Comparable Worth at Yale University: 
Anatomy of a Union Pay Equity Study

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Abstract

Responses from a survey of the job characteristics of 1272 members of the Local 34 bargaining unit were analyzed to determine the implicit pay policy followed by Yale University in assigning job titles to salary grades. Using multiple linear regression techniques, the authors found that Yale's implicit pay policy discriminates against women, and that the average woman in the Local 34 bargaining unit is underpaid by approximately $1,280 relative to the average man in the bargaining unit performing a similar job. The analysis also indicates that it is highly likely that Yale's implicit pay policy discriminates against non-white workers.

The article also explores the impact that the pay study had on the outcome of contract negotiations between Local 34 and Yale University and suggests several conclusions about when other unions might find it appropriate to use such a study in their bargaining strategy.
Introduction

Recent unionization efforts and contract disputes involving clerical workers have frequently included allegations of gender and race salary discrimination. The charge is made that female- and minority-dominated occupations are systematically underpaid relative to white, male occupations requiring equivalent levels of skill, training, experience, and responsibility. Many unions, including AFSCME, the Communications Workers of America, the International Union of Electrical Workers, the Service Employees International Union, the United Auto Workers, and the United Electrical Workers, have adopted pay equity as a goal in bargaining, membership education, and lobbying. (Amott, 1988:104) Notably, most efforts in this area have focused on the public sector where many clerical jobs are grouped and where political pressures have proved more effective in prompting employer action on pay equity.

While intuitively simple to understand -- and appealing as a rallying theme -- the concept of comparable worth can, in practice, be extremely difficult and expensive to quantify. Multiple linear regression techniques, drawing on data gathered through carefully designed instruments that survey job characteristics, have been the primary method of analysis where studies have been done. New York State's Pay Equity Study, which covered 100,000 state employees, is typical of this approach. There the Civil Service Employees Association (CSEA) and the State of New York negotiated funds to carry out a pay equity
study which found that predominately female jobs are compensated at a level two salary grades lower than male jobs with equivalent characteristics. (Steinberg, 1986:155)

This article reports on an analysis that represents a unique departure from the public-sector, joint management-labor pay equity study: one union's unilateral investigation of pay discrimination in a bargaining unit in the private sector. We believe that the investigation is a rare, if not unique, instance of a pay equity statistical study, with potentially broad implications for future such work in the private sector. Certainly, this article represents the first detailed publication of results from such a study.

In the Summer of 1987, Local 34, Federation of University Employees, Hotel Employees and Restaurant Employees International Union, decided to undertake a pay equity analysis of the compensation structure within their 2500 member bargaining unit. Comparable worth had been a major point of contention in the widely-publicized formation of the Local in 1984 and the subsequent ten-week strike against the University. As part of the first contract agreement, a special joint Union-University Committee was set up to explore the bargaining unit's pay system. Through this Committee, the Union pushed for a jointly-commissioned study which would perform a pay equity analysis, but the University steadfastly opposed such a study. With negotiations for their new contract scheduled to begin in the late Fall of 1987, the Local decided to fund such a study with its own resources. They believed that a study would support
the three years prior to the restructuring that resulted from the January 1988 contract settlement, Local 34's bargaining unit was divided into ten salary grades, separated by six percent increments. Each job in the bargaining unit was assigned a unique job title and each job title was placed into one of the ten salary grades.

Throughout the dispute about comparable worth between the Union and the University, the University maintained that job titles were placed into salary grades through the use of a "whole job" analysis, based on a list of nine compensable factors. It claimed that its system accurately rewarded each job according to its value to the University, and that the system was free from gender, race or other forms of invidious discrimination. By contrast, the Union maintained that the pay system was both irrational and discriminatory. It asserted that Yale was failing to accurately employ its nine compensable factors, yielding a system that was failing even on its own merits. Further, the Union argued that the placement of job titles into salary grades had produced a system that discriminated against women and minorities, as well as against employees who work in settings--such as the libraries -- with less faculty contact or greater amounts of contact with students and other members of the bargaining unit.

Local 34 also knew that within its bargaining unit there were discrepancies between the average annual salaries made by different race and gender groupings of its members(see Table 1). But the Union sought additional evidence, available through the
their hypothesis that Yale's pay system implicitly discriminated against women and minorities, and that objective statistical evidence confirming this hypothesis would strengthen their hand when negotiations began over proposals to restructure their job classification system.

To assist in the pay discrimination analysis, Local 34 hired the New Haven-based, independent consulting firm of Brody & Weiser. Brody & Weiser agreed to perform the analysis based on an agreement with the Union that the consulting firm's work would meet all the criteria of any independent, impartial statistical study. Results of the study would be provided, in confidence, to the Union, at which time the Union would be able to use the results as they saw fit.

This article will examine the results of that study, as well as the history of its use in the negotiation process. The discussion will lay out in detail the approach used in examining the Yale pay system, and will reflect on some of the particular difficulties and limits of performing such a study under these circumstances. It will also review how the study was used in internal organizing, press relations, and bargaining, seeking conclusions about how useful such studies are as a tool in adversarial labor relationships in non-profit, as well as public and for-profit institutions.

The Yale University Pay System

Yale University has for many years had a pay system in which salaries are based on two factors: seniority and salary grade. In
use of statistical regression techniques, about whether or not these discrepancies represented discriminatory pay differences between jobs with equivalent characteristics. In pursuit of such evidence, Local 34 initiated its pay equity survey and analysis.

**Data**

The Local 34 study is based on data gathered from a questionnaire circulated among all 2500 members of the Local 34 bargaining unit during the Fall 1986 and Spring 1987. Ninety-one questions in length, it was designed by the Union to obtain measures of relevant characteristics of the jobs performed by members of the bargaining unit. A self-reporting survey design was used to ensure the confidentiality of the job incumbents' responses. Self-reporting surveys have been shown to be a reliable method of gathering accurate information on job characteristics (Dawson and Weiss, 1973:188; Madden et al, 1964:10; Steinberg et al, 1986:19). Due to time and resource constraints on the part of Local 34, survey question reliability was not tested. However, the survey instrument was closely modeled on the New York State Pay Equity Study questionnaire, which was extensively tested for reliability(Steinberg, et al, 1986:78-79).

