
Study of Wage Equity in Public Employee Bargaining Units 1 and 10

Volume Two: Technical Appendices

A Report to the Governor and the Legislature
of the State of Hawaii

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APPENDIX I
SAMPLE SELECTION CRITERIA AND LIST OF JOBS IN SAMPLE

Sample Selection Criteria and List of Jobs in Sample

Jobs Evaluated and Criteria for Choosing Sample

In order to identify jobs to be included in the study, we requested demographic data from the Department of Human Resources Development from the State of Hawaii and the Departments of Personnel from the Judiciary, City and County of Honolulu, and the Counties of Maui, Kauai, and Hawaii. Specifically, we requested work force data reports that would summarize all jobs within bargaining units 1 and 10 (BU1 and BU10) with ten or more incumbents. For these jobs, we requested the job code, job title, number of employees, and number/percent of female and male employees. We then selected all female-dominated jobs with ten or more employees, and a representative sample of male-dominated jobs.

Using these criteria, we were unable to identify as many jobs as we had initially planned to examine. In part, this was attributed to the small size of the job classes, particularly in bargaining unit 10.

Therefore, to identify additional job classes and to ensure that we had sufficient data to use for meaningful analyses, we requested work force data reports that summarized all jobs in both bargaining units, regardless of the number of incumbents. We also expanded the pool of jobs in both bargaining units to include those that are gender-mixed. These were included in the study sample as a basis for comparative analysis. The decision rules below summarize our selection of job classes:

- 1) All classes within BU10 (regardless of gender-dominance) with 10 or more incumbents were included.

- 2) All female-dominated classes (in BU1) with 10 or more incumbents were included.
- 3) A representative sample of male-dominated and gender-neutral classes with 10 or more incumbents in BU1 was selected. The sample includes representation by occupational duties and by grade.
- 4) Four classes in BU1 were added that are represented in jurisdictions outside of the State government, e.g., in neighboring islands. These do not necessarily have 10 or more incumbents in each jurisdiction, but are representative of the types of jobs that are unique to the neighboring islands.

Many of the classes selected are designated by the State as "benchmark jobs". These jobs are represented in the majority of jurisdictions and therefore provide a reasonable way to examine jobs across jurisdictions.

In some cases we selected job classes within the same series (e.g., Groundskeeper I and II) so that we could assess whether there is adequate differentiation between jobs in a series. In other cases, we selected only one class within a series to enable us to look at a wider range of classes. In these series, we typically chose the journey level job; that is, the full-performance job in the series. However, in other cases, we picked the supervisory level job or entry-level job to have better representation of grade levels. In total, fifty job classes were selected for evaluation. These are listed below.

Job Classes Selected for Evaluation

Bargaining Unit 1: Classes Employed in State and County Government

Automotive Mechanic II	Male
Building Maintenance Worker I	Male
Building Maintenance Worker II	Male
Carpet Cleaner I	Male
Electrician I	Male
Electrician II	Male
Equipment Operator II	Male
Forestry Worker II	Male
General Laborer I	Male
General Laborer II	Male
Groundskeeper I	Male
Groundskeeper II (Supervisory)	Male
Heavy Truck Driver	Male
Laundry Worker II	Male
Light Truck Driver	Male
Painter II	Male
Park Caretaker II	Male
Vector Control Worker II	Male
Warehouse Worker	Male
Cook I	Neutral
Janitor II	Neutral
Kitchen Helper	Neutral
Laundry Helper I	Neutral
Cafeteria Helper	Female
Dietary Aide	Female
Food Services Driver	Female
Janitor III	Female
School Baker	Female
School Cook II	Female

Bargaining Unit 1: Classes Employed in County Government Only

Electrician Helper	Male
Landfill Attendant	Male
Refuse Collector	Male
Wastewater Treatment Plant Operator I	Male

Bargaining Unit 10: Classes Employed in State and County Government

Adult Corrections Officer Recruit	Male
Adult Corrections Officer III	Male
Adult Corrections Officer IV	Male
Adult Corrections Officer V	Male
Emergency Medical Technician II	Male
Youth Corrections Officer III	Male
Youth Corrections Officer IV	Neutral
Juvenile Detention Worker II (Judiciary only)	Neutral
Respiratory Therapy Technician IV	Neutral
Para Medical Assistant I	Neutral
Para Medical Assistant IV	Neutral
Para Medical Assistant II	Female
Para Medical Assistant III	Female
Licensed Practical Nurse I	Female
Licensed Practical Nurse II	Female
Licensed Practical Nurse III	Female
Occupational Therapy Assistant II	Female

APPENDIX II
DISCUSSION OF EVALUATION PROCESS AND SYSTEMS

THE JOB EVALUATION PROCESS

Descriptions Of Job Evaluation Systems Used: Comparisons and Differences Between Two Systems

Modified FES (Factor Evaluation System)

The Federal Factor Evaluation System (FES) is used by the U.S. Government to evaluate jobs in the federal system, and accordingly is used by many government municipalities. We customized the FES in 1991 for the District of Columbia government in a comprehensive wage equity study. The system's ten factors effectively capture elements inherent in the full range of non-management government jobs. The ten factors are:

- (1) Knowledge Required;
- (2) Interpersonal Contacts;
- (3) Mental Demands;
- (4) Independence of Action;
- (5) Physical and Sensory Demands;
- (6) Responsibility for Assets, People and Information;
- (7) Impact;
- (8) Work Pressures;
- (9) Environment; and
- (10) Hazards.

The modified FES includes updated versions of many of the traditional factors (skill and knowledge, mental effort, physical effort, responsibility, environment and hazards). These factors have been carefully reviewed and updated to reflect new technological requirements, and to more fully recognize the responsibilities and requirements associated with traditionally female jobs. In the modified FES, we have included factor definitions and examples that do not promote or encourage bias, and we have accounted for characteristics that were previously unrecognized, such as responsibility for human care and the effort required for sensory attention. In addition, the system has been

expanded to include interpretation guidelines. These guidelines describe the intended application of the factor level and give examples of jobs that are typically rated at each level.

The system also includes a weighting scheme that assigns points to each factor and factor level. The weighting scheme contains 4,000 possible points distributed over the system's 10 factors. The weighting scheme was developed using a technique called absolute relative factor weighting. Each of the factors was assigned a percentage of the total 4,000 points. The percentages were assigned to achieve internal equity while maintaining reasonable and appropriate relationships between jobs.

Based on the percentage assigned to each factor, the maximum number of points that the factor was worth was determined. For example, if a job is rated as a "Level 10" on "Knowledge Required," the job would receive 1000 points for that factor; a job rated as a "Level 10" on "Interpersonal Contacts," would receive 600 points. The percentages and maximum number of points for each factor are listed below.

