

**University of Virginia**  
**Faculty Salary Study Task**  
**Force Report to the Provost**  
**2014**

## Table of Contents

Preface .....	v
Executive Summary.....	vii
Introduction .....	1
I. Background .....	1
II. Available Data and Limitations.....	3
A. Excluded Cases.....	4
B. Limitations.....	5
III. Methods and Assumptions .....	5
A. Methodological Approach .....	6
B. Important Limitations and Assumptions .....	7
IV. Empirical Results.....	9
A. Descriptive Statistics.....	9
1. Measures by Experience and Rank .....	11
2. Measures by Department and Schools.....	12
B. Regression Results .....	15
C. Discussion.....	20
V. Recommendations.....	21
1) Equity Review and Salary Adjustments.....	21
2) Climate Study.....	22
3) Extending the Empirical Analysis .....	22
4) Periodic Review.....	22
Conclusion.....	23
References .....	24

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Appendix A: Supplemental Empirical Discussion .....	25
A. Data Choices .....	25
B. Additional Descriptive Data .....	27
C. Alternative Regression Specifications .....	33
1. Additional Covariates .....	33
D. Comparisons with Prior Years .....	38
E. Distributions of Residuals and Influence Analysis .....	42
F. Reminder of the Limitations of this Analysis .....	44
Appendix B: Charge to Task Force Members .....	45



## Preface

In October 2012, Provost John Simon appointed a Faculty Salary Study Task Force to conduct a quantitative examination of faculty salaries at the University of Virginia. The Task Force included a diverse group of academics with expertise in quantitative social sciences. Its members were:

Sarah Turner (Economics/Curry School), Chair

Silvia Blemker (Biomedical Engineering)

Greg Fairchild (Darden)

Amalia Miller (Economics)

Eric Patashnik (Batten/Politics)

Sara Rimm-Kaufman (Curry School)

Rip Verkerke (Law)

Tim Wilson (Psychology)

In addition, Gertrude Fraser, Marcus Martin, Susan Carkeek, Kerry Abrams and Madelyn Wessel represented administrative and legal units of the University in *ex officio* capacities.

The Report that follows presents the findings and recommendations of the Task Force. The members of the Task Force are unanimous in endorsing this Report.

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## Executive Summary

The University of Virginia has ethical, legal and competitive reasons to ensure that all members of its faculty are compensated equitably and fairly. This imperative led Provost John Simon to appoint a Faculty Salary Study Task Force in October 2012. He charged the Task Force to conduct a quantitative examination of faculty salaries and report its findings. The present Report describes our work—including data gathering, principal findings, and recommendations. Appendix A provides more detailed discussion of the econometric analysis and additional empirical results.

In this Executive Summary, we describe several key decisions the Task Force made in designing our quantitative study, discuss our most important empirical results, and summarize our recommendations for further action.

### *Available Data & Limitations*

With the cooperation of the Office of Institutional Assessment & Studies at the University of Virginia, the Task Force obtained 2012 and 2013 salaries for all tenured and tenure-track faculty at the University, with the exception of those working at the School of Medicine. The Task Force was also able to collect demographic and employment history data for these faculty. Our empirical analysis examined how nine-month faculty salaries are related to factors including school, academic discipline, rank, years since highest degree, and years at the University of Virginia. The study also investigated whether faculty salary levels were associated with gender, race or citizenship after controlling for these explanatory variables.

A significant limitation of the study is that the Task Force did not have access to direct measures of individual performance such as the quality or quantity of scholarly publications, external research funding, significant service activities, teaching evaluations, or annual performance evaluations conducted by peers, department chairs, or deans. Concerns about personal privacy would have militated against releasing some of this information. Moreover, these inherently multidimensional indicators of faculty productivity do not currently exist as quantitative measures, comparable across disciplines, and susceptible to meaningful empirical analysis. The Task Force also did not have access to other variables that might influence faculty salaries, such as the receipt of outside offers.

Because these factors often affect individual salaries, this study cannot determine the cause of any observed salary disparities between demographic groups or for specific individuals. The Task Force understood this limitation, shared by similar studies at other institutions, from the outset. Salary disparities can result from various causes, including discrimination in salary setting, differential opportunities or work assignments, variations in faculty productivity, or some combination of these factors. This study is thus descriptive and is intended to help the University review policies that may affect salary determination. The Task Force offers several specific recommendations below.

### *Principal Empirical Findings*

With these important limitations in mind, the Task Force used multiple regression analysis to investigate any association of faculty salaries with gender, race or citizenship. The main findings of the study include the following:

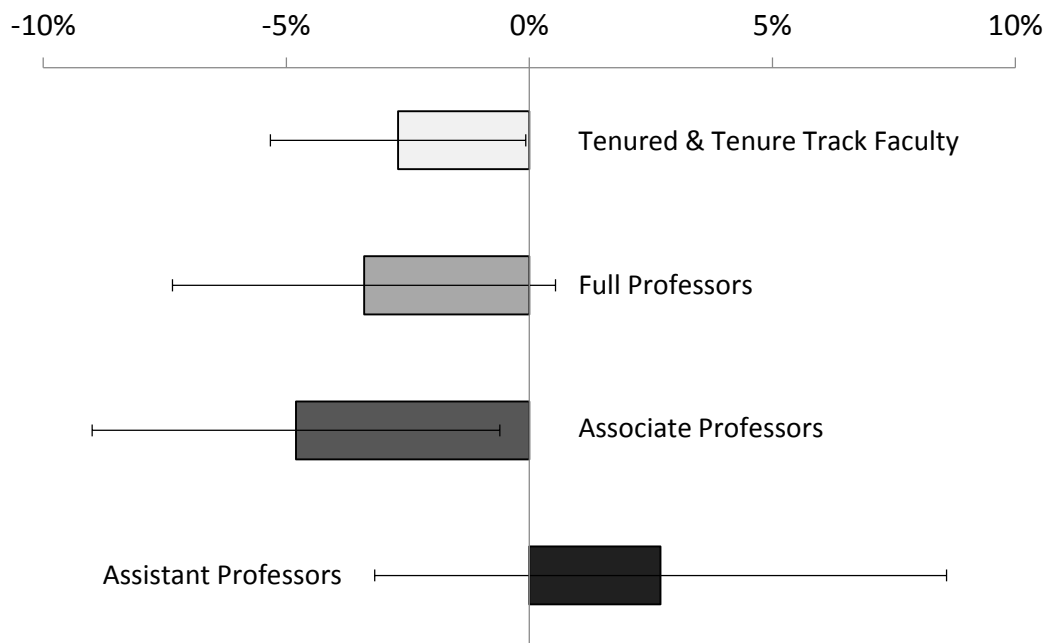
- After controlling for the influence of school, field, rank, years since highest degree, and years at UVa, the average salary of female faculty members at the University of Virginia was 2.7% less than the average salary of male faculty, an average difference of \$3,638. Similar differences have been identified at other peer universities.
- There was no statistically significant gender difference in average salary for assistant professors; however, the average salary of female faculty at the associate and full professor ranks lagged the average salary of male faculty by 4.8% (p value 0.03) and 3.4% (p value 0.09), respectively.
- Additional analysis of the data suggests that these gender gaps in average salary did not result from a few “extreme” outlying individuals (meaning those women or men with either very low or very high salaries). Instead, the statistical difference arose from the many smaller differences found between the salaries of male and female faculty members once school, field, rank, years since highest degree, and years at UVa were taken into account.
- After controlling for the variables mentioned above, the Task Force was unable to detect any significant association of salaries with race or citizenship, though the



comparatively small number of faculty in these groups limited our ability to draw meaningful statistical inferences.

Figure 1 presents our principal empirical results in graphical form. The length of each bar indicates the difference between the average salary of men and women, and the “whiskers” at the end of each bar show the width of a 95% confidence interval for each bar.

**Figure 1. Gender Differences in Salary for 2013, Overall and By Rank**



Source: Faculty Salary Study Task Force, Report to the Provost at pp.15-19.

### *Recommendations*

Acknowledging once again the significant limitations of the available data, the Task Force believes that the study results indicate the need for rigorous further investigation and possible salary adjustments in individual cases. Accordingly, the Task Force makes the following recommendations:

1) Equity Review and Salary Adjustments: The Provost in collaboration with deans and department chairs should ensure that a careful qualitative assessment of individual faculty salaries takes place. The process should incorporate the measures of productivity not included in

this study. The goal of the review should be to ensure that individual compensation fairly reflects each faculty member's contributions to teaching, research and service.

2) Study of Institutional Practice: Many hypotheses could explain the identified gender differences in salaries, and the University should make serious efforts to better understand particularly those factors within its potential control. The Task Force recommends that, as soon as possible, the University conduct a review of institutional practices that could differentially affect faculty success. Specific topics that should be investigated include (a) allocation of resources complementary to research productivity such as lab space and research assistance; (b) assignment to committees and the assessment of institutional service; (c) efforts made in schools and departments, such as mentoring junior colleagues, to support untenured faculty in the promotion process; (d) assistance provided to tenured faculty seeking promotion from associate to full professor and appointment to endowed chairs; (e) the observed gender disparity in the rate and timing of progression from associate to full professor; and (f) any potential gender disparities in hiring and salary setting for senior new hires coming from other institutions.

3) Extending the Empirical Analysis: The Task Force has identified additional information that could improve future empirical examination of salary equity at the University of Virginia. We recommend that the University (a) improve recording of leaves, distinguishing professional, family and administrative absences from the University, (b) improve recording of outside offers and special salary adjustments, and (c) centralize and standardize recording of joint appointments and terms of compensation such as the number of summer months assumed for 12-month contracts. We also recommend that the University conduct similar empirical analyses of the salaries of both general faculty members (i.e., non-tenure-track faculty) and Medical School faculty. These analyses should be sensitive to the distinctive and diverse institutional roles and responsibilities of these groups of faculty.

4) Periodic Review: The Task Force encourages the Provost to establish a schedule for periodic review of group differences in faculty salaries. These periodic studies should incorporate the additional information discussed above when such measures become available.

## Introduction

The University of Virginia has ethical, legal and competitive reasons to ensure that all members of its faculty are compensated equitably and fairly. This imperative led Provost John Simon to appoint a Faculty Salary Study Task Force in October 2012. He charged the Task Force to conduct a quantitative examination of faculty salaries and report its findings.<sup>1</sup> The present Report describes our work—including data gathering, principal findings, and recommendations. Appendix A provides more detailed discussion of our econometric analysis and additional empirical results.

## I. Background

The Provost charged the Task Force to examine the available quantitative data on faculty salaries. This empirical study is the first step in a broader initiative to ensure equitable compensation at the University of Virginia. Earlier efforts to address salary equity at the University include a 1992 statistical study (Report of Salary Study Steering Committee, 1992) and, in 1999, the President's Taskforce on the Status of Women recommended periodic salary equity studies. In the fall of 2012, the Provost sponsored University-wide discussions among faculty, deans and senior leaders that focused on best practices for salary equity studies in the higher education sector. Other more narrowly focused efforts at the University, including the U.Va. CHARGE initiative funded by the NSF ADVANCE Grant, mandate systematic quantitative review of salary setting for distinct subgroups of the faculty.