It is important to note here that the survey did not cover a large part of the Yale workforce, including management, professional, service and maintenance workers. Because the study was a unilateral effort by Local 34 -- in the context of an adversarial labor relationship -- it was not feasible to gain
access to this broader range of job types. In fact, Yale University refused to co-sponsor a study and would not allow Local 34 to survey employees outside their bargaining unit. By focusing on Local 34, the analysis was limited to a population of mostly female-dominated jobs. Many job types classically used in this type of study -- such as truck drivers or maintenance workers -- are not included in the study. This represents a weakness in the methodology for calculating gender discrimination within Yale's entire salary system, a weakness that very likely leads to underestimation of any existing discrimination and reduces the scope of this analysis from the level of a comprehensive comparable worth investigation. This point will be discussed in detail below in the section describing the results of the data analysis.

Another limitation of the study derives from the fact that the Union designed and administered the survey prior to hiring the consulting firm of Brody & Weiser. The study design was thorough and careful. But without the participation of the consulting firm from the beginning, it was impossible for the design process to fully anticipate the data needs of the subsequent pay equity statistical analysis. Thus, the design of the analysis was limited in certain respects by the data set.

Approximately 1300 surveys were returned. The returned surveys were coded by members of Local 34, and checked for completeness and consistency. Respondent self-reporting of job title codes was verified by cross-checking with available University records. In all, 1272 surveys were considered
acceptable -- just over fifty percent of the bargaining unit--
and formed the basis for the statistical analysis. The hard data
was then keypunched by a professional data management firm. The
resulting computer-based data was checked by Brody & Weiser,
which found an error rate of less than one-tenth of one percent.

While the just over fifty percent response rate was less than
optimal, the response population was matched against Yale's
records for the entire bargaining unit on gender, ethnicity, and
labor grade, and was found to be almost identical (see Table 2).

The primary unit of analysis employed in the study was the
job title, rather than the individual employee. This approach is
taken because comparable worth research is focused on the job
content characteristics of job titles, rather than the unique job
content features of individuals' jobs within a title (Steinberg,
et al, 1986:24-25). The investigation is designed to reveal those
characteristics of different jobs within a pay system that are
rewarded or penalized, rather than to describe what is happening
to particular individuals in the system.

To best describe the job content of job titles with the
Local 34 bargaining unit, individual survey responses were
aggregated by job title to produce mean scores for each job title
in the survey. This averages actual variations in job content of
positions within titles, producing a description of the average
or typical content of each job title (Steinberg, 1986:19).

Altogether, there are 179 job titles in the survey database,
which account for 74 percent of the 242 active job titles in
Local 34's bargaining unit. This high coverage rate ensured a
broad, inclusive range of job types would be compared in the regression analysis. Many reporting titles had only one or two respondents, however, arguably reducing the accuracy of the resulting description of job content characteristics for those titles. To mitigate the impact on our statistical analysis, we performed all multiple regressions with a case weighting technique, the statistically appropriate method for eliminating bias associated with cases of varying sizes.

The central goal of the analysis was to develop a multiple linear regression equation that would predict the existing placement of job titles within the bargaining unit's ten salary grades. The dependent variable in the regression equations is salary grade. The forty independent variables employed are a range of variables which describe each job title's demands and responsibilities, and which provide a profile of each job title's demographic characteristics, reporting relationships, educational achievement levels, and work settings. All the variables except four were derived from the survey instrument. The four exceptions -- the dummy variables which describe Yale's required level of education for a given job title -- were created from data publicly available from Yale University.

Only 37 of the 105 variables coded from the survey's 91 questions were used in the regression analysis -- 36 independent variables and the dependent. Many of the variables coded open-ended questions and were unusable in the analysis. Others concerned topics that were irrelevant to the hypotheses that were being tested. Finally, the questionnaire asked a number of
questions that were extremely similar and which had highly correlated responses. We employed only one of each of these pairs.

The Models

Two models of the Yale University pay system were developed and examined in the course of the analysis. The two models were labeled "Yale Model" and "Local 34 Model". The Yale Model was based on the nine compensable factors that Yale has stated that it uses in assigning job titles to labor grades. These factors are Knowledge and Skills Required, Education Required, Experience Required, Complexity, Contacts, Independence and Decisionmaking, Impact, Planning, and Supervision.\(^7\) Twenty nine variables developed from the questionnaire data were used as proxies for Yale's nine compensable factors. These variables were used to measure the extent to which the Yale factors were significant predictors of the explicit pay policy. The twenty nine variables are defined in Table 3.

The twenty-nine variables were chosen to represent Yale's nine factors based on face validity. This was a methodological limitation forced on Brody & Weiser by its entry into the study process after the design and implementation of the survey instrument. However, even had Brody & Weiser been able to design questions for the survey, the method would have still been compromised by Yale University's lack of cooperation in the design stage. This is a limitation of carrying out such a study in an adversarial context.
In choosing variables to fit Yale's nine factors, we studied Yale's definitions for each factor and chose variables which provided information which fit within each definition. For example, Yale's factor "Planning" is defined: "This factor addresses the kind and the extent of planning required to meet the job objectives. It considers prioritizing, planning day-to-day activities and routines, as well as long range plans." We chose the variables "Plan" and "Budget" as the best available proxies. Plan is defined as the "amount of responsibility for planning and scheduling work." Budget is defined as the "amount of responsibility for developing a budget for the department." (See Table 3)

The Local 34 Model included the twenty nine variables used in the Yale Model, plus eleven additional variables that were intended to capture additional factors Local 34 believed to be important, but non-explicit elements of Yale's pay policy. These additional factors included measures of ethnicity, gender, work setting, educational attainment and reporting relationships. The additional variables are defined in Table 4.

Our working hypothesis was that the Local 34 Model would be a superior predictor of Yale's pay policy, and that certain variables that Yale denies influence their compensation structure -- such as gender and race -- would prove to be statistically significant and of practical importance.

Results

The regression equation obtained for the Yale Model is
detailed in Table 5. The equation has a reasonable level of explanatory power (Adjusted R-squared equals 67.3%) and is statistically significant. In brief, the equation implies that Yale's pay policy does draw upon some of the nine factors, particularly Education Required, for which three of the four variables proved to be statistically significant at the 5 percent level. Supervision, Contacts, Impact and Complexity each had one variable that was statistically significant at the 5 percent level. However, certain factors Yale claims to compensate seem not to be significant in the pay policy, including Independence and Decisionmaking, Experience Required, Knowledge and Skills Required and Planning.