Knowledge Required	25%	1000 points
Interpersonal Contacts	15%	600 points
Mental Work	10%	400 points
Independence of Action	10%	400 points
Physical/Sensory Demands	5%	200 points
Responsibility for Assets, Information, Programs and People	10%	400 points
Impact	10%	400 points
Work Pressures	5%	200 points
Environment	5%	200 points
Hazards	5%	<u>200 points</u>
TOTAL:	100%	4000 points

The points within each factor were then distributed, beginning with the value for the highest level (Level 9 or 10) and then using successive decrements of 15% to calculate the points for the other levels. The weighting scheme, which includes point values for each factor level, is provided in Appendix III.

Diagnostic System

We designed a gender-neutral job evaluation system to measure Hawaii's public sector jobs. Given the mandate to study bargaining units 1 and 10, we developed a diagnostic system that would be appropriate for testing for gender bias. The system as it is designed is not currently suitable for implementation for all State jobs.

The diagnostic system includes 13 factors. Factors 1 through 4 measure distinct elements of skill; factors 5 - 7 measure various kinds of effort (physical, sensory, and emotional); factors 8 - 11 measure different types of responsibility; and 12 and 13 measure working conditions. The factors are listed below.

- (1) Skills and Knowledge Required
- (2) Interpersonal Skills
- (3) Complexity
- (4) Licensure and Continuing Education Requirements
- (5) Physical Demands
- (6) Sensory Demands
- (7) Emotional Demands
- (8) Material Resources and Information
- (9) Programs, Policies, Finances
- (10) Direct Public Service
- (11) Work of Others
- (12) Environment
- (13) Hazards

The system includes several unique features that make it particularly appropriate for Hawaii's work force. The system includes factors, such as Licensure and Continuing Education Requirements, Emotional Demands, and Direct Public Service that are not currently measured under most traditional systems, yet are certainly relevant to many of the jobs (particularly traditionally female jobs) in the Hawaii state government. Additionally, the system measures responsibility for the environment, which is an important component of many of Hawaii's public sector jobs.

We also designed a weighting scheme that assigns points to each factor and factor level. The weighting scheme contains 5,000 possible points distributed over the system's 13 factors. As in the modified FES, the weighting scheme was developed using a technique called absolute relative factor weighting. The percentages and maximum number of points for each factor are listed below.

Skills and Knowledge Required	15%	750 points
Interpersonal Skills	5%	250 points
Complexity	10%	500 points
Licensure and Continuing Educ. Requirements	5%	250 points
Physical Demands	5%	250 points
Sensory Demands	5%	250 points
Emotional Demands	5%	250 points
Material Resources and Information	10%	500 points
Programs, Policies, Finances	15%	750 points
Direct Public Service	10%	500 points
Work of Others	5%	250 points
Environment	5%	250 points
Hazards	5%	250 points
TOTAL:	100%	5000 points

The points within each factor were then distributed, beginning with the highest level and then using successive decrements of 15% to calculate the points for the other levels. Appendix IV shows the weighting scheme.

Job Evaluation

Job evaluation involves a process of analyzing and rating a job based on its skill, effort, responsibilities and working conditions. Essentially, job evaluation establishes the value of work. The ultimate objective of all job evaluation systems is to fairly and objectively rate all jobs on the same "yardstick", thereby producing an objective ranking of jobs according to their value to the organization. The resulting hierarchical list of jobs is the foundation of many employers' wage and salary administration plans.

This study incorporated the use of a two-member (male/female) job evaluation team consisting of consultants experienced in the techniques of equitable job evaluation. The team has had prior experience using the FES system and considerable expertise in gender-neutrality issues. Both team members had extensive prior knowledge of the range of government jobs being measured in this study. The team evaluated the 50 jobs listed above on both the modified FES and the Diagnostic System.

Several sources of information were reviewed during the process of evaluating jobs. The consultants examined the class specifications and position descriptions for each job. When job descriptions had been submitted by more than one jurisdiction, each of these was carefully reviewed to identify any discrepancies in job duties or requirements. In some cases, the job content information had not been updated in several decades, thereby making it difficult

for the evaluation team to accurately assess the job. To compensate, the evaluation team relied upon the job documentation to the extent possible, and then supplemented this with their own knowledge of similar jobs in other public jurisdictions, for example, when making determinations about the technological requirements of a given job.

At the beginning of the evaluation process, the job evaluation team worked together to rate jobs on the modified FES. By discussing each job in detail and coming to consensus on the evaluation ratings, the consultants ensured that they were consistently interpreting and applying the modified FES.

In the second step of the evaluation process, the job evaluation team members worked independently to rate the remaining jobs on the modified FES. At regular intervals the team met to discuss and reach consensus on the evaluation ratings. Ultimately, the evaluation team reached consensus on the ratings for all jobs.

As this part of the evaluation process was completed, the team began the process again, this time using the Diagnostic System. The team, working together and independently, evaluated each job and then through a discussion process, came to consensus on the ratings.

After all jobs had been rated on both systems, the job evaluation team conducted a "sore thumb" analysis of the final ratings. This analysis involved reviewing all the ratings, making comparisons across and between related jobs to check for logical and consistent application of the factor levels. This was the opportunity to revisit any rating that presented any peculiarities or that stuck out like a "sore thumb."

The final evaluation ratings of each job for each factor level are provided in Appendix V, and the total worth points for each job are in Appendix VI.

APPENDIX III

MODIFIED FEDERAL FACTOR EVALUATION SYSTEM
(FES),

INTERPRETATION GUIDELINES, AND WEIGHTS

MODIFIED FEDERAL FACTOR EVALUATION SYSTEM (FES), INTERPRETATION GUIDELINES, AND WEIGHTS

FACTOR #1: KNOWLEDGE

This factor measures the nature and extent of information or facts which the workers must understand to do acceptable work (e.g., steps, procedures, practices, rules, policies, theories, principles, and concepts) and the nature and extent of the skills needed to apply those knowledges. To be used as a basis for selecting a level under this factor, the knowledge must be **job related**, required and applied. Each level may be substituted with equivalent knowledge and skill.