The University of Virginia is not alone in expressing concern about salary equity. A number of other public research universities have conducted quantitative assessments of faculty salaries. These institutions include the University of Texas at Austin, the University of Minnesota, the University of Maine, the University of Wisconsin at Madison, the University of British Columbia, Texas A&M University, University of Western Ontario, and the University of California system. Among the University's closest peer institutions, the University of Michigan stands out because it has an unusually strong tradition of assessing salary equity. Since 1999, the University of Michigan has conducted regular studies of faculty compensation. These studies, conducted approximately every 5 years, have examined how faculty salaries are statistically

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<sup>1</sup> See Appendix B of this Report for a copy of the Provost's charge to the Task Force.

related to demographic characteristics, experience, rank and other quantifiable factors that may influence compensation.

The broad pattern of empirical results is surprisingly consistent across universities. Although magnitudes differ, these studies almost uniformly find that the average female faculty member earns substantially less than the average male at the same institution when no other factors are taken into account. However, women and men are not represented equally in comparatively low-paying and high-paying academic disciplines nor are they evenly distributed among the ranks of assistant, associate and full professors. Controlling for these differences in discipline and rank through regression analysis eliminates much of the observed salary disparity between male and female faculty. Nevertheless, a persistent and unexplained gender gap in compensation usually remains. This statistically significant difference, which was apparent at the University of Virginia and at peer institutions such as the University of Michigan and the University of British Columbia, leads the Task Force to recommend more detailed school and departmental level review of individual salaries.<sup>2</sup>

The empirical analysis described in this Report used an approach that most closely resembles the methodology of recent University of Michigan studies. Despite that similarity, however, differences between these two institutions precluded any attempt to replicate the same study at both universities. The structure of academic units, administrative policies, data collection practices, faculty culture, and institutional history all influenced how the Task Force designed and conducted this study. Moreover, some of these same factors may also contribute to the observed salary gap and should influence the University's choice of appropriate corrective measures. For example, although the Nursing School and the Curry School of Education admitted women much earlier, it was not until 1970 that the College of Arts & Sciences became fully coeducational and not until the 1990s that female faculty began to be hired in significant numbers in many disciplines. This institutional history and pattern of faculty hiring has shaped the age and gender distribution of University faculty and, in turn, must inform our interpretation of the study's empirical findings and our recommendations.

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<sup>2</sup> For our full recommendations, see pp. 21-22 of this Report.

## II. Available Data and Limitations

The Task Force worked with the Office of Institutional Assessment & Studies (IAS) at the University of Virginia to obtain data for this study. Administrative and personnel records contained information about salaries, academic affiliation, demographic characteristics, highest degree earned, and employment history at the University. We were able to obtain 2013 data, which first became available in December 2013, for the following potential explanatory variables: gender, race, citizenship, academic rank, years since highest degree, years at UVA, department chairs, multiple appointments, 9-month or 12-month salary payment, and school/departmental affiliation. The Task Force also obtained and analyzed similar data for 2012 and somewhat more limited data for 2007 and 2003.

Our empirical analysis explored the association of these variables with 9-month faculty salaries. Faculty employment relationships vary considerably and include both 12-month contracts and joint appointments in which faculty receive their salary from multiple academic units. We adjusted salaries to a common 9-month basis and assigned faculty to a primary academic unit; some additional details of these adjustments are presented in Appendix A.

Salary data for University of Virginia faculty are public records, subject to FOIA request, and regularly published in local news media. Despite these disclosures, missing information makes those published data less than fully reliable. Our access to information about whether a faculty member had a 9-month or 12-month contract and whether he or she was on leave with partial pay allowed us to make the salary variable considerably more accurate than published sources. Even our salary data, however, were incomplete. The compensation data available from IAS omitted override compensation and payments for executive education in the professional schools. If opportunities to receive this sort of compensation differed for male and female faculty members, our results could be biased by its exclusion from our salary variable.

One additional challenge for the analysis – particularly in the professional schools – was that faculty in some academic units possess a wide array of disciplinary expertise. For example, the Frank Batten School of Leadership and Public Policy includes faculty who were trained in diverse disciplines including business, economics, political science and psychology. Faculty in the Curry School of Education, McIntire School of Commerce and the Darden Graduate School of Business also vary widely in their disciplinary focus. It would be tempting to assign such faculty to the department that corresponds to the field in which they earned their highest degree.

However, faculty in professional schools with disciplinary doctoral degrees often pursue topically different research and have outside options that differ markedly from their disciplinary colleagues in the College of Arts & Sciences. Grouping faculty by discipline of doctorate thus would have failed to capture significant differences in faculty work product and opportunities. For the purposes of the empirical analyses reported below, we assigned faculty to the school or department in which they were appointed.

#### A. Excluded Cases

The goal of our empirical analysis was to compare faculty members with similar responsibilities for teaching, research and service. This objective led us to exclude from our analysis faculty members whose principal appointment was administrative, Medical School faculty, and general faculty at the University. The Task Force emphasizes the importance of ensuring equitable compensation for each of these excluded groups. However, we were unable to obtain comparable data for the present study.

First, the organization of University Human Resources files and salary records would have presented a significant obstacle to the Task Force's efforts to ensure data comparability in the case of Medical School and non-tenure track faculty. Personnel records for Medical School faculty appear in a different personnel system than other faculty. Similarly, existing personnel records do not distinguish general faculty members with multi-year contracts (or the expectation of continuing employment) from short-term adjunct instructors (including graduate teaching assistants) whose duties and employment relationships with the University are quite different. Moreover, the job responsibilities of the excluded groups often differ from those of tenured and tenure-track faculty, whose duties invariably include teaching, research and service. In contrast, a significant fraction of general faculty members have no responsibilities for research, and for many Medical School professors clinical duties predominate.

We also excluded faculty with primarily administrative appointments (including Deans) even though they may also hold tenured academic positions. Once again, the duties of these positions and the factors that determine their salaries differ markedly from those of other faculty. In the same vein, we excluded former University executives who receive compensation that is determined in part by their former executive position rather than solely on the basis of their current faculty responsibilities. Finally, we excluded from the analysis all faculty on leave with partial pay or on leave without pay. It was impossible to determine from the available personnel

records whether the leave was for academic, personal or other reasons and the associated full-year salary.

Even among the tenured and tenure-track faculty included in our study we recognize that job responsibilities differed widely. Although the common denominator of teaching, research and service allowed us to make meaningful comparisons among faculty, only multivariate analysis could account for the significant salary differences among academic disciplines, ranks and levels of experience.

#### B. Limitations

A significant limitation of our study is that direct measures of individual performance such as the quality or quantity of scholarly publications, significant service activities, teaching evaluations, or annual performance evaluations conducted by peers, departmental chairs or deans do not exist in a form that could be incorporated in a University-wide quantitative analysis. Concerns about personal privacy would have militated against releasing some of this information. Moreover, these inherently multidimensional indicators of faculty productivity are unavailable as quantitative measures, comparable across disciplines, and susceptible to meaningful empirical analysis. Other data that might influence faculty salaries such as the receipt of outside offers were similarly not available.

Because such measures of activities and productivity would be needed to determine the cause of any observed salary disparities between demographic groups, this study is descriptive and is intended to provide baseline measures and a framework to assist the University in reviewing policies that affect salary determination. Those disparities could result from various causes including discrimination in salary setting, differential opportunities or work assignments, variations in faculty productivity, or some combination of these factors.

### III. Methods and Assumptions

With these important limitations in mind, the Task Force used multiple regression analysis to investigate any association of faculty salaries with gender, race or citizenship. Our empirical analysis examined how nine-month faculty salaries are related to factors including school, academic discipline, rank, years since highest degree, and years at the University of Virginia. The study also investigated whether faculty salary levels were associated with gender

or race after controlling for these explanatory variables. This section of the Report describes our regression model and discusses some key assumptions on which this statistical analysis is based.

#### A. Methodological Approach

Social scientists use multiple regression analysis to investigate the statistical association between one “dependent variable” and a number of potential “explanatory variables.” Scholars routinely employ regression models to explore various factors that may influence wages. Moreover, the technique dominates the vast economic and sociological literature about earnings disparities between demographic groups. Countless studies use this method to determine whether compensation levels are statistically associated with gender or race. Unsurprisingly, multiple regression analysis has also been the primary method used in prior salary equity studies in higher education.

Our study followed this prior literature and used a multiple regression model. In this context, the goal of regression analysis was to calculate an average faculty salary for men and women after controlling statistically for observable differences in their relevant characteristics. For example, our baseline specification included controls for school or department, academic rank, years since highest degree, and years at UVa. We also considered additional explanatory variables such as whether an individual faculty member served as a department chair, was compensated on a 12-month basis, or held appointments in more than one academic unit; these alternative specifications are discussed in Appendix A. We used the same technique and models to compute similar averages for minority faculty and for those who were citizens of countries other than the U.S.

We followed a widely accepted norm of the labor economics literature and specified our salary measure in log units.<sup>3</sup> Intuitively, a linear specification of salary levels imposes the unrealistic assumption that faculty in low-paying fields will receive the same incremental dollar value salary adjustments each year as their colleagues who work in high-paying fields. It is far more plausible, and consistent with historical practice, to think that salary adjustments will be proportional to a faculty member’s base salary. For example, promotions generally come with a percentage increase in salary of about 12% resulting in a greater absolute dollar adjustment for

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<sup>3</sup> For more detailed discussion of this modeling choice, see Appendix A at p.33 of this Report.



faculty in more highly paid fields. A so-called “log-linear specification” captures this dynamic and better fits real-world salary data.

The following equation broadly describes the log-linear regression specification that we used for this study:

$$\ln Salary_i = \alpha + \gamma Female_i + \beta Experience_i + \pi_1 Associate_i + \pi_2 Full_i + \sum_j \delta_j Field_{ij} + e_i.$$

Indicator variables (taking the values of 0 or 1) specified gender, field and rank. We measured experience (time since highest degree and at UVa.) in years. The residual term ( $e_i$ ) represents differences in compensation that arose for reasons we were unable to observe. For example, we would expect salaries to vary according to each faculty member’s individual contribution to teaching, research and service. Because we had no available quantitative measures of those contributions, their influence on salary was captured in the residual term of our regression equation. In Appendix A, we also present specifications in which we allow the coefficient associated with gender to vary by rank.

## B. Limitations and Assumptions

Regression analysis allows us to answer questions such as: What would we expect a male or female faculty member with a given rank, academic discipline and years of experience to earn? It does not, however, support causal claims. Although it is tempting to interpret a negative coefficient on the gender indicator variable as evidence that sex discrimination depressed the salaries of female faculty members, the data included in our regression analysis were insufficient to rule out many alternative explanations for the observed salary gap between women and men.