The most heavily weighted of the nine factors in the Yale Model is Education Required -- the degree of education required for placement in a job title. In particular, whether or not a job requires a college degree or technical education has a large impact on the placement of any job title within the hierarchy of ten salary grades. We also found that those job titles that have no education requirement are positively correlated with an increase in labor grade. In other words, if two jobs are identical in all respects, except that one job requires an elementary school education, and the other job has no education requirement, the job with no education requirement will on average receive a higher salary grade. We believe this is explained by the existence of jobs that require technical skills which are not learned in school, such as carpentry, but which are highly compensated.9
A second important predictor is the proxy for Complexity called SAMEJOB -- a measure of how often a job's routines are the same from day to day. As would be expected, compensation appears to be inversely correlated with the level of routine involved in a given job.

The Yale Model regression found four other components of Yale's compensation system to be statistically significant at the 5 percent level: the amount of responsibility for training other employees, a proxy for the Yale Factor "Supervision"; the level of impact in terms of cost, delay or inconvenience a mistake on the job could have on other persons, a proxy for the Yale Factor "Impact"; and the level of student contact required in the job, a proxy for the Yale Factor "Contact". The levels of planning, training and potential impact all vary directly with salary grade, while the level of student contact varies inversely. This last result tells us that Yale downgrades jobs with higher levels of student contact. That is, given two individuals whose jobs are similar in all respects but their level of contact with students, the Yale Model places the individual with more student contact into a lower salary grade. Notably, this result corresponds with a hypothesis maintained by Union representatives prior to the study.10

While the Yale Model regression suggests that as many as six of its compensation factors may be significant predictors of a job title's salary grade, it also indicates three others--Independence and Decisionmaking, Experience Required, and Knowledge and Skills Required -- have little or no weight in
placing job titles into salary grades.

It is worth noting here that a finding that Yale's process of placing job titles into salary grades may not involve the use of all nine of its explicit factors may not comprise a serious criticism of Yale's job grading process. Many job classification schemes exist which only use a small number of factors. For example, the Hay Guide Chart Profile Method evaluates job content in terms of just four factors and several sub-factors (Bellak, 1982). Therefore, it may not be surprising to find that only a subset of Yale's factors are actually used in the job grading process. This fact does not, however, bear on the finding that other factors -- which Yale claims do not enter into its calculus, such as race or gender -- turn up as significant predictors of job title placement within salary grades.

The second phase of the study involved testing the Local 34 Model, which includes the same twenty-nine variables in the Yale Model, plus eleven other measures that the Union hypothesized would be significant predictors of job title placement within the pay structure (see Table 6). The authors found that the regression equation obtained for the Local 34 Model has significantly more explanatory value than that derived for the Yale Model (Adjusted R-Squared equals 74.3%). More importantly, the additional variables are statistically significant as a group, and several are highly significant individually. In brief, this implies that Local 34 is correct in its hypothesis that there are additional factors beyond those Yale claims are considered in its pay policy.
Most importantly, gender is found to be a statistically significant predictor of the placement of job titles into labor grades, and the coefficient of the gender variable clearly indicates that Yale's pay policy discriminates against women in the Local 34 bargaining unit. At a level of statistical significance of 1 percent, the Local 34 Model indicates that a woman is graded 1.248 labor grades lower than a man performing a job with equivalent characteristics. The results also suggest that non-white employees in the bargaining unit suffer pay discrimination, although the finding is not as robust (statistically significant at 10 percent level). The measures of educational attainment and work settings are also statistically significant. Particularly noteworthy is the finding concerning Yale library workers. As hypothesized by the Union, the regression suggests that Yale library workers who perform jobs that are in all other ways equivalent to jobs in other work settings are paid less.

Overall, the Local 34 Model reveals a somewhat different—and more troubling—perspective on Yale's pay policy than does the Yale Model. Of Yale's nine compensable factors only Complexity, Experience Required, and Knowledge and Skills Required show evidence of being significant predictors of the placement of job titles in salary grades. None of the proxy variables for the other six factors—Education Required, Contacts, Independence and Decisionmaking, Impact, Planning, and Supervision—are significant at the 5 percent level. Additionally, individual variables that describe Personal
Characteristics, Work Setting, and Educational Achievement—factors that Yale denies affect compensation decisions—weighted heavily in the picture of Yale's pay policy, as portrayed by the Local 34 Model regression.

In summary, the Local 34 Model is a significantly better model of Yale's pay policy, and uncovers serious discrimination in the Yale pay system. The study finds robust and significant evidence of discrimination in Yale University's against women within the bargaining unit. The study finds further that discrimination against non-white members of the bargaining unit is very likely part of the Yale University implicit pay policy as well.

The coefficients derived in the Local 34 Model regression are large enough to be of practical significance as well as statistical significance. For the average woman in the Local 34 bargaining unit, the gender discrimination inherent in Yale's implicit pay policy means that she is underpaid by approximately $1,280 relative to men in the bargaining unit performing work with equivalent characteristics. The average non-white worker is underpaid by approximately $700. The average employee who works in a library setting is underpaid by $980. These are significant amounts in a bargaining unit in which the average salary, prior to the most recent settlement, was $16,471.

The equations developed for the two models were tested for the impacts of multi-collinearity. We looked for high correlations between variables in different groups; e.g. between any of the five independent variables that model "Complexity" and
the five independent variables that model "Independence and Decisionmaking." High correlations between the variables within "Complexity", on the other hand, were not of concern to our results.

In general, there was an extremely low level of correlation between all variables used in the two models. A correlation matrix prepared for the 40 independent variables revealed only 15 instances of correlations -- between variable in different groups -- higher than 40 percent. Additionally, there were only seven instances of correlations above 50 percent and two instances of correlations above 60 percent. Notably, the two instances of correlations above 60 percent are easily explainable and do not impact on the important findings of the analysis.¹³

Perhaps most importantly, there were no correlations above 40 percent involving any of the three variables that formed the core of the study's finding: Gender, Ethnicity, or Setlib, the indicator of whether a job title involved work in a library setting. Thus, on the whole, the analysis shows that multicollinearity is not a significant concern for the study's major findings.