<u>KNOWLEDGE</u>	<u>INTERPRETATION GUIDELINE</u>
<p><u>Level 1</u></p> <p>Knowledge of simple, routine, or repetitive tasks or operations which typically includes following step-by-step instructions and requires little or no previous training or experience; OR skill to operate simple equipment or equipment which operates repetitively, requiring little or no previous training or experience; OR Skill to perform simple manual tasks.</p>	<p>Most jobs rated at this level require simple manual labor and in general do not have any educational prerequisites or prior experience in a related field. On-the-job training is usually not required to bring the incumbent to full performance. Only simple instructions are required to be conveyed to the incumbent.</p>
<p><u>Level 2</u></p> <p>Knowledge is similar to Level 1 where tasks are performed within a framework of a standardized work routine. Work requires from 3 weeks to 2 months on-the-job training and basic literacy.</p>	<p>Jobs rated at level 2 typically require no specific educational prerequisite beyond basic literacy. Incumbents may have some related work experience, but it is not required to function effectively in the job. Some on-the-job training should bring the incumbent to full performance. Jobs may require employee to sort, log, tally or compare written materials, file materials alphabetically, numerically or by date, operate photocopiers or load and unload materials, clean buildings or use tools.</p>

<p><u>Level 3</u></p> <p>Knowledge of basic or commonly-used rules, procedures, or operations which typically requires some previous training or experience; OR basic skill to operate machines or equipment requiring some previous training or experience.</p>	<p>Jobs rated at this level typically require a high school diploma or GED or the equivalent number of years of experience in a related job. Employees may compile, proof and check written materials, enter data on forms and records, file, operate typewriters and keyboard type data entry devices, clean buildings inside and out, or serve prepared food.</p>
<p><u>Level 4</u></p> <p>Knowledge of a body of standardized rules, procedures or operations requiring considerable training and experience to perform the full range of standard clerical assignments and resolve recurring problems; OR Skill acquired through considerable training and experience, to operate and adjust varied equipment, such as performing numerous standardized tests or operations.</p>	<p>Jobs rated at this level typically require a high school diploma or GED plus some experience in a related job. This level is typified by employees who are required to have some skill to function at full performance. Employee may carry out varied office support services, take and transcribe dictation, balance accounts, calculate payroll, proof and correct grammatical errors.</p>
<p><u>Level 5</u></p> <p>Knowledge of an extensive body of rules, procedures or operations requiring extended training and experience to perform a wide variety of interrelated or nonstandard procedural assignments; OR Practical knowledge of standard procedures in a technical field, requiring extended training or experience, to perform such work as: adapting equipment when this requires considering the functioning characteristics of equipment; interpreting results of tests based on previous experience and observations (rather than directly reading instruments or other measures); or extracting information from various sources when this requires considering the applicability of information and the characteristics and quality of the sources.</p>	<p>Jobs rated at this level typically require a high school diploma or GED plus considerable experience in a related job, or an associates degree, or two years of college. Incumbents at this level are required to possess the ability to work at full performance on large amounts of technical information and/or systems. This level is typified by requiring considerable administrative or technical skill to function at full performance. Employees may have skill in operating complex machinery or equipment, requiring technical methods or procedures.</p>

<p><u>Level 6</u></p> <p>Knowledge of basic principles, concepts and methodology of a professional or administrative occupation and skill in applying this knowledge in carrying out basic assignments, operations, or procedures; OR In addition to the practical knowledge of standard procedures in Level 5, practical knowledge of technical methods to perform assignments, such as carrying out limited projects that involve use of specialized, complicated techniques.</p>	<p>Jobs rated at this level typically require a bachelors degree or four years of experience in a related field. Incumbents are expected to exhibit the full range of intellect and skill to perform assigned tasks. Work is characterized by the employee's ability to carry out a variety of extensive office support services; prepare routine reports and statements; conduct program reviews and executive professional systems and programs.</p>
<p><u>Level 7</u></p> <p>Knowledge of the principles, concepts, and methodology of a professional or administrative occupation as described at Level 6 which has been supplemented by expanded professional or administrative knowledge which has provided skill in carrying out assignments, operations, and procedures in the occupation which are significantly more difficult and complex than those covered by Level 6; OR Practical knowledge of a wide range of technical methods, principles and practices similar to a narrow area of a professional field and skill in applying this knowledge to such assignments as the design and planning of difficult, but well-precedented assignments.</p>	<p>Jobs rated at this level typically require a bachelors degree plus some experience in a related field. Incumbents must exhibit the full range of intellect and skill to perform assigned tasks. Employees are usually able to manage large-scale projects and systems, conduct evaluations of work performed, perform assignments, operations or procedures designed to provide practice in and understanding of the basic principles, concepts and methods of a professional field.</p>
<p><u>Level 8</u></p> <p>Knowledge of a wide range of concepts, principles, and practices in a professional or administrative occupation, and skill in applying this knowledge to difficult and complex work assignments; OR A comprehensive, intensive, practical knowledge of a technical field and skill in applying this knowledge to the development of new methods, approaches, or procedures.</p>	<p>Jobs rated at this level typically require a masters degree. Incumbents may have experience in a related field but it is not required to perform the full range of intellectual tasks required by the job. Employees possess the capacity to develop and present analyses and recommendations concerning a wide range of subjects in support of departmental processes.</p>

<p><u>Level 9</u></p> <p>Mastery of a professional or administrative field to apply experimental theories and new developments to problems not susceptible to treatment by accepted methods; OR Make decisions or recommendations significantly changing, interpreting, or developing important policies or programs.</p>	<p>Jobs rated at this level typically require a masters degree or CPA certificate and several years professional or administrative experience in a related field. Employee may direct major administrative programs or services and provide advanced-level policy development and analysis work.</p>
<p><u>Level 10</u></p> <p>Mastery of a professional field to generate and develop new hypotheses and theories.</p>	<p>Jobs rated at this level typically require an advanced degree such as a Ph.D., MD or JD. Incumbents usually have considerable years of experience in a related field. Employee may manage, direct and execute agency-wide programs that are technical or administrative.</p>

FACTOR #2: INTERPERSONAL CONTACTS

This factor measures the primary reason for contacting, dealing with and influencing other people and performing the duties related to the position. When applying the factor, consider interaction with employees within the organization as well as with clients, customers, the public, government representatives and others outside the organization. Other characteristics to be considered include confidentiality, sensitivity and emotional content of the contact.

<u>INTERPERSONAL CONTACTS</u>	<u>INTERPRETATION GUIDELINE</u>
<p><u>Level 1</u></p> <p>Contacts are primarily internal with employees in the immediate work area. Common courtesy is required in communicating with others. Examples of contacts may include: Accomplishing work of self or others through discussion, elaboration and cooperation as necessary; OR Incidental contact while transporting individuals or materials.</p>	<p>Contacts are usually routine between employees and may involve giving or exchanging information.</p>

<p><u>Level 2</u></p> <p>Contacts are generally with peers or on a limited functional basis with employees of other departments, staff members, students, patients, outside organizations or the general public. Typically only common courtesy is required in relating with others but may involve limited stressful encounters.</p>	<p>Examples of contacts may include: Obtaining, clarifying, or giving information or some problem solving concerning routine matters. Contacts are intended to expedite, coordinate or explain a process, function or activity, including assistance in providing customer services.</p>
<p><u>Level 3</u></p> <p>Duties match some of level above and/or some of level below.</p>	<p>Contacts are typically on demand, routine and involve large numbers of people. Contacts with or services to the public may be on an on-going basis. Substantial questioning may be required to determine the nature of service required.</p>
<p><u>Level 4</u></p> <p>Contacts are with individuals or groups within and outside the organization where basic understanding, sympathy, or sensitivity may be required to effectively promote and maintain congeniality of relationships. Contacts generally involve non-controversial communication requiring tact and courtesy. Contacts may be interactive in order to facilitate accomplishment of projects or management of programs, services or activities for which the worker is responsible; provide technical advice or resolve operating problems.</p>	<p>Examples of contacts may include: Discussing problems, submitting reports, and making recommendations; OR providing short-term, intermittent assistance or custodial care on demand. Questioning may be required to determine the nature of service required OR providing a service to explain procedures in varied, non-routine and/or emergency situations, OR routinely responding to community and government leaders where particular skill and sensitivity to political aspects of interactions are indispensable. Diplomacy and facilitation of communications may be necessary but contacts do not typically require in-depth discussion, defending a position or substantively influencing the decisions of others.</p>
<p><u>Level 5</u></p> <p>Duties match some of level above and/or some of level below.</p>	<p>An example would include jobs such as correctional officers who communicate with staff and inmates as well as with police, probation, parole and court officials.</p>