Most notably, only very imperfect measures of faculty productivity and job responsibilities were available for our analysis. Our rank and experience variables, for example, are, at best, indirect proxies that capture only some of the individual variation in productivity and responsibilities. Significant differences also exist among academic disciplines. What counts as faculty productivity for one field of specialization may be far less important or even immaterial in another. Disciplines vary widely in how they value articles, books, grants, patents and other scholarly work products. Moreover, no universally accepted standard exists to judge the quality of this work. For example, citation counts may be considered highly informative in one field but misleading or irrelevant in another.

If these unmeasured variations in faculty productivity and/or job responsibilities were correlated with gender, then our regression model would estimate a biased value for the gender coefficient. The direction of this bias would depend on the pattern of correlation between salary, gender and the unobserved productive characteristics. The Task Force recognizes this limitation of our quantitative analysis and cautions readers that the results of this study can only be the first step in assessing any observed disparity between the average salaries of male and female faculty members. We recommend below that the Provost work with deans and department chairs to review individual salaries in each school and department.<sup>4</sup> These decision makers have the field-specific expertise and local knowledge needed to assess the quality of each faculty member's individual contributions to teaching, research and service.

Our empirical findings also depend on several important assumptions about the data and the process by which salaries are determined. Salaries vary widely among academic disciplines. For example, the annual survey of the College and University Professional Association for Human Resources (2014) reports that fields such as law, business, and engineering have the highest average starting salaries at public universities. In contrast, entry-level faculty in English, history, and visual and performing arts earn about one-half as much on average as their colleagues in these highly paid disciplines.

We assumed that outside market forces determine these salary differentials among disciplines. In addition, our regression model assumed that University hiring practices give women and men equal opportunities for appointment to positions in different schools and departments. If either of these assumptions were incorrect, our results would understate possible gender effects on salary. Gender bias thus could be hidden in salary differentials between academic disciplines or masked by unequal access to higher-paying disciplines.

Our decision to include academic rank as an explanatory variable depends on assuming that the University applies standards for promotion (from assistant to associate professor and from associate to full professor) in a gender-neutral manner. If this assumption was incorrect and women were disproportionately denied equal access to promotion, then our results again would understate the difference in salary associated with gender. Note, however, that only gender differences in promotion that resulted from biased decisions or institutional barriers to advancement raise this concern. It is also possible that, individual faculty preferences and

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<sup>4</sup> For discussion of this and other recommendations, see pp. 21-22 of this Report.

decisions about allocating effort could have varied along gender lines and that those differences produced the unequal distribution of male and female faculty members among ranks and disciplines.

The Task Force can draw no definitive conclusions from our analysis about what factors explain the observed gender distribution by rank and discipline. Our charge, however, directed us to focus on salary determination alone. Thus, we call attention to these assumptions about the absence of gender effects in hiring and promotion, but proceed with our analysis of salary. We believe that hiring and promotion processes deserve thorough scrutiny, but such an investigation extends beyond our charge and the scope of our analysis.

Finally, we acknowledge that data limitations prevent us from drawing meaningful statistical inferences about group differences in salary setting for comparatively disaggregated units of analysis. For small academic units such as specific departments or small schools such as architecture or nursing, our methods cannot distinguish factors associated with unique individuals from systematic patterns associated with demographic group membership. In our multivariate analysis, we focused instead on accounting for average differences across departments and schools that were likely to be determined by outside market forces.

## IV. Empirical Results

This section of the Report describes our empirical results. Before presenting the results of our regression analysis, it will be helpful to offer some descriptive statistics to show the basic characteristics of the data we analyzed.

### A. Descriptive Statistics

Our dataset included salary outcomes for faculty in the College of Arts & Sciences, the School of Engineering, the Curry School of Education, the School of Architecture, the Batten School of Leadership and Public Policy, the School of Nursing, the Darden School of Business, the McIntire School of Commerce, and the School of Law. Table 1 shows the aggregate descriptive statistics by rank and sex for fall 2013.<sup>5</sup>

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<sup>5</sup> We provide comparable data for 2012, 2007, and 2003, along with additional measures, in Table 1 of Appendix A to this Report.

**Table 1. Descriptive Characteristics, 2013**

	2013		
	Women	Men	All
Number of Faculty	260	644	904
Years since highest degree	17.6	24.9	22.8
Mean years at UVa	12.4	18.5	16.8
<i>Salary</i>			
Mean	\$ 111,896	\$ 134,748	\$ 128,175
25th percentile	\$ 77,300	\$ 92,150	\$ 86,846
Median	\$ 97,350	\$ 121,000	\$ 111,550
75th percentile	\$ 127,259	\$ 164,350	\$ 157,000
<i>Rank (Percent)</i>			
Assistant Professor	22.3	11.3	14.5
Associate Professor	41.5	26.2	30.6
Full Professor	36.2	62.4	54.9
<i>Mean salary by rank</i>			
Assistant Professor	\$ 95,654	\$ 92,745	\$ 94,033
Associate Professor	\$ 96,799	\$ 106,132	\$ 102,493
Full Professor	\$ 139,261	\$ 154,405	\$ 151,535
<i>Percent hired as...</i>			
Assistant Professor	77.7	67.5	70.5
Associate Professor	12.7	15.1	14.4
Full Professor	9.6	17.4	15.2
<i>Years to Associate Professor</i>			
Mean	6.4	6.4	6.4
<i>Years from Associate to Full Professor</i>			
Mean	8.4	6.9	7.2

*Notes:* Data are for tenured and tenure track faculty and do not include the School of Medicine; see text for details.

The average 9-month salary was \$128,175 in the fall of 2013, while the median was \$111,500 and the interquartile range was \$86,845 to \$157,000. A bit more than half (55%) of the faculty held the rank of full professor, while about 15% were at the assistant rank and more

than 30% were at the associate rank. The fact that the average number of years since highest degree was 22.8 suggests a fairly “mature” faculty.

In the aggregate, men and women differed markedly in both representation and compensation. With an average 9-month salary of \$111,895 for women relative to \$134,744 for men, average salaries differed by about 17%. Yet, this overall gap reflected the fact that men and women also differed in the dimensions of experience, rank and field. We provide a brief description of these differences and then turn to multivariate analysis to determine whether men and women received different salaries after controlling for these factors.

#### 1. Measures by Experience and Rank

Men not only constituted a large majority of the faculty (about 71%), but they also have been at the University for a longer period of time (an average of 18.5 years for men versus 12.4 years for women). Men also have longer tenures in academia, with men averaging nearly 25 years since receiving their highest degree and women averaging 17.6 years on the same measure of academic experience (see Table 1).

As we would expect in light of the substantial gender difference in time at UVa, men and women also differed markedly in their distribution by academic rank. As shown in Table 1, more than 62% of men on the faculty were full professors relative to 36% for women. In turn, women were disproportionately concentrated at the assistant and associate ranks. This difference in gender representation at full professor was somewhat greater than the national data reported by AAUP. Among tenured and tenure track faculty at public doctoral universities 47% of men and 26% of women were full professors.<sup>6</sup> Among full professors at UVa, men were more likely than women to hold endowed chairs or eminent scholar positions, with 49.75% of men relative to the 39% of women holding such positions, though this pattern may partially reflect the very high proportion of men among the most senior faculty. These appointments are often accompanied by salary supplements and provisions for additional research leave. We note, however, that schools create endowed chairs only when they are able to raise external funds. As a result, the proportion of faculty who receive these desirable appointments varies widely across various academic units at the University.<sup>7</sup>

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<sup>6</sup> Calculations from Table 12, AAUP (2014).

<sup>7</sup> See [http://avillage.web.virginia.edu/iaas/instreports/emp/dd/emp\\_end\\_chairs.htm](http://avillage.web.virginia.edu/iaas/instreports/emp/dd/emp_end_chairs.htm).

Table 1 also gives us insight into aggregate salary differences between men and women by academic rank. Female assistant professors held a slight salary advantage over males (\$95,654 for women vs. \$92,744 for men). At the associate and full professor levels, however, we found a raw gap of 10-11% favoring men. Comparing figures from Table 1 for 2013 with comparable figures reported in Appendix A for 2012, we note that a salary advantage for male assistant professors turned into an advantage for women in 2013. We have looked closely at the determinants of this relationship (and the change over time) and believe that it reflected a combination of factors. Women who were at the bottom of the salary distribution in 2012 received raises and promotions. In addition, a number of women were appointed in the professional schools and in Arts & Sciences fields that are traditionally highly compensated. Finally, Table 1 shows that faculty who held the rank of full professor had appreciably higher salaries than those at the associate rank. On average, associate professors earned 9% more than assistant professors, but the average difference between associate and full professors was about 48% (or more than \$49,000).

The lower part of Table 1 provides more detailed information about the timing of hiring and promotions. Two differences in these data stand out. First, women took substantially more time than their male counterparts to achieve promotion from associate professor to full professor. Women took nearly 1.5 more years on average to achieve the rank of full professor. Moreover, this gap appears to have grown since 2003, when it was a more modest 1.03 years. Men were also more likely to be tenured as “lateral hires” (coming from a tenured faculty position at another university) than women. Only 9.6% of women were hired at the level of full professor, but nearly 17.4 % of men were hired into these comparatively high-paying positions. We return to discuss these dynamics of hiring and promotion later in this section.

## 2. Measures by Department and Schools

Field of specialization also played a substantial role in determining salary levels among faculty.<sup>8</sup> National data reveal that men and women tend to pursue doctoral degrees in different fields. Women receive a disproportionate number of degrees in the humanities and life sciences, and men are relatively overrepresented in the natural sciences, math and engineering. Although

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<sup>8</sup> This report uses the term “field” to refer to academic departments and schools. In the regression specifications, we distinguished schools and aggregated departments in Arts & Sciences into groups: arts-humanities, social sciences excluding economics, economics, and the natural sciences. In Appendix A, we present additional specifications that include fields coded at a finer level of disaggregation.

these gaps have narrowed over time, there remain substantial differences by gender in the flow of new doctorates by discipline. For example, in 1970, the year that the University of Virginia became coeducational, women earned only 16 of the 3,447 (0.46%) doctoral degrees in engineering awarded in the U.S. By 2006, women's share of engineering doctorates had increased to 20%. Over the same time period, the share of doctorates awarded to women in the humanities increased from 23% to 51%.<sup>9</sup> Vast literatures in economics and sociology discuss the reasons for these differences, but whatever the cause, the University of Virginia faces a market supply of potential faculty candidates that tends to reinforce existing gender disparities in representation between higher-paying and lower-paying schools and departments.

Table 2 shows the representation of women by schools and major academic units within the university.

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<sup>9</sup> See data from the National Science Foundation's *Survey of Earned Doctorates*.