Finally, it is important to reiterate the fact that the study results are based on a subset of Yale employees that probably yields an underestimate of the actual degree of pay discrimination at Yale. The Local 34 bargaining unit is 84 percent female. In the analysis of the New York State system, Steinberg (1987) found that discrimination within female-dominated units -- such as the Local 34 bargaining unit--
was less severe than discrimination between female-dominated units and the whole organization. Based on this finding, it is likely that pay discrimination against women within the female-dominated bargaining unit is less than such discrimination within the wage structure for all jobs at Yale -- clerical, technical, management, professional, maintenance and service. In other words, the relative discrimination between the male-dominated jobs and the female-dominated jobs within the Local 34 bargaining unit is very likely less than the discrimination between the males dominated jobs across the University and the female-dominated jobs within Local 34.14

Role of the Study in Negotiations

Pay equity studies are highly technical and difficult for the lay person to understand. In addition, statistical analysis is an inexact science in which controversial results are notoriously subject to contentious challenge. Despite these obstacles, Local 34 determined to unilaterally pursue a pay equity regression analysis as a tool to strengthen its hand in negotiations with Yale University. How did Local 34 plan to make use of the the study in the bargaining process? What impacts did the study in fact have? How did the study affect internal member organizing, success with the press, and bargaining outcomes with the University? This section seeks to develop preliminary answers to these questions based on the authors' experience with the study and interviews with members of the Union's negotiating team.
Local 34's organizing committee had several goals when they made the decision to undertake a job description survey of their membership and to hire the independent consulting firm of Brody & Weiser to analyze the data. First, and foremost, the Union sought proof of the race- and gender-based pay inequities they believed existed. Contentions about discrimination had been central to the organizing campaign and subsequent strike that led up to their first contract in early 1985. But the first contract had not resolved the pay equity question. By the terms of that contract, Yale University and the Union had agreed to confront the pay equity issue in the next contract negotiation three years hence. To prepare for that part of the bargaining, Local 34 believed that it needed more than accusations and descriptive anecdotes about pay inequities. In a community where academic arguments are the norm and where the employer has a strongly positive reputation, the Union decided that it must have independent confirmation of its pay discrimination claims in order to attain its goals in the negotiations.

Second, Local 34 hoped that the pay equity analysis would serve as a prescriptive tool. They hoped that the data gathered from job description surveys would not only provide a description of significant predictors of Yale's pay policy, but would also have the predictive power required to determine how the system should be restructured to eliminate discrimination and to fairly reward a full range of appropriate job characteristics.

Looking back at the study and the negotiations many months after the successful completion of a new contract, it appears
that both these goals were realized to some degree, although not always in the expected manner. Further, the study had other unexpected effects on the Union and the shape of the entire bargaining process. In the end, the study appears to have played a fundamental part in the University's almost complete acceptance of Local 34's pay system restructuring plan.\(^{15}\)

As part of the settlement, Yale approved a wholesale revision of the compensable factors on which the system is based, including the addition of stress, research and reference skills, and exposure to safety risks as compensable factors. The two lowest grades of the ten grade system were eliminated and more than 98 percent of the employees in the bargaining unit were upgraded. The number of employees in the top third of the system increased from twenty seven to nearly five hundred and the skewed distribution of minority employees in the system -- formerly 42 percent of the lowest grade and zero percent of the highest -- was drastically reduced. Salary increases under the settlement ranged from 24 percent to 35 percent over four years. Finally, new job descriptions were created, based on employees' responses to an eighteen page survey implemented in January 1989, and a new audit and appeals procedure, including the right to arbitrate unresolved disputes, was put into place.

The Union's first goal of increasing the legitimacy of its pay equity claims through the study was almost fully realized. After months of work gathering and analyzing the data, Local 34 received an independent, "scientific" confirmation of its assertions that the Yale pay system discriminated against women
and minorities. The strong statistical result -- announced near the beginning of active negotiations with the University--helped the Union take the offensive on the comparable worth issue, a position it never lost.

When the Union presented its proposal for changing the pay system, they were able to reference particular study results as the basis for moving each job title to a new position. If Local 34 had not had such rigorous support for its plan, the University would very likely not have taken the proposal seriously. Instead, because the Union had an analytic basis for its restructuring proposals, it was able to control the bargaining over the pay system. The University had nothing of equal validity to use in arguing for a competing plan.

As serious negotiations got under way, the University found itself backed into a corner by the Union's findings. Yale's opening position was that the pay system was fair and that it should not be changed. Yale denied the results of the study, but was unable to present a serious rebuttal. Its negotiators' only substantive mode of attack on the findings was to accuse the Union of biasing the study results through systematic manipulation of the data-gathering process.16 But this was an inherently weak position; first, because it is difficult, if not impossible, to manipulate 1272 individuals into self-reporting 100 questions in a manner that will yield a single, systemic bias in a complex regression analysis; and, second, because the nature and magnitude of the findings were similar to results from other comparable worth studies(Steinberg, 1987; Rothchild, 1985).
Without an effective rebuttal, the University was unable to assert that its pay system was not flawed.

In fact, in the final days of negotiation the University brought an alternative restructuring proposal to the bargaining table -- its only counteroffer during the negotiations. Upon close examination, the Union determined that the plan was based on the same assumptions that shaped the Local 34 plan -- but was less expensive and less comprehensive. The University had taken Local 34's plan and had simply moved the same job titles lesser distances; e.g. one salary grade instead of three. Because Yale's plan depended on the Union's assumptions, the University was in a weak position to bargain when the Union challenged the particulars of its plan.

In the end, the University accepted the Union's plan with only minor changes. Of the 230 titles that the Union had proposed upgrading in its opening proposal, the University ultimately, in the final settlement, agreed to upgrade 223. The seven titles that were not moved involved less than 70 employees, and 40 of those employees have since been upgraded through post-contract negotiations. Of the total group of jobs in the bargaining unit, only the handful of predominately male technical titles were not upgraded -- a necessary step to ensure relative improvement by the predominately female titles.

The Union negotiators point to the single University counteroffer as further proof of the effectiveness of the study in boosting their strength at the bargaining table. They cite the unusually low level of give and take as the result of the fact
that Yale was unprepared to counter the quality and detail of the information that the Union brought to the table. As a result, Yale was forced into a reactive posture and was ultimately overwhelmed.

The study also helped improve the Union's position in the critical battle for public opinion. The study was a rigorous statistical analysis prepared by an independent consulting firm, and, as such, represented a substantial departure from the usual array of press materials presented by a union. The study results were presented in a news conference that yielded prominent coverage in local papers. The results were reported in a booklet circulated to the entire University community. And when the strike threat grew and out-of-town reporters began to cover the story, the study gave Local 34 a concise but authoritative way to frame the issue to outsiders.

The study was also beneficial to the Union's internal organizing process. First, it was important in convincing the Union's own membership of the validity of the pay discrimination claims -- an unexpected and, in retrospect, highly significant result. The study results empowered the clerical and technical workers to argue the pay equity issue in a work environment where debate is characterized by a high degree of academic rigor. Although the details of the pay equity issue remained difficult for the average employee to understand and delineate in argument, the statistical proof provided an easy and authoritative reference.