<p><u>Level 6</u></p> <p>Contacts are within and outside the organization to obtain cooperation and approval of action. Significant interaction with others and skill in presenting ideas are necessary. These contacts are usually straightforward but may be controversial or sensitive at times where there is a concern for the well being of the individual.</p>	<p>Examples of contacts may include: Analyzing individual/client circumstances and determining the most appropriate course of action; OR instructing, advising, planning or coordinating with others on work objectives to achieve desired actions; OR ensuring compliance with codes, regulations or laws; OR directing a group working in scattered locations or coordinating the efforts of a diverse group of non-employees; OR representing or serving as a liaison on an agency's behalf before special interest groups, governmental entities, or as a committee member.</p> <p>Further specific examples might include the communication between a correctional sergeant and an inmate; contact between a semi-level manpower development specialist and a client in search of employment; a communication operator who routinely communicates via radio with police throughout a district; or program analysts who must communicate with a variety of persons in order to maintain the integrity of programs and assure the continued delivery of services.</p>
<p><u>Level 7</u></p> <p>Duties match some of level above and/or some of level below, or contacts are to provide personal assistance, care or custody where client problems are multi-faceted and intensive/sustained interaction is required.</p>	<p>Application of this rating would be exemplified in employees in jobs such as: parole officers who must maintain regular, intense and sustained contact with parolees; social workers who must manage client circumstances through regular and sustained interaction; or trial attorneys who must communicate with a wide range of people within and outside of the government such as clients, judges, law enforcement officials, or registered nurses who must talk with patients to ascertain their medical problems and with doctors in order to carry out medical treatments.</p>

<p><u>Level 8</u></p> <p>Contacts are with individuals or groups at varying levels of authority for the purpose of developing policy or formulating strategies. Contacts may cause a high level of emotional concern because of potentially sensitive issues or may require considerable discretion, resourcefulness, and persuasiveness to achieve desired objectives through negotiations or influencing the decisions of others.</p>	<p>Examples of contacts may include: Counseling or persuading others to obtain desired results involving issues that are of substantial importance and relate to the government; OR coordinating and developing cohesiveness of large and diverse organizational entities (e.g., subdivisions); OR adeptly handling highly significant or sensitive issues and/or volatile human relations situations having legal or contractual implications. Incumbents may be authorized to arbitrate or initiate action to resolve differences of opinion. A specific example would be the job of a clinical administrator.</p>
<p><u>Level 9</u></p> <p>Duties match some of level above and/or some of level below.</p>	<p>Contacts may involve meeting and dealing with high-level officials in formulating major policies, programs or services, or in contesting significant and complex matters or issues that are politically or socially sensitive. A specific example would be the job of clinical psychologist.</p>
<p><u>Level 10</u></p> <p>Contacts are regularly made with the highest appointed and elected officials or highly influential persons within organizations or the community. Contacts concern problems that are severe, extremely complex, or life-threatening.</p>	<p>Examples of contacts may include: Promoting, justifying, defending, or testifying on behalf of programs/policies as a formal representative of an agency or the government. Issues are of critical importance where resourcefulness and discretion are paramount to accomplishing desired ends.</p> <p>This rating is intended to cover situations in which the incumbent decides or approves matters relating to a service, program or activity of a department or equivalent organizational unit. Contacts at this level are usually with high-level officials within and outside of the government and are typically accompanied by the potential for legal or adverse repercussions to the government.</p>

FACTOR #3: MENTAL WORK

This factor measures the amount and nature of analysis, problem solving, and reasoning required to perform job-related duties. The conceptual demands of the job are characterized by: the degree of analysis and interpretation required for problem definition and resolution; creativity; selection of alternatives; mental challenge; job structure limitations; and planning activities.

<u>MENTAL WORK</u>	<u>INTERPRETATION GUIDELINE</u>
<u>Level 1</u> Work requires very limited analysis in performing tasks that are repetitive, well-defined and clear-cut with specific guidelines. Little or no creativity is required to carry out assigned duties. A very limited degree of reasoning and problem solving is required. Common sense is typically used to follow detailed, simple and very uncomplicated instructions and predetermined routines.	Jobs rated at this level usually consist of a few clearly related steps such as filing materials by date or reference codes; typing from a clear draft copy; operating simple equipment or cleaning grounds or buildings. Few jobs would fall at this level of mental demand.
<u>Level 2</u> Work requires limited reasoning and planning in tasks that are straightforward, repetitive and involve different but related processes and methods. Some creativity and interpretation are required to choose from a limited number of possible solutions the most appropriate course of action. The job entails considerable structure; procedures and general job-related instructions are provided.	Jobs rated at this level involve work which consists of several steps and which requires the employee to vary responses or actions according to differences in the work such as: file clerks who must arrange different files according to several variables; data transcribers who enter large volumes of redundant data into a computer; nursing assistants who aid LPNs and RNs in providing patient care; or inmate finance assistants who handle cash disbursements for inmates.
<u>Level 3</u> Duties match some of level above and/or some of level below.	An example of a job at this level would be a warehouse worker who simply keeps track of supplies and follows orders.

<p><u>Level 4</u></p> <p>Work requires some degree of analysis to adapt to a variety of duties that involve unrelated processes and methods. A moderate amount of planning is required in that a variation from daily routines is possible. Tasks may be broad in scope and may require the recognition and creative definition of problems and their practical solutions from a range of possible alternatives. Specific job-related instructions/procedures may not be available or may require adaptation.</p>	<p>Jobs rated at this level usually involve problem-solving, planning and organizing or making decisions after considering several factors such as designing and installing complicated filing systems; planning and organizing office support services; maintaining a system of accounts (or parts thereof) and preparing reports and statements describing the conditions of accounts. Typical examples would be supply technicians who keep track of supplies and account technicians who must reconcile large volumes of accounts.</p>
<p><u>Level 5</u></p> <p>Duties match some of level above and/or some of level below.</p>	<p>Examples of jobs rated at this level include: emergency medical technicians who are required to respond creatively and spontaneously to unpredictable situations.</p>
<p><u>Level 6</u></p> <p>Work requires the ability to analyze, evaluate and synthesize variable technical, administrative, or human service problems. The work contributes to the conception, development or administration of technical processes, administrative plans and programs, patient care techniques, or human/public service programs. Problems may require imaginative solutions within stated mandates.</p>	<p>Jobs rated at this level require employees to have the ability to organize, coordinate and integrate work products, synthesize unrelated or variable information from various sources; or resolve unusual problems using analytical approaches to identify various alternatives. Specific examples would include computer programmers who must define and resolve complex technical computer problems; or procurement analysts who are responsible for verifying the authenticity of information and then synthesizing that information in order to effectuate the delivery of vital services.</p>
<p><u>Level 7</u></p> <p>Duties match some of level above and/or some of level below.</p>	<p>An example of jobs rated at this level might include investigators who must be analytical and possess the ability to synthesize conflicting information to form valid conclusions and recommendations.</p>