**Table 2. Counts and Representation of Women by Schools and Major Fields, 2013**

	N=	% Female
Arts & Sciences	494	27.5%
Humanities	150	41.3%
Math & Science	143	16.1%
Social Science (ex Econ)	174	26.4%
Economics	27	18.5%
Architecture	33	42.4%
Batten	8	62.5%
Commerce	48	33.3%
Curry	60	45.0%
Darden	56	21.4%
Engineering	119	15.1%
Law	66	22.7%
Nursing	20	85.0%

It is evident that women were not represented in the same numbers as men in the natural sciences, math and engineering. Women represented just 15.1% of the faculty in engineering and only 16.1% in math and natural sciences in the College of Arts and Sciences. Women also comprised a comparatively small proportion of the faculty at the Law School (22.7%) and the Darden Graduate School of Business (21.4%). In contrast, a majority of the faculty in the School of Nursing (85.0%) and in the Batten School (62.5%) were women. These differences in the proportion of female faculty members among schools and disciplines have obvious implications for the interpretation of aggregate salary measures when salaries differ so dramatically by field.

In sum, these descriptive statistics reveal marked differences in the gender distribution of faculty by academic discipline and rank. Our aim was to discover whether the aggregate difference in salary reflected differences in the representation of men and women by field or whether expected differences in salaries remained once we accounted for the differences in field.



Multivariate regression analysis allowed us to estimate demographic group differences after controlling for the quantifiable determinants of salary.

#### B. Regression Results

Table 3 shows the main results of our regression analysis and shows a statistically significant association between gender and faculty salary. The dependent variable in each model was the log of 9-month salary, and results of additional regression specifications are provided in Appendix A. For ease of exposition, coefficient estimates associated with explanatory factors are discussed in terms of the percentage impact on predicted salaries.<sup>10</sup>

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<sup>10</sup> Note, however, estimated coefficients such as  $\gamma$  (gamma) are only an approximation of the “percentage change” where  $e^\gamma - 1$  will equal the expected percentage change associated with an indicator such as gender.

**Table 3. Log 9-Month Salary Regression Results, 2013**

Explanatory Variables	2013			
	(1)	(2)	(3)	(4)
Female	-0.176 (0.0268)***	-0.118 (0.0260)***	-0.045 (0.0162)***	-0.027 (0.0134)**
Minority	-0.116 (0.0451)**	-0.080 (0.0424)*	-0.056 (0.0256)**	-0.015 (0.0212)
American citizen	0.120 (0.0349)***	0.062 (0.0335)*	0.014 (0.0204)	0.010 (0.0169)
Years since highest degree		0.016 (0.0015)***	0.018 (0.0009)***	0.009 (0.0009)***
Years at UVa		-0.010 (0.0016)***	-0.008 (0.0010)***	-0.008 (0.0008)***
Assoc. Prof. Indicator				0.101 (0.0196)***
Full Prof. Indicator				0.400 (0.0233)***
Assoc x Law				0.113 (0.0620)*
Math & Natural Sciences			0.136 (0.0244)***	0.108 (0.0203)***
Social Sciences			0.098 (0.0230)***	0.078 (0.0190)***
Economics			0.511 (0.0432)***	0.484 (0.0357)***
Architecture			-0.016 (0.0395)	0.021 (0.0326)
Batten			0.526 (0.0749)***	0.495 (0.0621)***
Commerce			0.669 (0.0343)***	0.668 (0.0283)***
Curry			0.049 (0.0313)	0.037 (0.0258)
Darden			0.793 (0.0323)***	0.763 (0.0267)***
Engineering			0.264 (0.0255)***	0.229 (0.0211)***
Law			0.823 (0.0304)***	0.694 (0.0272)***
Nursing			0.179 (0.0492)***	0.131 (0.0407)***
Constant	11.644 (0.0333)***	11.465 (0.0357)***	11.179 (0.0284)***	11.146 (0.0261)***
Observations	904	904	904	904
R-squared	0.066	0.184	0.712	0.805
Standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Column (1) of Table 3 provides a baseline analysis of the influence of demographic variables (sex, race, and citizenship) on faculty salaries. This baseline model did not control for school, rank, years of employment, and other factors that are plausibly associated with faculty salaries. The coefficients shown in column (1) should therefore be interpreted with caution as only raw indicators of differences in expected salaries for women (negative 17.6%), African American/Latino/Multi-racial (negative 11.6%), and U.S. Citizens (positive 12%). The Task Force also investigated whether salaries differed for Asian faculty members at the University. The coefficient on this indicator variable was not statistically significant in any model, and thus this Report focuses on results for gender and other minority groups.

Column (2) reports regression results with the inclusion of measures of experiences at the University, defined as years since highest degree and years at the University. Adding these indicators reduces the gender gap markedly to about 11.8%. School/department indicators were added as explanatory variables in Column (3), which leads to a substantial decline in the gender gap to -4.5%. Note that the omitted or baseline category is the Arts-Humanities departments.

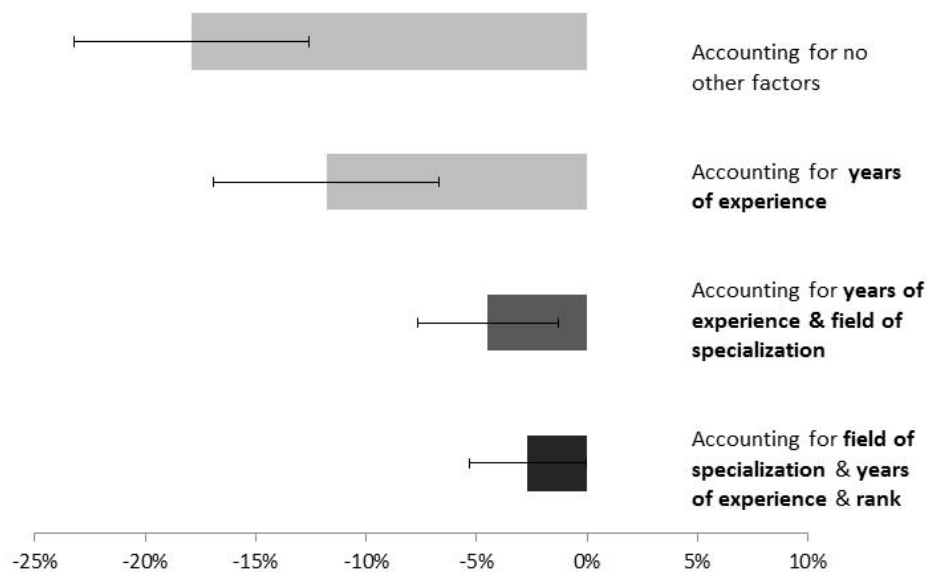
Next, Column (4) includes measures of faculty rank, with indicators for associate and full professor. The point estimate of the gender gap declined when these rank measures were taken into consideration but remained statistically significant. Column (4) represents the Task Force's baseline regression specification. After controlling for the influence of school, field, rank, years since highest degree, and years at UVa, the average salary of female faculty members at the University of Virginia in 2013 was about 2.7% less than the average salary of male faculty, an average difference of about \$3,638, computed at the mean for men of \$134,748. After controlling for the variables mentioned above, the Task Force was unable to detect any significant association of salaries with minority status or citizenship. However, the comparatively small number of faculty in these groups limited our ability to draw meaningful statistical inferences.

It is notable that even with a relatively small number of control variables, the analysis was able to explain a very sizeable proportion of the gender gap in faculty salaries. Rank and field accounted for about 80.5% of the variation in faculty salaries. As found in other studies of faculty salaries at major public research universities (such as Courant and Smith, 2012), much of the difference between the salaries of male and female faculty was attributable to systematic

differences related to field and rank.<sup>11</sup> While estimates are not directly comparable owing to differences in regression specifications and data availability, the University of Michigan (-1.6%) and the University of British Columbia (-2.4%) also found similar, statistically significant gender differences in faculty salaries.

Figure 2 is a graphical representation of the coefficients associated with the “female” variable from the regression models shown in Table 3. “Whisker plots” (horizontal lines) represent the 95% confidence interval for each point estimate, while the bars indicate the point estimate of the coefficient associated with the female variable. As we move down the figure, the salary gap between men and women declines, and the precision of the estimates increases. At the same time, gender differences in pay remained statistically significant across all of the regression specifications presented.

**Figure 2. Predicted Gender Wage Difference, University of Virginia, 2013**

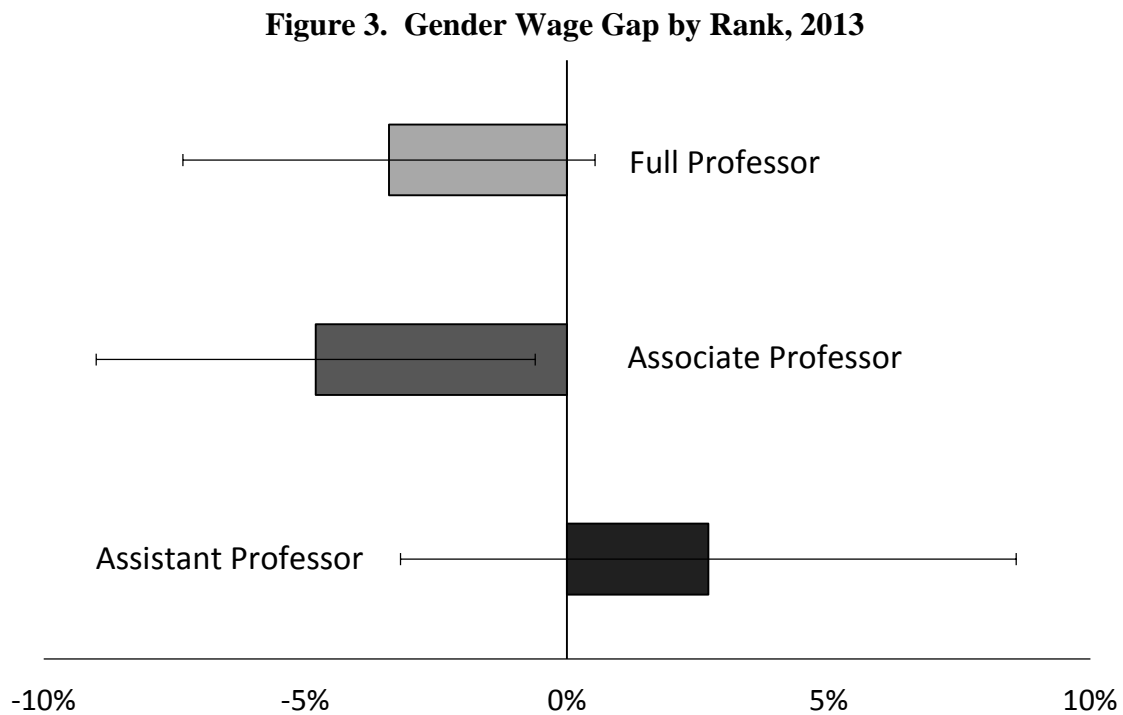


Source: Table 3 of this Report.