Second, it helped the Union to begin to build interest in--
and focus on -- the comparable worth issue more than a year before negotiations were to begin. The Union circulated the questionnaire, providing an opportunity for organizers to reach out to everyone in the bargaining unit. By meeting with each member of the unit individually and explaining the questionnaire, the Union was able to raise consciousness about the comparable worth issue extremely early in the campaign.

The individualized administration by union staff and rank-and-file personnel -- where the purpose of the study could be explained and confidentiality assured -- also generated a high degree of confidence in the results among both union and non-union members of the bargaining unit. This method ensured that the respondents felt that the questionnaire would accurately reflect their concerns. It also provided reassurance that the results would not be improperly used by management to evaluate individual job performance. As discussed in more detail below, member confidence in the job survey is critical to gaining later support for the differential pay increases required in a pay-equity settlement.

While the benefits of union administration of the survey were significant, this approach also created a credibility problem. The University focused much of its criticism on this methodology, claiming again and again that the Union had tampered with the results.18 Although the University's criticism was ultimately ineffective in blunting the impact of the study, it certainly raised an important methodological issue for future union-initiated studies: Is there a way to gain the benefits of
union survey administration without risking damaging charges of biasing study results?

By contrast to these successes, the study was a disappointment to the Union as a prescriptive tool. The Local had hoped that the study's statistical methods would yield a quick, inexpensive prediction of how each job title should be moved within the salary structure to create a new system that eliminated race and gender discrimination and other inequities. But in practice, the predictive capacity of the Local 34 Model regression was not sharp enough to yield such a one-step restructuring plan. The study results were able to provide a listing of -- and description of the general magnitude of -- the key problem areas in Yale's salary structure. It delineated the race and gender discrimination. It confirmed that library workers were undercompensated. It showed that certain types of skills and responsibilities, such as independence and decision-making, were not being adequately accounted for in the compensation scheme. In this way, the study helped the Union to simplify the process of developing a restructuring scheme by focusing and narrowing their goals to cover the problems highlighted by the results.

This information was used to determine which job titles should be moved upwards the largest number of grades. For example, job titles with large concentrations of library workers, workers with extensive contacts with students, or minority workers were selected for the largest upgrades based on the regression results that had shown strong evidence of inequitable pay for these titles. Similarly, the study results informed the
large relative increases for predominately female job titles.

However, the process of developing the new structure of salary grades and job titles was still time-consuming and intellectually demanding. Despite the assistance provided by the study results, the Union's Bargaining Committee had to engage in a significant amount of additional analysis and discussion to develop the new pay system proposal. While Local 34 was able to handle the time commitment and complexity of managing this process under the pressure of ongoing negotiations, other unions considering a study must weigh carefully whether it is feasible within their bargaining context.

Although the study did not generate a new structure automatically, it was helpful in additional ways that surpassed its direct analytic utility. For example, the study results enabled the Union to develop a new pay system with much greater consensus among its members than might otherwise have been possible. Because pay equity corrections require differential pay increases within a bargaining unit, they can cause jealousy and dissension within the membership. The proposed pay system that Local 34 took to the bargaining table demanded upgrades ranging from zero to four grades -- a wide variation. Thus, higher paid workers were asked to bargain and perhaps strike to make gains for their underpaid peers. By providing a rational foundation for the structure of the new pay system, the Bargaining Committee believes that the Study helped the Union avoid infighting and dissension.

The early and thorough participation of the Union members in
the study process also probably reduced dissent. Local 34 has encountered very few complaints about the new pay system now being put into place. By contrast, Yale's union of service and maintenance workers -- which won a similar restructuring plan without going through the prolonged study process -- has suffered greater resistance from its membership than Local 34.21

Conclusions

Performing a comparable worth statistical study requires a sizeable commitment of time, money, and effort. The decision to undertake the study should be made well before bargaining begins -- probably a year or more. Survey design, survey administration, data preparation, and data analysis all take considerable time and expense. Local 34 created a special committee that supervised the entire study and performed parts of the study. Such a committee is often required because the study process requires continual attention.

The study prepared for Local 34 by Brody & Weiser was not prohibitively expensive, but was none-the-less a major financial commitment. The Union was able to keep its costs down by working closely with the consulting firm and performing the portions of the study that it could.22 Despite this, a study comparable to the one described here would require a substantial financial commitment for any small to mid-sized union local, probably in the range of $12,000 to $25,000, if a professional consulting firm is utilized. Thus, it must be carefully evaluated as one component of a comprehensive bargaining strategy, and pursued
only where pay inequity is perceived as pervasive and economically significant, and when there is a broad consensus that comparable worth is among the critical issues of concern to the membership.

This last point is particularly critical. The pay equity issue is complicated, and its diagnosis and correction usually require highly technical processes that a local's membership and the employer may not fully comprehend. This can complicate the process of organizing around the issue. As a result, developing comparable worth as a central organizing theme -- and pursuing a study as a means to win on the issue -- demands deep support from the membership. This support must spring from a deep feeling of inequity about the pay system which goes beyond discontent about general pay levels. One of the primary reasons that the Hotel and Restaurant Workers were successful in organizing Yale's clerical and technical workers was employee anger about the perceived insensitivity and irrationality that characterized Yale's grading of different jobs. This concern made a comparable worth campaign sensible as a strategic choice. Had this anger been lacking, it would probably have been easier and less risky to simply seek across-the-board increases.

Without a strong consensus among the membership about the importance of comparable worth, such a campaign can stumble on the complexity of actually preparing for and engaging in bargaining on the issue. In particular, the requirement that some job titles receive larger increases than others in any pay equity settlement can create disharmony in the ranks if the
understanding and interest in comparable worth is not at a high level.

In addition to the organizing pitfalls involved with focusing a campaign on pay equity, unions also must beware of a further danger: managements may seek to resolve pay inequities by bringing some jobs down in pay rather than bringing underpaid jobs up. For example, the New York State pay equity study found levels of discrimination similar to those found at Yale.23 But unlike at Yale, the final settlement involved leveling down of certain male-dominated jobs.24 Thus, unions must develop a strategy that takes into account this eventuality, and they must determine before embarking on a pay equity campaign whether they have the organizational strength to fend off such a management counter-strategy. In this case, Local 34's success in organizing on the pay equity issue must be attributed to its strength as a union, as much as to the power of its analysis.