<p><u>Level 8</u></p> <p>Work requires interpretive skill and analysis using logical, evaluative, scientific or professional thinking to define highly variable and frequently ill-defined problems, collect information, establish facts and form valid solutions. There is a limited degree of job structure. Deadlines are numerous and require consideration of multiple and conflicting data, new concepts and imaginative approaches to reach a conclusion.</p>	<p>Jobs rated at this level are typified by the requirement that incumbents be able to employ professional thinking into their problem solving methodologies. Such decision-making often involves great uncertainties requiring continual assessment of approach. Changing the parameters of programs, projects, policies, positions, or setting new precedents may be required. Examples of jobs requiring this level of mental work are: trial attorneys who must examine conflicting evidence and draw logical conclusions; or general engineers who are required to design structural buildings or roads and must effectively analyze related conditions that affect their design.</p>
<p><u>Level 9</u></p> <p>Duties match some of level above and/or some of level below.</p>	<p>Jobs rated at this level involve planning, coordinating and directing broad programs and functions, or performing highly specialized work in solving problems that are unprecedented or novel.</p>
<p><u>Level 10</u></p> <p>Work requires extremely complex analysis and highly-developed reasoning and planning skills to solve a wide range of eventualities and practical problems. Assignments are often unique and typically require a great degree of mental challenge to deal with job demands of a highly strategic, creative, policy-making or technical/scientific nature. Job demands are often of a sensitive, controversial, or precedent-setting nature, and may be critical to life, property or safety. The selection of the appropriate course of action depends upon intangible considerations as well as tangible facts, opinions and information.</p>	<p>Examples would involve jobs that are more complex and more highly specialized than at level 9.</p>

FACTOR #4: INDEPENDENCE OF ACTION

This factor measures the level of decision making associated with the position. Characteristics to be considered include: nature of supervision received, degree of freedom or discretion that can be exercised, and accountability. Decisions or judgments are governed by instructions, policies, practices, precedents, and/or objectives.

<p style="text-align: center;"><u>INDEPENDENCE OF ACTION</u></p> <p><u>Level 1</u></p> <p>Work is directly controlled through a highly structured body of procedures, requirements, clearly defined rules and methods or close, detailed instructions, and/or supervision by others. Work is subject to review and/or inspection, with all problems or deviations referred to the supervisor.</p>	<p style="text-align: center;"><u>INTERPRETATION GUIDELINE</u></p> <p>Jobs rated at this level represent those that are the highly structured and offer the least flexibility to the employee in carrying out their assignments.</p>
<p><u>Level 2</u></p> <p>Work is generally proceduralized and performed in conformance with prescribed standard practices, written instructions, established schedules, and/or pre-determined priorities. Work is performed under intermittent close supervision. Only routine decisions from a clear cut set of options are made. Some discretion may be exercised within pre-determined limits and procedures to make minor operating decisions on sequencing (rather than on accuracy and quality), with any doubtful issues being referred to supervisor for advice or guidance.</p>	<p>Employees in jobs rated at this level also tend to require substantial supervision or rely heavily upon prescribed guidelines, policies and/or written procedures. For example, food service workers working on an assembly line only make minor decisions regarding the placement of food on trays; and housekeeping aides and sanitation workers are typically required to perform routine, redundant tasks that are strictly guided by precedent and procedure.</p>
<p><u>Level 3</u></p> <p>Decisions or actions match some of level above and/or some of level below.</p>	<p>Jobs rated at this level, such as those occupied by carpenters and sewer construction repair employees, must follow specific instruction some of the time and at other times they may be permitted to exercise discretion regarding work sequencing.</p>
<p><u>Level 4</u></p> <p>Receives general directions on assignments, priorities and objectives. Completed work is evaluated for compliance with technical standards, appropriateness, and conformity to organizational policy. Discretion and judgment must be exercised in interpreting and applying rules and guidelines; may make decisions on quality and accuracy.</p>	<p>Employees in jobs rated at this level refer problems requiring interpretation, adaptation or modification to a supervisor for direction or resolution. For example, parking control aides, work independently but are closely guided by rules, regulations and written procedures. Miscellaneous document examiners are another example of employees who work independently at their desks but who must follow very specific guides which dictate what they do.</p>

<p><u>Level 5</u></p> <p>Decisions or actions match some of level above and/or some of level below.</p>	<p>Jobs rated at this level, such as automotive mechanics and heavy equipment mechanics both are responsible for working independently but both also use specific guides and written procedures to determine the techniques and rationale for their actions. They rely heavily upon written instruction for repairing cars or for operating heavy equipment.</p>
<p><u>Level 6</u></p> <p>Work assignments are governed by specific goals and objectives, requiring general interpretation of policy, practices, and precedence. Unusual matters are referred to supervisor for advice or guidance. Frequently may make definitive decisions in the absence of a supervisor due to the nature of the work or intervening circumstances; however, actions are later reviewed for appropriateness and conformity.</p>	<p>Employees in jobs that are rated at this level work with considerable independence. They are frequently called upon to exercise judgments that are critical to the situation at hand but such judgments are later reviewed for appropriateness. An example would be a recreational specialist who is responsible for providing supervision over children while at athletic events; or emergency medical technicians who must make independent decisions regarding treatment modalities while in the field. In both these situations, the employee's actions may be later reviewed but on-the-spot supervisory review is usually not possible.</p>
<p><u>Level 7</u></p> <p>Decisions or actions match some of level above and/or some of level below.</p>	<p>Jobs rated at this level, such as investigator and plumbing inspector are responsible for working independently -- both in the field. Employees in these type of jobs must exercise some degree of independence at all times. Specific guides and written procedures regarding the appropriate techniques are typically available.</p>
<p><u>Level 8</u></p> <p>Work is primarily guided in a general way by policy and past practice, precedent, overall organizational policy and/or professional standards. Nominal direction is received regarding work responsibilities; discretion and judgment must be exercised in translating broad organizational goals into specific objectives. Exceptional problems or circumstances are discussed with the supervisor to obtain advice or concurrence, with recommended approaches/solutions.</p>	<p>Jobs rated at this level are characterized by the fact that employees work with very little direct supervision, oversight or reliance on written guidelines and with professionalism such that their jobs rely primarily upon technical expertise. Trial attorneys and social workers would be examples of jobs whereby employees exercise this degree of independence.</p>