<sup>11</sup> In the bottom row of Table 3, we present the “adjusted R-squared measure,” which reflects the proportion of the variance in salaries explained by the coefficients taking into consideration the number of covariates in the regression.

Additional analysis of the data suggests that these gender gaps in average salary did not result from a few “extreme” outlying individuals (meaning those women or men with either very low or very high salaries). Instead, the statistical difference arose from the many smaller differences found between the salaries of male and female faculty members once school, field, rank, years since highest degree, and years at UVA were taken into account. Appendix A presents more detailed analysis of the regressions residuals and influential observations.

The Task Force also examined the gender gap across ranks by including an interaction between each rank and the indicator for female. Regression analysis uncovered no statistically significant gender difference in average salary for assistant professors; however, there was a statistically significant gap in the average salary of female faculty at the associate and full professor ranks relative to men. At the associate professor level, women earned 4.8% less than their male colleagues while at the full professor rank women earned about 3.4% less than their male colleagues. Although not statistically significant at the 95% confidence level, the predicted gender wage gap for full professors was significant at the 90% level. Figure 3 shows these results graphically, while the full regression results are shown in Appendix Table 6.



*Source:* Appendix Table 6.

### C. Discussion

The study reports evidence on the extent to which faculty salaries at the University of Virginia varied systematically across demographic groups, particularly gender, after controlling for differences attributable to rank, experience, and field. The Task Force recognizes the limits of our analysis. As the charge to the Task Force stated, “only some of the factors that are known to affect salary can be considered in a quantitative analysis” of this kind. We have not attempted to measure the performance of individual faculty members in teaching, research and service. The Task Force in no way intends to displace the faculty peer review process. We also emphasize that the small number of minority faculty members limited the Task Force’s ability to analyze salary differences associated with race or citizenship.

The Task Force’s analysis generated several important findings. After controlling for rank, discipline/school and measures of experience, there remained a statistically significant average salary difference between men and women on the faculty at the University of Virginia. This difference was 2.7% or \$3,638 in the fall of 2013. There were substantial differences by rank in the magnitude of this gender difference. There was no statistically significant difference for women among assistant professors. However, there was a substantial and statistically significant difference at the tenured ranks of associate (4.8%) and full professor (3.4%), though the gap among full professors was only significant at the 90% confidence level. In addition, the Task Force found evidence that men and women differed in the rate at which they progressed through the tenured ranks from associate to full professor, though an analysis of the promotion process is beyond the scope of the Task Force’s charge.

The quantitative analysis performed by the Task Force is insufficient to provide a conclusive interpretation of the *cause* of the observed gender difference in salaries. Thoughtful discussions in the Task Force and a review of existing research generated a number of hypotheses. Without endorsing any explanation, we note the following possibilities:

- Institutional and administrative norms in salary setting may have disadvantaged women, leading to a circumstance where men and women with equal productivity in the same substantive areas received different compensation.

- The allocation of committee assignments and service requirements may have disproportionately burdened women relative to men and impeded women's research productivity, which in turn limited their ability to earn raises and receive outside offers.
- The allocation of resources complementary to research productivity (such as lab space and access to graduate students) may systematically disadvantage women relative to men.
- Men and women may be differently affected by child-rearing and family responsibilities, particularly during the mid-career period during which faculty seek promotion from associate to full professor.
- Men and women may differ in the extent to which they aggressively seek outside offers, which often lead to substantial salary increases. That difference may reflect either gendered differences in bargaining or systematic differences in mobility which reduce the likelihood that women will receive outside offers.

This set of explanations is neither exhaustive nor mutually exclusive. Although individuals may have strong and well-informed beliefs about the importance of specific explanations, the Task Force was unable to produce definitive statistical evidence that could discriminate among these potential causes of the gender gap observed in this study.

## V. Recommendations

Acknowledging once again the significant limitations of the available data and research methodology, the Task Force believes that the study results suggest the need for rigorous further investigation and possible salary adjustments in individual cases. Accordingly, the Task Force makes the following recommendations:

### 1) Equity Review and Salary Adjustments

The Provost in collaboration with deans and department chairs should ensure that a careful qualitative assessment of individual faculty salaries takes place. That process should incorporate the measures of productivity not included in this study. The goal of the review should be to ensure that individual compensation fairly reflects each faculty member's contributions to teaching, research and service.

## 2) Study of Institutional Practice

Many hypotheses could explain the identified gender differences in salaries, and the University should make serious efforts to better understand particularly those factors within its potential control. The Task Force recommends that, as soon as possible, the University conduct a review of institutional practices that could differentially affect faculty success. Specific topics that should be investigated include (a) allocation of resources complementary to research productivity such as lab space and research assistance; (b) assignment to committees and the assessment of institutional service; (c) efforts made in schools and departments, such as mentoring junior colleagues, to support untenured faculty in the promotion process; (d) assistance provided to tenured faculty seeking promotion from associate to full professor and appointment to endowed chairs; (e) the observed gender disparity in the rate and timing of progression from associate to full professor; and (f) any potential gender disparities in hiring and salary setting for senior new hires coming from other institutions .

## 3) Extending the Empirical Analysis

The Task Force has identified additional information that could improve future empirical examination of salary equity at the University of Virginia. We recommend that the University (a) improve recording of leaves, distinguishing professional, family and administrative absences from the University, (b) improve recording of outside offers and special salary adjustments, and (c) centralize and standardize recording of joint appointments and terms of compensation such as the number of summer months assumed for 12-month contracts. We also recommend that the University conduct similar empirical analyses of the salaries of both general faculty members (i.e., non-tenure-track faculty) and Medical School faculty. These analyses should be sensitive to the distinctive and diverse institutional roles and responsibilities of these groups of faculty.

## 4) Periodic Review

The Task Force encourages the Provost to establish a schedule for periodic review of group differences in faculty salaries. These periodic studies should incorporate the additional information discussed above when such measures become available.



## Conclusion

The Task Force's analysis of tenured and tenure track faculty salaries begins an essential process of analyzing salary equity at the University of Virginia. Our findings provide a useful quantitative picture of aggregate salaries and identify a number of important factors that influence faculty salary levels at the University. We have recommended that the Provost review individual salaries using more detailed qualitative information and examine institutional practices that could affect faculty compensation. Equitable compensation is not only a legal and moral imperative, but it also serves the University's long-term objective of recruiting and retaining an outstanding faculty. The Task Force recognizes that "equity" in compensation does not imply equal compensation when individuals perform differently or have skills that are rewarded differently by outside markets. We designed our empirical models to control for those factors that we could quantify. Nevertheless, the inherent limits of regression analysis make our work only the starting point in efforts to ensure equitable faculty compensation. Our recommendations identify next steps toward the ultimate objective of salary equity. Achieving that goal will both recognize individual faculty accomplishment and improve the competitiveness of the University of Virginia among leading research universities.

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## Appendix A: Supplemental Empirical Discussion

This Appendix supplements the main Report’s discussion of our decisions about model specification and describes some additional empirical results. In presenting the work of the Faculty Salary Study Task Force, we hope to combine broad accessibility with transparency and detail. The Task Force has been keenly aware of the limitations of this type of analysis (discussed in the body of this report) and recognizes that econometric methods often cannot “solve” fundamental problems of measurement. We recognize that our work necessarily involved choices about models, inclusion of observations, and the proper functional form. We considered a number of alternative specifications and methods of estimation. This detailed Appendix provides an opportunity to address at least some potential questions about our decisions. The purpose of this Appendix is to avoid burdening the body of the Report with these details while also providing interested readers with additional information about the decisions the Task Force made in conducting our analysis.

This Appendix provides more detail on the data available for analysis and the rationale for including and excluding particular faculty categories. It also presents additional descriptive statistics, comparative data for earlier years, more detailed discussion of specification issues, and estimation results from alternative multivariate specifications.

### A. Data Choices

As noted in the body of this report, the data used in this analysis were from the Office of Institutional Assessment and Studies (IAS) at the University of Virginia and were drawn from administrative and personnel records. Available measures included school, department, rank, years in rank, type of contract (9 month or 12 month) along with basic demographic characteristics. The focus of the work of the study group was on data available for Fall 2013 (which became available in December of 2013) and Fall 2012; data for 2007 and 2003 were also available for a more limited set of data elements. Key restrictions in the observations included:

- Data were limited to tenured and tenure-track faculty appointments;
- Faculty from the School of Medicine were excluded from the analysis;
- Faculty who were on leave without pay or leave with partial pay were excluded;
- Faculty with primary appointments at the level of Dean or above were excluded.

In addition, the salary data measured only an individual’s regular academic salary. The data available from IAS did not include override compensation or payment for executive

education classes taught in the professional schools. The Task Force made every effort to limit the study to faculty with responsibilities for teaching, research, and service. Nevertheless, included faculty varied somewhat in their appointment status and salary structure. Three dimensions of potential variation included: 9-month versus 12-month appointments, multiple appointments, and administrative chairs.

First, we converted all faculty salaries to a 9-month basis. Overall, about 15% of faculty held 12-month contracts, with men and women about equally likely to hold such appointments. Our conversion assumed that salaries reported for 12-month contracts should be multiplied by  $9/12$  to obtain a 9-month equivalent. Academic units vary, however, in whether faculty on 12-month contracts receive compensation for “11-ninths” or “12-ninths.” In our multivariate analysis, we therefore considered additional specifications that included a variable to indicate whether a faculty member was compensated on a 12-month basis. Including or excluding this variable did not significantly alter any of our principal results, and thus this variation in the structure of compensation did not appear to affect the conclusions of this study.

Second, we identified a number of cases in which faculty received their salary from multiple academic units. Overall, about 2.2% of faculty held appointments with salary drawn from multiple administrative units. A larger group of faculty have joint appointments or courtesy appointments that do not involve split funding sources. These “0 weight” joint appointments were not identified in the data. In the results reported below, we assigned faculty to the unit that paid the highest fraction of total compensation. We have also repeated the same empirical analyses assigning faculty to academic units in proportion to the salary shares paid by each unit. None of the main results were sensitive to this alternative specification.

For 2012 and 2013, we were able to identify department chairs (administrative appointments distinct from endowed chairs). Additionally, the College of Arts & Sciences verified base 9-month salaries for these appointments. As discussed below, additional specifications allowed for salary variation associated with such appointments, though such adjustments did not affect our primary specification.

While a study of this type would ideally assess the extent to which there are salary differences associated with race or ethnicity, there are comparatively few faculty members in these subgroups at the University. As a result, the Task Force’s empirical analysis had only a very limited ability to identify any salary differences that may exist along these lines. The data

identified the following racial and ethnic subgroups: White, Black, Asian, Latino, multi-racial and non-resident alien. The primary grouping used in our analysis was “minority,” which includes Black, Latino and multi-racial individuals.

The descriptive data in the next section illustrate the “small numbers” problem. There were 22 Latino, 41 Black and 8 multi-racial faculty in 2013. The Task Force wishes to emphasize that our limited capacity to draw meaningful statistical inferences about racial or ethnic salary differences in no way lessens the importance of ensuring equitable compensation for individuals in these groups.