Finally, if a union undertakes a study similar to the one described here, two structural factors should be considered at the outset. First, the study should cover as wide a group of employees as possible. As noted above, the Local 34 study covered a group of jobs that were primarily female-dominated, probably leading to an underestimate of discrimination. To gain an accurate assessment of pay inequities, a survey must include service, maintenance, management, and professional jobs. Obviously, this may be difficult to accomplish where a unilateral study is performed. Naturally suspicious of such a study, employers are unlikely to allow a survey of their management and
professional staff. However, these are just the jobs that it is most important to compare against traditionally female-dominated jobs. Without including such male-dominated jobs, a study could arrive at a result that would incorrectly indicate that no discrimination existed.

Second, if the study is to be done with an outside consultant, collaboration with the consultant should start at the beginning of the process. Local 34 designed and administered its survey before contracting with its consultants. This weakened the study's impact, because the survey was not geared to fit all the demands of the statistical analysis that the Union desired. The consultants had to create solutions to avoidable problems—after the fact—adding unnecessary time and expense to the project.

In deciding to work with a consulting firm, a union should consider not just expense, but also experience with and sensitivity to union concerns, and willingness to share expertise. In preparing the Local 34 study, the Brody & Weiser consultants met regularly with the Union study team. The progress of the study was shared candidly, and the Union participants played a major role in deciding which avenues of investigation to pursue. This close working relationship enabled the Union study team to fully grasp the important details of the methodology, and to defend the study intelligently at the bargaining table.

In closing, it can be said that pay equity studies such as the one described above are powerful tools. When they work well, they can provide devastating evidence of discrimination within a
pay system. However, like most tools, they must be used properly, or they can create an expensive disaster. Our work indicates that as a prerequisite for the effective use of this type of study, a union should encounter five conditions: (1) clear evidence of pervasive discrimination; (2) strong membership support for a fight against pay discrimination; (3) the time necessary to perform the organizing and analysis; (4) a willingness on the part of the union leadership to commit time, money and staff resources to the study process; and (5) the bargaining strength needed to gain employer acceptance of a new non-discriminatory pay system. If these conditions exist, a pay equity study should be considered as a potentially invaluable aid to negotiating a more equitable pay system.
<table>
<thead>
<tr>
<th>Race and Gender Group</th>
<th>Average Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-white males</td>
<td>$15,999</td>
</tr>
<tr>
<td>Non-white females</td>
<td>$16,151</td>
</tr>
<tr>
<td>White females</td>
<td>$16,295</td>
</tr>
<tr>
<td>White males</td>
<td>$17,190</td>
</tr>
</tbody>
</table>
Table 2. Comparison of the Distribution of the Survey Sample with the Actual Population on Key Indices

<table>
<thead>
<tr>
<th>Labor Grade</th>
<th>Sample Freq.</th>
<th>Population Freq.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(%)</td>
<td>(%)</td>
</tr>
<tr>
<td>3</td>
<td>3.5</td>
<td>4.1</td>
</tr>
<tr>
<td>4</td>
<td>5.7</td>
<td>4.8</td>
</tr>
<tr>
<td>5</td>
<td>15.4</td>
<td>15.3</td>
</tr>
<tr>
<td>6</td>
<td>14.3</td>
<td>13.0</td>
</tr>
<tr>
<td>7</td>
<td>25.6</td>
<td>23.0</td>
</tr>
<tr>
<td>8</td>
<td>17.6</td>
<td>19.3</td>
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<tr>
<td>9</td>
<td>10.5</td>
<td>11.3</td>
</tr>
<tr>
<td>10</td>
<td>6.6</td>
<td>8.0</td>
</tr>
<tr>
<td>11</td>
<td>0.5</td>
<td>0.8</td>
</tr>
<tr>
<td>12</td>
<td>0.2</td>
<td>0.3</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Sample Freq.</th>
<th>Population Freq.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(%)</td>
<td>(%)</td>
</tr>
<tr>
<td>Male</td>
<td>13.0</td>
<td>15.7</td>
</tr>
<tr>
<td>Female</td>
<td>86.5</td>
<td>84.3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Sample Freq.</th>
<th>Population Freq.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(%)</td>
<td>(%)</td>
</tr>
<tr>
<td>White</td>
<td>82.6</td>
<td>81.6</td>
</tr>
<tr>
<td>Non-White</td>
<td>16.1</td>
<td>18.3</td>
</tr>
</tbody>
</table>
Table 3. Independent Variables used in the Yale Model

**EDUCATION REQUIRED**

NOREQ: Dummy for no educational requirement  
HSREQ: Dummy for high school requirement  
TECHREQ: Dummy for technical education requirement  
COLLREQ: Dummy for college graduation requirement

**EXPERIENCE REQUIRED, KNOWLEDGE AND SKILLS REQUIRED**

YRSYALE: Average number of years worked at Yale.  
YRSLABOR: Average number of years in the labor force.

**COMPLEXITY**

WRITE: Amount of responsibility for original writing and/or editing, including correspondence.  
SPEND: Amount of responsibility for spending or allocating department or project funds.  
SAMEJOB: How often this job's routines are the same from one day to the next.  
TOLDTODD: How often job title respondents are told specific tasks to perform.  
RESEARCH: Amount of responsibility for researching and analyzing information.

**CONTACTS**

STUDCTCT: How much contact with students the job involves.  
WORKCTCT: How much contact with workers from other departments or work units.  
FACCTCT: How much contact with faculty.  
SUPCTCT: How much contact with supervisors from other departments or work units.  
PATCTCT: How much contact with patients.

**INDEPENDENCE AND DECISIONMAKING**

PROTOCOL: Amount of responsibility for creation, implementation, and maintenance of work systems (i.e., files, protocols, routines.)  
POLICY: Amount of responsibility for interpretation or explanation of department or University policy.  
RUN: Amount of responsibility for running the department in the absence of the supervisor.  
QUICKLY: How much freedom there is to decide how quickly to do work.  
TASKTDAY: How much freedom there is to decide how to do work from day to day.
IMPACT

MSTKREP: How much a mistake could harm the reputation of the supervisor or the department.
MSTKCOST: How much a mistake could seriously inconvenience, delay or cost another person.
MSTKHRM: How much a mistake could harm the health or safety of another person.
CONFIDE: Amount of responsibility for confidential matters.

PLANNING

PLAN: Amount of responsibility for planning and scheduling work.
BUDGET: Amount of responsibility for developing a budget for the department.

SUPERVISION

SUPERVIS: Amount of responsibility for direction or supervision of other employees.
TRAIN: Amount of responsibility for training other employees.
Table 4. Additional variables used in the Local 34 Model

PERSONAL CHARACTERISTICS

GENDER: Number of males as a percent of job title respondents.
AGE: Average age of job title respondents.
ETHNIC: Number of whites as a percentage of job title respondents.