<p><u>Level 9</u></p> <p>Decisions or actions match some of level above and/or some of level below.</p>	
<p><u>Level 10</u></p> <p>Work results are considered technically authoritative and are evaluated relative to general organizational policy in terms of feasibility, compatibility and effectiveness. Incumbents use their own judgment and ingenuity to develop and interpret organizational goals and guidelines.</p>	
<p style="text-align: center;">FACTOR #5: PHYSICAL AND SENSORY DEMANDS</p> <p>This factor measures the degree to which the job requires the incumbent to perform work in single actions or a series of activities that are demanding in terms of physical effort, sensory attention, and/or concentration. Physical demands may encompass one or several elements: coordination (to integrate movement of the body or parts of it skillfully); fine motor (precise finger movements); gross motor (controlled body movement); strength (exertion of force); or speed and accuracy (quick and precise movement of body or parts of the body or enforced work pace). Sensory attention involves the use of one or more of the major senses (sight, hearing, touch, smell, taste). Concentration relates to focused attention to detail. Consideration is given to the intensity and frequency of the effort required.</p>	
<p style="text-align: center;"><u>PHYSICAL & SENSORY DEMANDS</u></p> <p><u>Level 1</u> Work requires <u>VERY LIGHT</u> physical or sensory exertion or concentration, dexterity and/or strain.</p>	<p style="text-align: center;"><u>INTERPRETATION GUIDELINE</u></p> <p><u>VERY LIGHT:</u> Work is basically sedentary and incumbent is free to move about. Physical effort is represented by some walking, standing, bending, carrying of light items, incidental driving, use of video display terminal, typing, etc. At times, there may be more intense demand for a brief period. Sensory effort is represented by routine awareness of surrounding environment. Job content is varied as that for most aspects of daily life. The percentage of time required to perform physically or sensory demanding job duties at level 1 would be less than 5% of a person-year or .5 hour per day; 2.5 hours per week; one day per month; or 2 weeks each year.</p>

Level 2

Work requires **VERY LIGHT OR LIGHT** physical or sensory exertion or concentration, dexterity and/or strain.

LIGHT Physical exertion or specific acuity and/or durability of one or more of the senses. Physical effort is represented by use of light hand tools or carrying lifting or pushing persons or objects up to 25 lbs., long periods of sitting with little opportunity to stand up or move about, intermittent periods or rapid use of fingers or fine finger movement, or manipulative ability in filing, sorting, or similar operations.

LIGHT Sensory effort is represented by more acute or enduring attention and information processing than are required for most aspects of daily life, such as monitoring equipment, regularly driving a vehicle, visual attention and/or mental concentration in which few interruptions are permitted.

The percentage of time required to perform physically or sensory demanding job duties at level 2 would be less than 5% of a person-year if the exertion is **LIGHT** or .5 hour per day; 2.5 hours per week; one day per month; or 2 weeks each year; OR between 25 and 50% of a person-year if the exertion is **VERY LIGHT** (as described in level 1 above). If the exertion is **VERY LIGHT**, the amount of time spent performing such duties would be as follows:

VERY LIGHT 25% OF THE TIME: Not less than 2 hours per day; 10 hours per week; 5 days per month; or 1 month per year or

VERY LIGHT 50% OF THE TIME: Not more than 4 hours per day; 20 hours per week; 10 days per month; or 6 months per year.

Occasional fatigue may be associated with **LIGHT** physical or sensory exertion.

Level 3

Work requires VERY LIGHT, LIGHT OR MODERATE physical or sensory exertion or concentration, dexterity and/or strain.

MODERATE physical exertion or unusual specific acuity and/or durability of two or more of the senses. Physical effort is represented by use of prolonged rapid use of fingers or fine-finger movement to a very close tolerance, or long periods of standing or periods of sitting in one position with no opportunity for relief, or carrying/lifting/pushing persons or objects weighing from 25 to 50 lbs., use of hand and/or power tools, climbing and working from ladders, walking over rough ground, or working in other awkward positions for short periods.

MODERATE sensory effort is represented by the use or two or more of the major senses simultaneously to an intense or refined degree, operation of machinery/equipment, driving a vehicle in heavy traffic, administration of routine treatments or injections.

The percentage of time required to perform physically or sensory demanding job duties at Level 3 would be VERY LIGHT for 75 to >95% of the time OR LIGHT for 25% of the time OR MODERATE FOR <5% (as described below):

VERY LIGHT 75% to >95% OF THE TIME: 2 hours per day; 10 hours per week; 5 days per month; or 1 month per year.

LIGHT 25% OF THE TIME: 4 hours per day; 20 hours per week; 10 days per month; or 6 months per year.

MODERATE LESS THAN 5% OF THE TIME: .5 hours per day; 2.5 hours per week; 1 day per month; or 2 weeks per year.

Noticeable fatigue may be associated.

Level 4

Work requires **LIGHT, MODERATE OR HEAVY** physical or sensory exertion or concentration, dexterity and/or strain.

HEAVY physical exertion or precise specific acuity and/or durability of one or more of the senses. Physical effort is represented by exceptional physical strength or agility, e.g., crouching or crawling in confined spaces, or working in awkward positions for prolonged periods, or carrying/lifting/pushing objects or persons weighing 100 lbs. or more. There may be episodes of intense physical effort requiring exertion of maximum strength, such as grappling or fighting with adults or lifting/extricating injured people.

HEAVY sensory effort is represented by intense concentration with exceptional sensory attention for prolonged periods or close eye and hand coordination, finger dexterity, and manipulative ability. Examples include assisting in major/delicate surgery involving microtechniques, use of miniature instruments, venipuncture, insertion of intravenous arterial lines or insertion of indwelling catheters, making repairs to delicate electronic or similar equipment, or performing microscopic experiments.

The percentage of time required to perform physically or sensory demanding job duties at Level 4 would be **LIGHT for 50% of the time OR MODERATE for 25% of the time OR HEAVY FOR <5%** (as described below):

LIGHT 50% OF THE TIME: 4 hours per day; 20 hours per week; 10 days per month; or 6 months per year.

MODERATE 25% OF THE TIME: 2 hours per day; 10 hours per week; 5 days per month; or 1 month per year.

HEAVY <5% OF THE TIME: .5 hours per day; 2.5 hours per week; 1 day per month; or 2 weeks per year.

Considerable fatigue may be associated.

Level 5

Work requires **LIGHT, MODERATE, HEAVY OR SUBSTANTIAL** physical or sensory exertion or concentration, dexterity and/or strain.

SUBSTANTIAL physical OR sensory exertion or stamina, fine manual dexterity, or exacting acuity and/or endurance of one or more of the senses under circumstances where accuracy may be critical.