The Task Force recognizes that coding choices may potentially affect reported outcomes. Wherever possible, we considered alternative specifications that allowed us to assess the sensitivity of our results to particular choices. Note, however, that these choices would only affect our findings about salary differences by demographic group if a coding choice or data exclusion varied systematically by gender or race.

#### B. Additional Descriptive Data

In Appendix Tables 1, 2 and 3, we present additional descriptive statistics for 2013, along with earlier summary measures from 2012, 2007, and 2003. Appendix Table 1 includes data for each year on the number of faculty, distribution by rank and mean salary within rank. In addition, the bottom row of the table includes the representation of men and women with 12-month contracts, joint appointments and endowed chairs or eminent scholar appointments.

**Appendix Table 1. Descriptive characteristics of tenured and tenure-track faculty, selected years**

	2013			2012			2007			2003		
	Women	Men	All	Women	Men	All	Women	Men	All	Women	Men	All
Number of Faculty	260	644	904	258	653	911	252	692	944	210	658	868
Years since highest degree	17.6	24.9	22.8	16.8	24.6	22.4	15.4	22.7	20.8	15.9	21.8	20.4
Mean years at UVa	12.4	18.5	16.8	11.8	18.4	16.5	10.5	16.9	15.2	10.5	16.7	15.2
<i>Salary</i>												
Mean	\$ 111,896	\$ 134,748	\$ 128,175	\$ 103,145	\$ 127,358	\$ 120,501	\$ 94,949	\$ 118,194	\$ 111,989	\$ 80,439	\$ 98,935	\$ 94,460
25th percentile	\$ 77,300	\$ 92,150	\$ 86,846	\$ 70,300	\$ 86,000	\$ 80,000	\$ 68,100	\$ 84,950	\$ 77,850	\$ 58,500	\$ 71,900	\$ 67,950
Median	\$ 97,350	\$ 121,000	\$ 111,550	\$ 85,046	\$ 112,300	\$ 104,200	\$ 82,600	\$ 106,500	\$ 99,050	\$ 71,000	\$ 89,400	\$ 85,000
75th percentile	\$ 127,259	\$ 164,350	\$ 157,000	\$ 118,300	\$ 157,336	\$ 150,000	\$ 109,050	\$ 144,100	\$ 138,350	\$ 94,500	\$ 119,000	\$ 113,000
<i>Rank (Percent)</i>												
Assistant Professor	22.3	11.3	14.5	26.4	11.5	15.7	30.2	14.2	18.4	27.1	13.2	16.6
Associate Professor	41.5	26.2	30.6	41.1	26.6	30.7	36.1	27.3	29.7	41.4	25.8	29.6
Full Professor	36.2	62.4	54.9	32.6	61.9	53.6	33.7	58.5	51.9	31.4	60.9	53.8
<i>Mean salary by rank</i>												
Assistant Professor	\$ 95,654	\$ 92,745	\$ 94,033	\$ 84,839	\$ 91,252	\$ 88,203	\$ 70,994	\$ 84,759	\$ 78,747	\$ 60,743	\$ 69,265	\$ 65,892
Associate Professor	\$ 96,799	\$ 106,132	\$ 102,493	\$ 90,333	\$ 100,310	\$ 96,533	\$ 85,907	\$ 94,420	\$ 91,653	\$ 74,946	\$ 77,439	\$ 76,595
Full Professor	\$ 139,261	\$ 154,405	\$ 151,535	\$ 134,132	\$ 145,710	\$ 143,717	\$ 126,048	\$ 137,379	\$ 135,414	\$ 104,689	\$ 114,485	\$ 113,100
<i>Special Appointments (Percent)</i>												
Joint Appointment	3.1	1.9	2.2	2.7	1.8	2.1	2.8	2.7	2.8	1.9	2.0	2.0
12-Month Contract	13.5	15.8	15.2	12.8	14.4	13.9	15.9	21.5	20.0	14.3	19.3	18.1
<i>Chairs (Percent of Full Professors)</i>												
Endowed Chair or Eminent Scholar	39.4	49.8	47.8	40.5	47.0	45.9	38.8	47.4	45.9	33.3	40.9	39.8
None	60.6	50.2	52.2	59.5	53.0	54.1	61.2	52.6	54.1	66.7	59.1	60.2

*Notes:* See text for discussion of variable definitions and excluded cases.

In Appendix Table 2, we present some basic indicators of rank at the time of UVa appointment and the observed progression through the promotion ladder from assistant to associate to full. We recognize that determining the cause of these patterns falls outside the charge and capacity of this Task Force. Nevertheless, these results identify some notable differences in the career trajectories of men and women on the faculty. First, men on the faculty were much more likely to be hired at a tenured rank than women, with this pattern apparent in all years. Secondly, although men and women spent about the same amount of time in the rank of assistant professor, the time from the rank of associate to full was about 1.5 years longer for the women relative to the men who achieved this promotion. Finally, because of the age structure of the faculty, men had a longer average time in rank than women at the associate and full professor level. Only a very modest number of women on the faculty were hired before 1990.

**Appendix Table 2. Descriptive measures of time in rank and time to promotion, selected years**

	2013			2012			2007			2003		
	Women	Men	All	Women	Men	All	Women	Men	All	Women	Men	All
<i>Percent hired as...</i>												
Assistant Professor	77.7	67.5	70.5	78.7	68.6	71.5	77.4	69.7	71.7	75.2	72.6	73.3
Associate Professor	12.7	15.1	14.4	12.8	14.1	13.7	13.1	14.9	14.4	14.3	14.0	14.1
Full Professor	9.6	17.4	15.2	8.5	17.3	14.8	9.5	15.5	13.9	10.5	13.4	12.7
<i>Years to Associate Professor</i>												
Mean Years	6.4	6.4	6.4	6.4	6.5	6.5	6.6	7.1	7.0	6.8	7.5	7.3
<i>Years from Associate to Full Professor</i>												
Mean Years	8.4	6.9	7.2	8.5	6.8	7.2	8.3	6.6	6.9	7.1	6.1	6.2
<i>Years in Current Rank - Assistant Professor</i>												
Mean	3.2	3.3	3.3	3.4	3.4	3.4	2.6	2.3	2.4	3.5	2.8	3.1
25th percentile	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	2.0
Median	3.5	3.0	3.0	4.0	4.0	4.0	2.0	2.0	2.0	4.0	3.0	3.0
75th percentile	5.0	5.0	5.0	5.0	5.0	5.0	3.0	3.0	3.0	5.0	4.0	4.5
<i>Years in Current Rank - Associate Professor</i>												
Mean	6.2	8.5	7.6	6.2	8.5	7.6	5.8	7.7	7.1	6.0	7.4	6.9
25th percentile	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0
Median	4.5	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0
75th percentile	9.0	13.0	12.0	9.0	13.0	12.0	8.0	13.0	11.0	9.0	13.0	11.0
<i>Years in Current Rank - Full Professor</i>												
Mean	9.0	14.9	13.7	9.1	14.6	13.6	7.3	13.0	12.1	7.3	11.3	10.8
25th percentile	3.0	6.0	5.0	4.0	6.0	5.5	2.0	7.0	5.0	2.0	5.0	4.0
Median	8.0	14.0	13.0	8.0	14.0	12.0	6.0	13.0	12.0	5.0	12.0	11.0
75th percentile	14.0	24.0	22.0	13.5	23.0	22.0	10.0	21.0	20.0	11.0	18.0	18.0



Appendix Table 3 presents the distribution of faculty by race and ethnic subgroup. These data show that minority faculty members were a comparatively small proportion of the total, and those numbers diminished still further when we considered these subgroups by rank. Black, Latino, Asian and multi-racial faculty were less likely to hold the rank of full professor relative to whites. In turn, whites typically had more years of experience as academics and longer periods of appointment at the University.

**Appendix Table 3. Representation of faculty by race and ethnicity**

	Latino	Black	Asian	White	Multi Racial	Non-Res Alien	Black + Latino	Black + Latino + Multi
Number of Faculty	22	41	68	741	8	24	63	71
Years since highest degree	18.5	18.5	17.3	24.2	13.3	10.0	18.5	17.9
Mean years at UVa	14.0	12.7	11.5	18.1	8.1	3.2	13.2	12.6
<i>Rank (Percent)</i>								
Assistant Professor	36.36	17.07	29.41	10.93	25.00	54.17	23.81	23.94
Associate Professor	27.27	53.66	25.00	29.82	50.00	29.17	44.44	45.07
Full Professor	36.36	29.27	45.59	59.24	25.00	16.67	31.75	30.99

### C. Alternative Regression Specifications

In this section, we present multivariate regression results that explore the sensitivity of the basic results presented in the body of the report to alternative specifications and consider the extent to which baseline results have changed over the years of observation. As a check on the robustness of the basic results, we consider three types of additional specifications which include a non-linear representation of experience, additional indicators for type of appointment, and more detailed specifications of discipline of specialization. We continue to conduct the multivariate analysis with salaries specified in logarithmic form. The rationale for this specification, which is also used in the studies at the University of Michigan and the University of British Columbia, is twofold: i) the log-linear models tend to do better in “fitting” the data than models in which salaries are presented in levels and ii) the logarithmic model is consistent with the “percentage increment” model of salary setting that tends to predominate in academics.

#### 1. Additional Covariates

Appendix Table 4A includes the main specifications for 2013 reported in the text along with additional specifications, beginning in Column (6) which includes additional covariates. Recall that the primary specification in Column (5) includes covariates for field, rank and experience, and shows a statistically significant -2.7% difference between the expected salaries for women relative to men. Column (6) allows for quadratic variation in experience. While there is a long literature in labor economics supporting this specification because earnings tend to increase at a decreasing rate with additional years of experience, those effects were not significant in these data. In the interest of parsimony and simplicity, we present the model without these quadratic effects (col. (5)) in the body of the text and note the robustness of gender effect to this alternative. Columns (7) – (8) add additional indicators for appointment status, including department chair, 12-month contract status and joint appointment status; these indicators are each positive and significant, though the estimated coefficient on the indicator variable for female is largely unchanged. In effect, these indicators for contract status are unrelated to gender.

In column (9), we add an indicator for holders of “endowed chairs” and “eminent scholars.” These appointments – broadly referred to as “chaired appointments” are defined by

the policies of the Provost.<sup>12</sup> Chaired appointments “may recognize a current member of the faculty or it may be associated with recruitment of a new faculty member; but, in all appointments, excellence should be evidenced by several years of outstanding performance based on national and international standards.” Including the indicator for a chaired appointment in column (9) leads to a reduction in the point estimate of the coefficient on the indicator variable for gender from -.026 to -.021. The point estimate in column (9) is not statistically distinguishable from the point estimates for the gender coefficient in columns (5) through (8) but is no longer statistically distinguishable from zero at the 10% significance level ( $p=0.11$ ). This variable is difficult to interpret because the number of available endowed chairs is small and the distribution of available chairs differs widely among schools, departments and areas of research across the University.

