, A. F. & Walters, A. E. (1999). Gender differences in negotiation outcome: A meta-analysis. *Personnel Psychology*, *53*, 653-677.

Suinn, R., & Witt, J. (1982). Survey on ethnic minority faculty recruitment and retention. *American Psychologist, 37*(11), 1239-1244.

Summers, L. (2005). *Remarks at NBER conference on diversifying the science and engineering workforce*. Retrieved on 16 August 2010 from http://www.president.harvard.edu/speeches/summers_2005/nber.php.

Takahashi, A., & Takahashi, S. (2011). Gender differences in economics departments in Japan. *Economics of Education Review*, *30*, 1306-1319.

Tapia, R. (2010). Broadening participation hiring and developing minority faculty at research universities. *Communications of the ACM, 53*(3), 33-35.

The nation faculty and staff: Salaries and demographics. (2009, August 28). *Chronicle of Higher Education, 56*(1), 25-26.

Toutkoushian, R. (1994). Using citations to measure sex discrimination in faculty salaries. *Review of Higher Education*, *18*(1), 61-82.

Toutkoushian, R. (1998). Racial and marital status differences in faculty pay. *The Journal of Higher Education, 69*(5), 513-541.

Toutkoushian, R. (1998). Sex matters less for younger faculty: Evidence of disaggregate pay disparities from the 1988 and 1993 NCES surveys. *Economics of Education Review, 17*(1), 55-71.

Toutkoushian, R. (1999). The status of academic women in the 1990s: No longer the outsiders, but not yet equals. *The Quarterly Review of Economics and Finances, 39,* 679-698.

Toutkoushian, R. (2000). Addressing gender equity in nonfaculty salaries. *Research in Higher Education, 41*(4), 417-442.

Toutkoushian, R., & Hoffman, E. (2002). Alternatives to measuring the unexplained wage gap. In: Toutkoushian, R. (ed.), *Conducting Salary-Equity Studies: Alternative Approaches to Research*, Jossey-Ball, San Francisco, CA, pp. 71-89.

Toutkoushian, R. & Conely, V. (2005). Progress for women in academe, yet inequities persist:

Evidence from NSOPF:99. *Research in Higher Education, 46*(1), 1–28.

Toutkoushian, R., Bellas, M., & Moore, J. (2007). The interaction effects of gender, race, and marital status on faculty salaries. *The Journal of Higher Education, 78*(5), 572-601.

Umbach, P. (2006). Gender equity in the academic labor market: An analysis of academic disciplines. *Research in Higher Education*, *48*(2), 169-192.

Valian, V. (2005). Beyond gender schemas: Improving the advancement of women in academia. *Hypatia, 20*(3), 198–213.

Verdugo, R. (1992). Earning differentials between black, Mexican American, and non-Hispanic white male workers: On the cost of being a minority worker, 1972-1987. *Social Science Quarterly*, *73*, 663-673.

Warman, C., Woolley, F., & Worswick, C. (2010). The evolution of male-female earnings differentials in Canadian universities. *Canadian Journal of Economics*, *43*(1), 347-372.

Wasburn, M. (2007). Mentoring women faculty: An instrumental case study of strategic collaboration. *Mentoring & Tutoring for Partnership in Learning, 15*(1), 57-72.

Watson, C. (1994). Gender versus power as a predictor of negotiation behavior and outcomes, *Negotiation Journal*, *10*, 117-127.

Wellington, A. (1993). Changes in the male/female wage gap, 1976-85. *Journal of Human Resources*, *28*, 383-411.

West, M. (2007). Unprecedented urgency: Gender discrimination in faculty hiring at the University of California. *Feminist Formations, 19*(3), 199-211.

What professors earn. (2010, April 16). *Chronicle of Higher Education, 56*(31), A10.

Whitaker, E.A. (2011). *The role of gender in adaptation work following an employee relocation*. Ph.D. dissertation. Michigan State University, Michigan.

Willetts-Bloom, M., & Nock, S. (1994). The influence of maternal employment on gender role attitudes of men and women. *Sex Roles, 30,* 371-389.

Williams, C. (1992). The glass escalator: Hidden advantages for men in the 'female' profession. *Social Problems, 39,* 253-267.

Wolfinger, N., Mason, M., & Goulden, M. (2008). Problems in the pipeline: Gender, marriage, and fertility in the ivory tower. *The Journal of Higher Education, 79*(4), 388-405.

Wood, R., Corcoran, M., & Courant, P. (1993). Pay differences among the highly paid: The male-female earnings gap in lawyers' salaries. *Journal of Labor Economics, 11(3),* 417-441.

Wright, A., Ryan, K., Germain, P., Schwindt, L., Sager, R., & Reed., K. (2007). Compensation in academic medicine: Progress toward gender equity. *Journal of General Internal Medicine, 22(10),* 1398-1402.

Xu, Y. (2008). Gender disparity in STEM disciplines: A study of faculty attrition and turnover intentions. *Research in Higher Education, 49*(7), 607-624.

Yoder, J. D. (1992). Rethinking tokenism: Looking beyond numbers. *Gender and Society, 5*, 178-192.