WORK SETTING

SETNLR: Percentage of job title respondents who perform research in a non-laboratory setting (for example, a library).
SETMED: Percentage of job title respondents who work in a medical setting.
SETACAD: Percentage of job title respondents who work in an academic setting.
SETLIB: Percentage of job title respondents who work in a library setting.

EDUCATIONAL ACHIEVEMENT

EDTECH: Percentage of job title respondents who have achieved two years of college or a technical degree.
EDCOLL: Respondents holding college or postgraduate degrees as percent of job title respondents.

REPORTING RELATIONSHIPS

RPTC: Percentage of job title respondents who report to other clerical and technical workers.
RPTFAC: Percentage of job title respondents who report to faculty members.
Table 5. The Yale Model: Regression Analysis of the Determinants of Job Title Placement into Salary Grade

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>COEFFICIENT(SE)</th>
<th>T-STATISTIC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EDUCATION REQUIRED</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOREQ:</td>
<td>1.285(.602)</td>
<td>2.134**</td>
</tr>
<tr>
<td>HSREQ:</td>
<td>0.298(.525)</td>
<td>0.567</td>
</tr>
<tr>
<td>TECHREQ:</td>
<td>1.452(.556)</td>
<td>2.610*</td>
</tr>
<tr>
<td>COLLREQ:</td>
<td>1.696(.605)</td>
<td>2.804*</td>
</tr>
<tr>
<td><strong>EXPERIENCE REQUIRED, KNOWLEDGE AND SKILLS REQUIRED</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YRSYALE:</td>
<td>0.051(.039)</td>
<td>1.288</td>
</tr>
<tr>
<td>YRSLABOR:</td>
<td>-0.025(.024)</td>
<td>-1.080</td>
</tr>
<tr>
<td><strong>COMPLEXITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WRITE:</td>
<td>0.181(.204)</td>
<td>0.886</td>
</tr>
<tr>
<td>SPEND:</td>
<td>-0.215(.223)</td>
<td>-0.961</td>
</tr>
<tr>
<td>SAMEJOB:</td>
<td>-0.981(.242)</td>
<td>-4.058*</td>
</tr>
<tr>
<td>TOLDTODO:</td>
<td>-0.267(.301)</td>
<td>-0.886</td>
</tr>
<tr>
<td>RESEARCH:</td>
<td>0.175(.167)</td>
<td>1.048</td>
</tr>
<tr>
<td><strong>CONTACTS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDCTCT:</td>
<td>-0.446(.183)</td>
<td>-2.444**</td>
</tr>
<tr>
<td>WORKCTCT:</td>
<td>0.023(.304)</td>
<td>0.074</td>
</tr>
<tr>
<td>FACCTCT:</td>
<td>0.154(.202)</td>
<td>0.761</td>
</tr>
<tr>
<td>SUPCTCT:</td>
<td>0.113(.255)</td>
<td>0.445</td>
</tr>
<tr>
<td>PATCTCT:</td>
<td>-0.206(.176)</td>
<td>-1.176</td>
</tr>
<tr>
<td><strong>INDEPENDENCE AND DECISIONMAKING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROTOCOL:</td>
<td>0.130(.218)</td>
<td>0.594</td>
</tr>
<tr>
<td>POLICY:</td>
<td>-0.054(.199)</td>
<td>-0.270</td>
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<tr>
<td>RUN:</td>
<td>-0.216(.188)</td>
<td>-1.150</td>
</tr>
<tr>
<td>QUICKLY:</td>
<td>-0.232(.272)</td>
<td>-0.854</td>
</tr>
<tr>
<td>TASKTDAY:</td>
<td>-0.197(.289)</td>
<td>-0.681</td>
</tr>
<tr>
<td><strong>IMPACT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSTKREP:</td>
<td>-0.264(.253)</td>
<td>-1.042</td>
</tr>
<tr>
<td>MSTKCost:</td>
<td>0.705(.300)</td>
<td>2.349**</td>
</tr>
<tr>
<td>MSTKHARM:</td>
<td>0.162(.152)</td>
<td>1.070</td>
</tr>
<tr>
<td>CONFIDE:</td>
<td>0.121(.164)</td>
<td>0.738</td>
</tr>
</tbody>
</table>
PLANNING

PLAN: 0.415(.235) 1.768***
BUDGET: 0.497(.413) 1.203

SUPERVISION

SUPERVIS: 0.238(.293) 0.812
TRAIN: 0.610(.303) 2.015**

CONSTANT 5.944(1.957) 3.038*

ADJUSTED R-SQUARE: .673  F: 13.715  STANDARD ERROR: 1.014

* Statistically significant at the .01 level.
** Statistically significant at the .05 level.
*** Statistically significant at the .10 level.
Table 6. The Local 34 Model: Regression Analysis of the Determinants of Job Title Placement into Salary Grade

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>COEFFICIENT(SE)</th>
<th>T-STATISTIC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EDUCATION REQUIRED</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOREQ:</td>
<td>0.696(.571)</td>
<td>1.219</td>
</tr>
<tr>
<td>HSREQ:</td>
<td>-0.114(.491)</td>
<td>-0.233</td>
</tr>
<tr>
<td>TECHREQ:</td>
<td>0.956(.524)</td>
<td>1.827***</td>
</tr>
<tr>
<td>COLLREQ:</td>
<td>0.865(.613)</td>
<td>1.411</td>
</tr>
<tr>
<td><strong>EXPERIENCE REQUIRED, KNOWLEDGE AND SKILLS REQUIRED</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YRSYALE:</td>
<td>0.096(.038)</td>
<td>2.545**</td>
</tr>
<tr>
<td>YRSLABOR:</td>
<td>0.009(.031)</td>
<td>0.286</td>
</tr>
<tr>
<td><strong>COMPLEXITY</strong></td>
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<td></td>
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<td>WRITE:</td>
<td>0.138(.196)</td>
<td>0.707</td>
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<td>SPEND:</td>
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<td>-2.219**</td>
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<tr>
<td>SAMEJOB:</td>
<td>-0.573(.238)</td>
<td>-2.410**</td>
</tr>
<tr>
<td>TOLDTOD:</td>
<td>-0.412(.284)</td>
<td>-1.451</td>
</tr>
<tr>
<td>RESEARCH:</td>
<td>0.376(.165)</td>
<td>2.272**</td>
</tr>
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<td><strong>CONTACTS</strong></td>
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<tr>
<td>STUDCTCT:</td>
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<td>-1.385</td>
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<td>WORKCTCT:</td>
<td>-0.012(.277)</td>
<td>-0.039</td>
</tr>
<tr>
<td>FACCTCT:</td>
<td>0.132(.194)</td>
<td>0.681</td>
</tr>
<tr>
<td>SUPCTCT:</td>
<td>0.052(.239)</td>
<td>0.218</td>
</tr>
<tr>
<td>PATCTCT:</td>
<td>0.014(.338)</td>
<td>0.042</td>
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<td><strong>INDEPENDENCE AND DECISIONMAKING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROTOCOL:</td>
<td>0.107(.202)</td>
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</tr>
<tr>
<td>POLICY:</td>
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<td>-0.278</td>
</tr>
<tr>
<td>RUN:</td>
<td>-0.129(.176)</td>
<td>-0.739</td>
</tr>
<tr>
<td>QUICKLY:</td>
<td>-0.218(.250)</td>
<td>-0.872</td>
</tr>
<tr>
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<tr>
<td><strong>IMPACT</strong></td>
<td></td>
<td></td>
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<tr>
<td>MSTKREP:</td>
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<td>-0.672</td>
</tr>
<tr>
<td>MSTKCOST:</td>
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<td>1.257</td>
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<tr>
<td>MSTKHARM:</td>
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<td>-0.657</td>
</tr>
<tr>
<td>CONFIDE:</td>
<td>0.252(.192)</td>
<td>1.314</td>
</tr>
</tbody>
</table>
PLANNING