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<sup>12</sup> The University distinguishes these positions as follows (<http://provost.virginia.edu/appointment-endowed-and-eminant-scholars-chairs>):

*Endowed Chairs:* A named professorship established for scholars who are full or associate professors at the University of Virginia provided to supplement state-funded salary and to recognize excellence in a school or field of study.

*Eminent Scholars Chairs:* Named endowed professorships receiving support from the State Council of Higher Education’s Eminent Scholars Program.



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Appendix Table 4B repeats the analysis of Appendix Table 4A with more disaggregate definitions of fields of study. In particular, departments with more than 20 faculty members in the College of Arts and Sciences are distinguished separately. Such a specification would be preferred if the aggregated field groups combined fields with different structures of pay and different demographic representations. Finer field distinctions improve our measurement of faculty specialization, which may be correlated with both demographic group and salary. The cost, however, is the potential for over-fitting. When academic units become very small, it becomes more difficult to distinguish systematic gender differences. In any event, the differences between Appendix Tables 4A and 4B are modest.



#### D. Comparisons with Prior Years

Given the absence of a systematic history of salary studies at the University of Virginia, applying the same analysis to prior years provides a useful frame of reference. An important question is whether the basic salary structure in terms of relative rewards for rank and experience, as well as the observed difference related to gender, was different in 2013 than in the earlier years. Broadly comparable data for 2003, 2007, and 2012 are available to answer this question. However, changes such as the introduction of the Batten School between 2007 and 2012 and the absence of data on the salaries for administrative chairs imply that strict comparability is not possible.

Appendix Table 5 (columns 1-3) repeats baseline models from Appendix Table 4 (columns 4-6) for 2013 and includes the same specifications for 2012, 2007, and 2003. While it is broadly encouraging to note that the point estimate of the expected gender gap declined over the interval, the fairly large standard errors that accompany these point estimates diminish any chance of identifying a statistically significant change over this period.



Appendix Table 5. Multivariate logarithmic salary regressions, 2003, 2007, 2012, 2013

Explanatory Variables	2013			2012			2007			2003		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Female	-0.045 (0.0162)***	-0.027 (0.0134)**	-0.025 (0.0134)*	-0.056 (0.0161)***	-0.032 (0.0134)**	-0.030 (0.0134)**	-0.051 (0.0154)***	-0.043 (0.0129)***	-0.043 (0.0129)***	-0.077 (0.0159)***	-0.048 (0.0137)***	-0.045 (0.0137)***
Minority	-0.056 (0.0256)**	-0.015 (0.0212)	-0.015 (0.0212)	-0.040 (0.0254)	-0.003 (0.0211)	-0.003 (0.0210)	-0.020 (0.0244)	0.008 (0.0205)	0.008 (0.0205)	-0.028 (0.0291)	0.001 (0.0249)	0.002 (0.0249)
American citizen	0.014 (0.0204)	0.010 (0.0169)	0.011 (0.0169)	0.014 (0.0208)	0.006 (0.0172)	0.007 (0.0172)	0.039 (0.0195)**	0.020 (0.0164)	0.019 (0.0164)	0.045 (0.0210)**	0.032 (0.0180)*	0.032 (0.0180)*
Assoc. Prof. Indicator		0.101 (0.0196)***	0.127 (0.0240)***		0.096 (0.0189)***	0.131 (0.0227)***		0.109 (0.0172)***	0.118 (0.0218)***		0.107 (0.0178)***	0.134 (0.0211)***
Full Prof. Indicator		0.400 (0.0233)***	0.431 (0.0287)***		0.397 (0.0229)***	0.438 (0.0276)***		0.384 (0.0217)***	0.395 (0.0268)***		0.348 (0.0216)***	0.381 (0.0256)***
Assoc X Law		0.113 (0.0620)*	0.090 (0.0631)		0.133 (0.0589)**	0.106 (0.0595)*		0.143 (0.0588)**	0.152 (0.0591)**		0.095 (0.0584)	0.078 (0.0589)
Years since highest degree	0.018 (0.0009)***	0.009 (0.0009)***	0.005 (0.0029)*	0.018 (0.0009)***	0.009 (0.0009)***	0.005 (0.0028)*	0.019 (0.0009)***	0.010 (0.0009)***	0.005 (0.0027)*	0.021 (0.0009)***	0.012 (0.0010)***	0.006 (0.0028)**
Years at UVa	-0.008 (0.0010)***	-0.008 (0.0008)***	-0.008 (0.0022)***	-0.008 (0.0009)***	-0.007 (0.0008)***	-0.011 (0.0022)***	-0.007 (0.0009)***	-0.007 (0.0007)***	-0.003 (0.0021)	-0.008 (0.0010)***	-0.008 (0.0008)***	-0.008 (0.0023)***
Years since degree-squared			0.007 (0.0051)			0.007 (0.0052)			0.010 (0.0053)**			0.012 (0.0058)**
Years at UVA-squared			0.002 (0.0048)			0.008 (0.0050)			-0.010 (0.0052)*			0.001 (0.0060)
Math & Natural Sciences	0.136 (0.0244)***	0.108 (0.0203)***	0.106 (0.0203)***	0.134 (0.0240)***	0.106 (0.0200)***	0.102 (0.0199)***	0.120 (0.0219)***	0.110 (0.0185)***	0.112 (0.0185)***	0.088 (0.0224)***	0.079 (0.0192)***	0.076 (0.0193)***
Social Sciences	0.098 (0.0230)***	0.078 (0.0190)***	0.077 (0.0190)***	0.083 (0.0225)***	0.067 (0.0186)***	0.065 (0.0186)***	0.052 (0.0208)**	0.052 (0.0174)***	0.051 (0.0174)***	0.034 (0.0211)	0.034 (0.0181)*	0.030 (0.0181)*
Economics	0.511 (0.0432)***	0.484 (0.0357)***	0.482 (0.0357)***	0.499 (0.0424)***	0.471 (0.0352)***	0.466 (0.0352)***	0.408 (0.0412)***	0.398 (0.0346)***	0.397 (0.0345)***	0.374 (0.0415)***	0.338 (0.0356)***	0.333 (0.0356)***
Architecture	-0.016 (0.0395)	0.021 (0.0326)	0.021 (0.0326)	0.040 (0.0388)	0.077 (0.0322)**	0.073 (0.0321)**	0.019 (0.0358)	0.076 (0.0302)**	0.077 (0.0301)**	0.015 (0.0346)	0.064 (0.0297)**	0.065 (0.0296)**
Batten	0.526 (0.0749)***	0.495 (0.0621)***	0.482 (0.0624)***	0.568 (0.0666)***	0.540 (0.0555)***	0.518 (0.0558)***						
Commerce	0.669 (0.0343)***	0.668 (0.0283)***	0.668 (0.0283)***	0.702 (0.0339)***	0.717 (0.0281)***	0.716 (0.0280)***	0.558 (0.0329)***	0.568 (0.0276)***	0.573 (0.0277)***	0.455 (0.0316)***	0.447 (0.0270)***	0.445 (0.0270)***
Curry	0.049 (0.0313)	0.037 (0.0258)	0.035 (0.0258)	0.016 (0.0298)	0.024 (0.0247)	0.019 (0.0247)	-0.065 (0.0275)**	-0.030 (0.0232)	-0.029 (0.0231)	-0.069 (0.0275)**	-0.040 (0.0235)*	-0.041 (0.0235)*
Darden	0.793 (0.0323)***	0.763 (0.0267)***	0.759 (0.0268)***	0.835 (0.0319)***	0.813 (0.0264)***	0.805 (0.0265)***	0.731 (0.0303)***	0.719 (0.0254)***	0.721 (0.0254)***	0.663 (0.0305)***	0.639 (0.0261)***	0.635 (0.0261)***
Engineering	0.264 (0.0255)***	0.229 (0.0211)***	0.231 (0.0211)***	0.272 (0.0248)***	0.248 (0.0205)***	0.249 (0.0205)***	0.274 (0.0224)***	0.260 (0.0188)***	0.259 (0.0187)***	0.244 (0.0226)***	0.248 (0.0193)***	0.245 (0.0193)***
Law	0.823 (0.0304)***	0.694 (0.0272)***	0.688 (0.0274)***	0.871 (0.0301)***	0.746 (0.0271)***	0.735 (0.0273)***	0.769 (0.0291)***	0.655 (0.0265)***	0.653 (0.0267)***	0.723 (0.0292)***	0.633 (0.0271)***	0.622 (0.0274)***
Nursing	0.179 (0.0492)***	0.131 (0.0407)***	0.123 (0.0409)***	0.176 (0.0498)***	0.148 (0.0413)***	0.134 (0.0415)***	0.204 (0.0397)***	0.202 (0.0333)***	0.201 (0.0332)***	0.143 (0.0434)***	0.153 (0.0372)***	0.155 (0.0372)***
Constant	11.179 (0.0284)***	11.146 (0.0261)***	11.168 (0.0286)***	11.092 (0.0278)***	11.065 (0.0252)***	11.097 (0.0280)***	11.028 (0.0257)***	11.011 (0.0228)***	11.024 (0.0250)***	10.870 (0.0267)***	10.841 (0.0242)***	10.872 (0.0274)***
Observations	904	904	904	911	911	911	944	944	944	868	868	868
R-squared	0.712	0.805	0.806	0.741	0.823	0.825	0.736	0.815	0.816	0.726	0.801	0.802

We also explored in greater detail the finding that the gender gap is wider in the tenured ranks than at the assistant professor level. Appendix Table 6 presents estimates with the female indicator interacted with rank for each year. Although the gaps at the tenured levels were broadly persistent (even as there was year to year variation in point estimates), there was a striking narrowing of the gender gap at the assistant professor level from negative in sign and statistically significant to positive in sign and statistically significant.