The percentage of time required to perform physically or sensory demanding job duties at Level 5 would be **LIGHT for 75% of the time OR MODERATE for 50% of the time OR HEAVY FOR 25% OR SUBSTANTIAL FOR <5% OF THE TIME** (as described below):

LIGHT 75% OF THE TIME: 6 hours per day; 30 hours per week; 14 days per month; or 8.5 months per year.

MODERATE 50% OF THE TIME: 4 hours per day; 20 hours per week; 10 days per month; or 6 month per year.

HEAVY 25% OF THE TIME: 2 hours per day; 10 hours per week; 5 days per month; or 1 month per year.

SUBSTANTIAL <5% OF THE TIME: .5 hours per day; 2.5 hours per week; 1 day per month; or 2 weeks per year.

Exhaustive fatigue may be associated.

Level 6

Work requires **LIGHT, MODERATE, HEAVY OR SUBSTANTIAL** physical or sensory exertion or concentration, dexterity and/or strain.

The percentage of time required to perform physically or sensory demanding job duties at Level 6 would be either **LIGHT for >95% of the time** OR **MODERATE for 75% of the time** OR **HEAVY FOR 50%** OR **SUBSTANTIAL FOR 25% OF THE TIME** (as described below):

LIGHT >95% OF THE TIME: 7.5 hours per day; 37.5 hours per week; 18 days per month; or 11 months per year.

MODERATE FOR 75% OF THE TIME: 6 hours per day; 30 hours per week; 14 days per month; or 8.5 months per year.

HEAVY 50% OF THE TIME: 4 hours per day; 20 hours per week; 10 days per month; or 6 month per year.

SUBSTANTIAL 25% OF THE TIME: 2 hours per day; 10 hours per week; 5 days per month; or 1 month per year.

SUBSTANTIAL <5% OF THE TIME: .5 hours per day; 2.5 hours per week; 1 day per month; or 2 weeks per year.

Exhaustive fatigue may be associated.

<p><u>Level 7</u> Work requires <u>MODERATE, HEAVY OR SUBSTANTIAL</u> physical or sensory exertion or concentration, dexterity and/or strain.</p>	<p>The percentage of time required to perform physically or sensory demanding job duties at Level 7 would be either <u>MODERATE for >95% OF THE TIME OR HEAVY FOR 75% OF THE TIME OR SUBSTANTIAL FOR 50% OF THE TIME</u> (as described below):</p> <p><u>MODERATE >95% OF THE TIME</u>: 7.5 hours per day; 37.5 hours per week; 18 days per month; or 11 months per year.</p> <p><u>HEAVY FOR 75% OF THE TIME</u>: 6 hours per day; 30 hours per week; 14 days per month; or 8.5 months per year.</p> <p><u>SUBSTANTIAL 50% OF THE TIME</u>: 4 hours per day; 20 hours per week; 10 days per month; or 6 month per year.</p> <p>Exhaustive fatigue may be associated.</p>
<p><u>Level 8</u> Work requires <u>HEAVY OR SUBSTANTIAL</u> physical or sensory exertion or concentration, dexterity and/or strain.</p>	<p>The percentage of time required to perform physically or sensory demanding job duties at Level 8 would be either <u>HEAVY for >95% OF THE TIME OR SUBSTANTIAL FOR 75% OF THE TIME</u> (as described below):</p> <p><u>HEAVY >95% OF THE TIME</u>: 7.5 hours per day; 37.5 hours per week; 18 days per month; or 11 months per year.</p> <p><u>SUBSTANTIAL FOR 75% OF THE TIME</u>: 6 hours per day; 30 hours per week; 14 days per month; or 8.5 months per year.</p> <p>Exhaustive fatigue may be associated.</p>

<p><u>Level 9</u></p> <p>Work requires <u>SUBSTANTIAL</u> physical or sensory exertion or concentration, dexterity and/or strain.</p>	<p>The percentage of time required to perform physically or sensory demanding job duties at Level 9 would be <u>SUBSTANTIAL for >95% OF THE TIME</u> (as described below):</p> <p><u>SUBSTANTIAL >95% OF THE TIME</u>: 7.5 hours per day; 37.5 hours per week; 18 days per month; or 11 months per year.</p> <p>Exhaustive fatigue may be associated.</p>
<p>NOTE: This factor for physical and sensory demands is designed to provide considerable flexibility to evaluating the various demands placed on a job. The intensity of a job is measured in terms of very light, light, moderate, heavy or substantial physical, sensory exertion or concentration, dexterity and/or strain. The actual ratings are achieved by considering not only "intensity" but "frequency" as well. As a general rule, the higher the frequency percentage, the higher the rating. This factor, more than any other, contains the most opportunity for flexibility in order to provide the maximum credit for physical and/or sensory demands of a particular job. In cases where this factor does not apply, the job will be rated at level 1.</p>	

<p style="text-align: center;">FACTOR 6: RESPONSIBILITY FOR ASSETS, INFORMATION, PROGRAMS AND/OR PEOPLE</p> <p>This factor measures the degree to which the job requires the employee to be the person <u>responsible</u> for materials, equipment, and financial resources of the organization; the degree to which the employee is responsible for the well-being of the people whom the organization serves; or the breadth of programs and their relationship to the overall mission of the organization.</p>	
<p style="text-align: center;"><u>ASSETS</u></p> <p><u>Level 1</u></p> <p>Responsibility is limited to the exercise of care in the performance of duties and the use of equipment and materials. There is no direct responsibility for the physical safety or well-being of others.</p>	<p style="text-align: center;"><u>INTERPRETATION GUIDELINE</u></p> <p>Jobs rated at this level describe work with some responsibility for assets, albeit limited, intermittent responsibility for such things as supplies and equipment while in use. Use of this level is reserved for those jobs where an employees' responsibility for assets would not disrupt the operation of the unit if it were not done. The work of the unit would go on but could be more difficult without the support of this job.</p>

<p><u>Level 2</u></p> <p>Responsibility for the safekeeping of equipment, machines, or vital records while in use. May provide routine information or directions in response to inquiries, handle small daily cash accounts, or monitor, catalogue, or file paperwork related to programs, policies, services or budgets. There is no responsibility to judge the accuracy of facts or figures. May have limited and infrequent designated responsibility for the physical safety and well-being of others.</p>	<p>Jobs rated at this level have some responsibility for assets. This level is typified by employees who perform labor-intensive tasks such as custodians, laborers and housekeeping aides. Employees in these type of jobs are usually responsible for supplies and equipment while in use and beyond. Jobs rated at this level usually have very little, if any, responsibility for the safety and well-being of others.</p>
<p><u>Level 3</u></p> <p>Responsibility to ensure the upkeep and repair machinery and equipment; maintain unit/section inventory; ensure the accuracy, manipulation, and/or updating of records, information, and/or manuals; handle large daily cash accounts; monitor a limited expenditure budget; maintain and safeguard the confidentiality of sensitive records; or process, search for, and develop information sources. May facilitate others' work through provision of services or completion of work products that require organization and coordination. May have limited and on-going designated responsibility for the physical safety and well-being of others.</p>	<p>Jobs rated at this level have moderate responsibility for assets. This level is characterized by an increase in the type and quantity of assets an employee may be responsible for. For example, data transcribers have access to and responsibility for sensitive data while being transcribed; and parking control aides carry with them documents which are used to record violations in the city's parking laws and to generate revenue for the city. Their responsibility for assets is however, restricted by higher level review, supervision or some other internal control methods.</p>
<p><u>Level 4</u></p> <p>Responsibilities match some of level 3 above and some of level 5 on the next page.</p>	<p>Examples of jobs rated at this level include correction officers who are responsible for the limited and on-going safety of inmates; behavioral technicians who provide work with clients as they receive medical or psychiatric treatments; or civil engineer technicians who are responsible for assuring compliance with engineering specifications that could affect the construction of renovation of a building.</p>