PLAN: 0.055(.225) 0.243
BUDGET: 0.630(.377) 1.674***

SUPERVISION

SUPERVIS: 0.351(.276) 1.269
TRAIN: 0.513(.281) 1.822***

PERSONAL CHARACTERISTICS

GENDER: 1.248(.402) 3.104*
AGE: -0.042(.026) -1.614
ETHNIC: 0.688(.458) 1.504***

WORK SETTING

SETNLR: -2.705(.867) -3.120*
SETMED: -0.061(.963) -0.063
SETACAD: -0.005(.432) -0.012
SETLIB: -0.956(.404) -2.366**

EDUCATIONAL ACHIEVEMENT

EDTECH: 1.161(.465) 2.496**
EDCOLL: 1.813(.544) 3.335*

REPORTING RELATIONSHIPS

RPTCT: -0.723(1.158) -0.624
RPTFAC: 1.208(.762) 1.585

CONSTANT 4.901(2.249) 2.179**

ADJUSTED R-SQUARE: .743 F: 13.857 STANDARD ERROR: 0.901

* Statistically significant at the .01 level.
** Statistically significant at the .05 level.
*** Statistically significant at the .10 level.
Bibliography

Amott, Teresa and Julie Matthaei.

Bellak, Alvin.

Dawson, R.E., and D.J. Weiss.

Madden, J.M., J.T. Hazel, and R. Christal,

State of Minnesota.


1. From an interview with Michael Boyle, Chief Negotiator for Local 34 throughout the period.
2. E.g. A Speech by Peter Vallone, Associate Vice President for Human Resources, to the Local 34 Bargaining Unit employees on March 30, 1987.
3. One study concluded: Overall, the findings gave strong support for the ability of workers to rate their jobs accurately, that is consistently and with evidence of validity. Dawson and Weiss, 1973:188.
4. Ronnie Steinberg, one of the authors of the New York State Pay Equity Study, assisted in the design of Local 34's survey instrument, as well as in the design of the multiple regression analysis. We acknowledge a debt to Steinberg, as well as to all those who worked on the New York State Pay Equity Study. The incredibly thorough and comprehensive methodology used in that respected research effort provided a solid framework to guide this study's methodology.
5. From an interview with Michael Boyle, Local 34 Chief Negotiator throughout the period of the contract negotiation.

6. We were able to avoid the use of integer regression techniques -- greatly simplifying the analysis -- because, in the Yale system, each salary grade is separated by exactly six percent.


8. Ibid.

9. This result is not created by self-reporting error -- i.e. confusion on the part of those responding about what the job requirements of their job title are. Data on job title educational requirements was drawn directly from Yale's records.

10. This hypothesis was raised in early discussions with the Local 34 Committee that worked with Brody & Weiser.

11. An F-Test of the joint significance of the additional variables was performed and indicated that the additional variables were jointly significant. The Local 34 Model has an F-Value of 13.857, while the Yale model's F-Value was 13.715.

12. The loss of significance of certain variables between the Yale Model and the Local 34 Model is most likely explained by specification bias in the initial Yale Model.

13. There was a 72% correlation between years in the labor force (YRSLABOR) and age (AGE) -- not a surprising result. And note that YRSLABOR was not statistically significant in the first
regression, in which the variable Age was not present, so the concern that multi-collinearity rendered either variable statistically insignificant is minimized. There was an 85% correlation between patient contact (PATCTCT) and medical setting (SETMED). Again, PATCTCT was not statistically significant in the first regression, in which the variable SETMED was not present.

14. The comparison of job characteristics and pay for a set of job titles to the wage structure for all white male jobs in the organization is the non-discrimination standard used in pay equity studies (Steinberg and Haignere, 1987).

15. We note here that the contentions and conclusions that follow are speculative. Because the statistical study was carried on in an adversarial atmosphere, we were unable to gather the University's perspective on the questions that we discuss in this section. For example, we were not privy to the University's behind the scenes thoughts and strategies during the negotiation process. The accuracy of the analysis here depends on the authors' commitment to fairly assessing the events surrounding the study process and the negotiations.

16. Information about positions taken and statements made by the Union and Yale during the negotiating process comes from discussions with Michael Boyle, Chief Negotiator for Local 34 before and during the negotiations.

17. This point came out in discussions with members of the Local 34 Committee which worked with Brody & Weiser on the study.

18. Reported by Michael Boyle, Chief Negotiator.
19. This is the perspective presented in discussions between the author and members of the Bargaining Committee.

20. Additionally, to buffer the impact of this differential movement, the Union gained a minimum increase for all salary grades of 24 percent spread out over four years. Thus, all members received relatively generous raises compared to those provided in many bargaining settlements in 1987.

21. This is the perspective of Michael Boyle.

22. It should be noted that not every effort to save costs proved effective. For example, the Local developed and administered its job characteristics survey on its own, which saved money but caused problems during the analysis stage -- of which more is said below.

23. The New York State Pay Equity Study found that predominately female jobs are compensated at a level two salary grades lower than male jobs with equivalent characteristics. Steinberg, 1986:155

24. The source of this information is a discussion with Ronnie Steinberg, the principal author of the New York State Study.