**Appendix Table 6. Multivariate logarithmic salary regressions with interactions by rank, 2003, 2007, 2012, 2013**

	(1)	(2)	(3)	(4)
Explanatory Variables	2013	2012	2007	2003
Female x Asst. Prof.	0.027 (0.0300)	-0.009 (0.0286)	-0.052 (0.0250)**	-0.101 (0.0271)***
Female x Assoc. Prof.	-0.048 (0.0214)**	-0.044 (0.0212)**	-0.037 (0.0210)*	-0.012 (0.0216)
Female x Full Prof.	-0.034 (0.0201)*	-0.032 (0.0206)	-0.042 (0.0197)**	-0.052 (0.0215)**
Female x Law Assoc. Prof	0.027 (0.1207)	-0.003 (0.1168)	-0.003 (0.1139)	-0.011 (0.1118)
Assoc. Prof.	0.133 (0.0250)***	0.112 (0.0245)***	0.103 (0.0215)***	0.072 (0.0223)***
Full Prof.	0.426 (0.0275)***	0.408 (0.0271)***	0.379 (0.0247)***	0.325 (0.0249)***
Law Assoc. Prof	0.102 (0.0739)	0.133 (0.0688)*	0.145 (0.0701)**	0.100 (0.0693)
Years since highest degree	0.009 (0.0009)***	0.009 (0.0009)***	0.010 (0.0009)***	0.012 (0.0010)***
Years at UVa	-0.008 (0.0008)***	-0.007 (0.0008)***	-0.007 (0.0007)***	-0.008 (0.0008)***
Female x Years since highest degree				
Female x Years at UVa				
Minority	-0.016 (0.0212)	-0.004 (0.0212)	0.008 (0.0206)	0.003 (0.0250)
American citizen	0.011 (0.0169)	0.006 (0.0172)	0.020 (0.0165)	0.030 (0.0180)*
Math & Natural Sciences	0.106 (0.0203)***	0.106 (0.0200)***	0.110 (0.0185)***	0.077 (0.0192)***
Social Sciences	0.076 (0.0190)***	0.067 (0.0187)***	0.052 (0.0175)***	0.034 (0.0181)*
Economics	0.483 (0.0357)***	0.472 (0.0353)***	0.397 (0.0347)***	0.334 (0.0356)***
Architecture	0.024 (0.0326)	0.078 (0.0322)**	0.076 (0.0302)**	0.066 (0.0296)**
Batten	0.481 (0.0626)***	0.533 (0.0562)***		
Commerce	0.664 (0.0284)***	0.716 (0.0281)***	0.568 (0.0277)***	0.445 (0.0270)***
Curry	0.035 (0.0258)	0.024 (0.0247)	-0.030 (0.0232)	-0.039 (0.0235)*
Darden	0.762 (0.0267)***	0.814 (0.0265)***	0.719 (0.0254)***	0.640 (0.0261)***
Engineering	0.227 (0.0211)***	0.248 (0.0206)***	0.260 (0.0188)***	0.246 (0.0193)***
Law	0.692 (0.0272)***	0.746 (0.0272)***	0.655 (0.0266)***	0.632 (0.0270)***
Nursing	0.128 (0.0407)***	0.145 (0.0415)***	0.202 (0.0334)***	0.147 (0.0373)***
Constant	11.124 (0.0282)***	11.055 (0.0275)***	11.015 (0.0243)***	10.862 (0.0257)***
Observations	904	911	944	868
R-squared	0.806	0.823	0.815	0.803
Standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

## E. Distributions of Residuals and Influence Analysis

Beyond describing the baseline structure of salaries at the University, we considered other measures of the distribution of salary differences including the incidence of unusually high or low salaries and the extent to which such cases affected systematic differences by demographic group.

We asked whether the measured gender gap was attributable to a few particularly high (or low) values and the extent to which these extreme observations were distributed differently for men and women. Statistical methods can help us to determine if nearly all women earned a modest (but non-trivial) increment less than men, or if instead, men and women with similar appointments had similar compensation except in a few extraordinary cases where men received very high salaries and/or women received very low salaries.

Following Courant and Smith (2012), we investigated this question by estimating a model with the basic covariates from Appendix Table 4, column (5), but omitting the gender indicator.<sup>13</sup> This regression produced a “predicted” measure that we compared to each individuals’ observed salary. The difference reflected the “residual,” and positive residuals implied higher than predicted earnings while negative residuals indicated that actual earnings fell below the level predicted by the model. Although earlier regression results revealed that the average residuals for women were less than the average residuals for men, Appendix Table 7 shows a more detailed distribution of these residuals.

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<sup>13</sup> An alternative perspective on the distribution of residuals and the associated regression interpretation is to ask whether there are observations that have a particularly large effect on the estimated parameters. We identified so-called “influential observations” using the baseline regressions specification and calculate Cook's Distance (see supplemental table for exact specification) and, following the norms of the literature, drop any observation in which this metric is great than  $4/n$ . The proverbial “bottom line” is that while the point estimates do adjust slightly with the exclusion of the outliers, the results are qualitatively similar to the original specification leading to the conclusion that the basic results are fundamentally not changed by a small number of observations.

**Appendix Table 7. Regression-Adjusted Distribution of  
Unexplained Salary Variation, 2013**

	All Observations, 2013			Less than 20 years since Degree		
	Men	Women	All	Men	Women	All
Total N	644	260	904	376	207	583
<i>Salary residual &gt; 2 SD's above mean</i>						
Category N	32	4	36	18	3	21
Percent of Sex	4.97	1.54	3.98	4.79	1.45	3.60
<i>Salary residual 1-2 SD's above mean</i>						
Category N	72	25	97	35	21	56
Percent of Sex	11.18	9.62	10.73	9.31	10.14	9.61
<i>Salary residual 0.5-1 SD above mean</i>						
Category N	67	30	97	45	23	68
Percent of Sex	10.40	11.54	10.73	11.97	11.11	11.66
<i>Salary residual between mean and 0.5 SD above the mean</i>						
Category N	124	57	181	73	47	120
Percent of Sex	19.25	21.92	20.02	19.41	22.71	20.58
<i>Salary residual between mean and 0.5 SD below the mean</i>						
Category N	151	72	223	97	56	153
Percent of Sex	23.45	27.69	24.67	25.80	27.05	26.24
<i>Salary residual 0.5-1 SD below mean</i>						
Category N	99	54	153	58	36	94
Percent of Sex	15.37	20.77	16.92	15.43	17.39	16.12
<i>Salary residual 1-2 SD's below mean</i>						
Category N	82	17	99	40	17	57
Percent of Sex	12.73	6.54	10.95	10.64	8.21	9.78
<i>Salary resid. &gt; 2 SD's below mean</i>						
Category N	17	1	18	10	4	14
Percent of Sex	2.64	0.38	1.99	2.66	1.93	2.40

One initial observation is that the salaries of men were somewhat more widely dispersed than those for women. While 49.6% of women had salaries within one standard deviation of the median (+ or - 0.5) conditional on observed rank and field, only about 42.7% of men were within this range. Men were overrepresented in both tails – among those with large positive salary residuals and among those with large negative residuals. In the top tail – those with

salaries more than a standard deviation greater than what would be expected given rank and field – we find 16.5% of men in this range relative to 11.5% of women. In the bottom tail – those with salaries more than a standard deviation less than what would be expected given rank and field – we find 15.4% of men in this range relative to 6.9 % of women.

At the University of Virginia, the historical context of faculty hiring plays an important role in producing this pattern. Few women were hired in many disciplines before the 1990s. Their comparatively shorter average tenure at the University thus explains the gender difference in representation in the tails of the salary distribution. Salary variance was greater among those with more experience, and those with the greatest experience were disproportionately men. Specifically, 268 men on the faculty had more than 20 years of post-degree experience, relative to 53 women. Revisiting the analysis using data from only those faculty with less than 20 years of experience at the University, the gap between men and women in representation in the tails narrowed appreciably. A further implication of this result is that a policy focusing on cases with “big” residuals would focus a disproportionate amount of attention on the faculty, disproportionately men, with the longest terms of service at the University.

#### F. Reminder of the Limitations of this Analysis

While the conclusions and recommendations of the Faculty Salary Study need not be repeated in this Appendix, some of the limitations and assumptions of the empirical analysis merit emphasis. First, the multivariate regression framework used in this empirical analysis describes group differences in salaries once factors like field, rank and experience have been taken into consideration, but it does not offer an explanation for why such differences exist. Second, our estimates of the gender gap depend on important assumptions. Multivariate specifications that include measures like rank assume that the promotion process does not systematically favor men, women or particular racial groups. Our recommendations include a call to review this process and associated administrative practices to ensure that they are free of bias. Finally, small numbers of observations limit the capacity to identify group differences in salary setting in many circumstances. It is worth underscoring the importance of examining confidence intervals not just point estimates in assessing demographic group differences in salaries. In particular, the modest representation of racial and ethnic minorities makes it difficult to assess potential differences in salary determination for these groups, but does not lessen the importance of achieving equity in compensation.

## Appendix B: Charge to Task Force Members

October 31, 2012

Dear XXX,

The University of Virginia recognizes that equitable compensation contributes to the long-term objective of recruiting and retaining an outstanding faculty. For this reason, the Office of the Provost, in collaboration with the Office for Diversity and Equity, and Human Resources is establishing a faculty task force to conduct a quantitative analysis of faculty salaries at the University of Virginia.

I write to invite you to serve on this Faculty Salary Study Task Force. I am confident that your subject expertise, informed knowledge of institutional and departmental life, and fundamental commitment to the work of the committee will contribute to the success of this endeavor. Professor Sarah Turner, University Professor of Economics & Education, has agreed to serve as the study director and chair. The Faculty Salary Study Task Force would be expected to complete its work and present findings to me by August 30, 2013.

### **Background**

Starting in the late 1980's and continuing through to the 1990's, a series of recommendations by faculty committees broadly focused on matters of gender and racial climate offered recommendations that included a call to conduct salary equity studies. These included a 1992 salary gender equity statistical study which led to adjustments based on case review in a few selected schools, but the report was not broadly released. In 1999, the President's Taskforce on the Status of Women recommended that salary equity studies be conducted every five years, with gender as one among several categories of analysis. Earlier this fall, I invited Dr. Abigail Stewart, Sandra Schwartz Tangri Distinguished University Professor of Psychology and Women's Studies at the University of Michigan, to discuss best practices in salary equity studies in the higher education sector and their implementation at her institution. She met with a wide range of faculty, school deans and senior university leaders. We are presented with an important opportunity to take up once again the issue of equitable compensation so that the quantitative data may be rigorously and comprehensively examined.

### **Committee Charge and Responsibilities**

Because only some of the factors that are known to affect salary can be considered in a quantitative analysis, it is important to note that this committee will be only responsible for the measurement phase of the overall initiative to assess the extent of demographic differences in compensation.

Working with the committee chair and study director, the role of the Faculty Salary Study Task Force faculty is to:

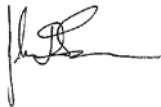
- Propose a methodology and the plan for data collection;

- Following the data acquisition and analyses, review the findings and advise the study director of questions or concerns;
- Review the draft final report and advise the study director and the Office of the Provost of any questions or concerns

Ms. Gertrude Fraser, Vice Provost for Faculty Recruitment and Retention, will coordinate activities and needed logistical support. Data support for the committee's work will be provided by Mr. George Stovall, Director, the Office of Institutional Studies and Assessment.

Please reply to Ms. Cindy Persinger, Executive Assistant to the Executive Vice President and Provost, [cdp6s@virginia.edu](mailto:cdp6s@virginia.edu), to confirm your ability to serve. Thank you for your willingness to contribute to this very important effort.

Sincerely,



John D. Simon  
Executive Vice President and Provost

JDS:cp

cc: Sarah Turner  
Gertrude Fraser  
Marcus Martin  
Susan Carkeek