<p><u>Level 5</u></p> <p>Substantial, shared responsibility to effectively develop and/or carry out programs through the direct provision of services to the public, students, or employees. May make purchasing decisions of moderate scope; organize, coordinate, and facilitate the actual application of a project, system or segment of a program; or monitor a budget. May process, search for, and/or maintain information that provides services directly to other employees or that produces a final product used by others. May have direct responsibility for administering complex treatments or medications to patients, or implementing procedures and processes through others. May recommend technical, administrative or service programs, procedures and initiatives.</p>	<p>Jobs rated at this level are differentiated from lower rated jobs by the increased responsibility which employees exercise in executing their work. Incumbents typically have substantial responsibility for assets. An example would be boiler plant operators who are responsible for assuring the proper boiler temperature and pressure which could affect the operation of water systems in an entire unit within a building, could jeopardize the safety of people, or cause the suspension of vital services. Some computer programmers are likewise substantially responsible for vital records or computer systems. Both positions typify what is intended at this level.</p>
<p><u>Level 6</u></p> <p>Responsibilities match some of level 5 above and some of level 7 below.</p>	<p>Jobs rated at this level include correctional cooks who are responsible for preparing meals for inmates, some of whom have special dietary requirements; quality control examiners who are responsible for assuring the programmatic and financial integrity of city programs; and accountants who are responsible for the accuracy and safekeeping of department budgets and/or program accounts.</p>
<p><u>Level 7</u></p> <p>Responsible to develop and execute projects, systems or programs within a unit. May be responsible for the development of policies and procedures relating to guidelines that determine the use or disuse of machines and/or equipment; purchases of major scope; developing patient care and/or therapeutic plans (including social and psychological as well as physical care); or for organizing, coordinating and facilitating the actual application of a program or delivery of services.</p>	<p>Jobs rated at this level may involve developing and administering a program budget, or program for ensuring the physical safety of others, or other comparable service. Examples include mental health specialists who are responsible for contributing to the implementation of treatment plans for mental health patients; general engineers who are responsible for the design and structural safety of buildings and/or roads; or budget analysts who are responsible for monitoring department budgets and compliance with legislative limitations.</p>

<p><u>Level 8</u></p> <p>Responsibilities match some of level 7 above and some of level 9 below.</p>	<p>Examples of jobs rated at this level include clinical administrators who may be responsible for the management and operations of a medical facility and for all of the safety and well-being of the patients served at that facility; and clinical psychiatrists who are responsible for the proper diagnosis and treatment of patients with mental health illnesses.</p>
<p><u>Level 9</u></p> <p>Responsible to develop and/or plan programs and budgets that support operations or services and affect a wide range of people. May have shared responsibility for overseeing the operation and/or administering the assets and budget of an agency. May be responsible for initiating, recommending and implementing policies and procedures related to a program or service for a unit or functional area. May have primary responsibility for a major segment of an agency's resources in providing a primary community service.</p>	
<p><u>Level 10</u></p> <p>Responsible to develop, defend, execute, direct, or manage major functions, programs, or services. May be responsible for directing or managing the general assets of the agency; or may affect the social, physical, and/or economic well-being of significant numbers of people through the development, execution, and/or administration of agency programs.</p>	

FACTOR 7: IMPACT

This factor is an objective measure of the impact of a position on the organization through consideration of: likelihood of errors; possibility of error detection; and probable effects of errors on the government, agency, the public or patients.

Probable results of errors are measured in terms of jeopardy of safety/security for patients, the public or other employees; damage to equipment or facilities; jeopardy to municipal programs; cash losses, etc. Also considered is access to privileged information, the disclosure of which could compromise the government's position, be injurious to patients' or employees' rights to privacy or well-being, or constitute a breach of security. Accountability may be the result of individual contributions, the responsibility for human life, or influence on the decision-making process, as well as the exercise of management responsibilities.

<p style="text-align: center;"><u>IMPACT</u></p> <p><u>Level 1</u></p> <p>Errors are obvious and can be rapidly detected, and they have little or no consequence.</p>	<p style="text-align: center;"><u>INTERPRETATION GUIDELINE</u></p> <p>An example of a job that is rated at this level would be a painter, whose errors can be easily identified by looking at what has been painted and can also be corrected if needed.</p>
<p><u>Level 2</u></p> <p>Errors are readily apparent to those who review the work, or can be easily detected by checking or inspecting the work. For example, errors in keying input data, proofreading, or using incorrect settings on a camera. Errors may cause minor discomfort to patients or inconvenience to individual clients or the general public, slow down in the processing of work, some embarrassment or time loss. Errors have the effect of causing work to be re-done with loss of small amounts of time and resources worth less than \$500.</p>	<p>Jobs rated at this level are differentiated from those at level 1 by the fact that they may not be as readily detected and may have associated time or financial consequences. For example, sanitation workers' errors are detected by the inspection team which follows the truck carrying the employees, or by complaints by residents about trash not being picked up. The consequences of such errors are usually minimal.</p>
<p><u>Level 3</u></p> <p>Consequence of errors match some of level 2 above and/or some of level 4 on the next page.</p>	<p>Examples of jobs rated at this level include custodians, housekeeping aides and laborers because employees in each of these groups tend to work under close supervision wherein their work is closely checked. Under such circumstances, errors are quickly detected, corrected and typically cause only minor discomfort to people or related financial loss. Conversely errors of an account technician might have to be traced back to a prior step and can have limited related losses in time and financial resources.</p>

<p><u>Level 4</u></p> <p>Errors are not readily apparent but must be traced back to prior steps or actions to be corrected; or if the product or service is rendered directly to users, errors cannot be detected beforehand.</p> <p>For example, errors in dispensing information to the general public; instructing others in the processing of work; preparing accounts, estimates or forecasts; calculating payments; errors in operating computer equipment that result in hours of downtime; errors in office work flow that delay the processing of work; or errors affecting payroll. Errors affect further operations by providing inaccurate information upon which decisions/processes are based (further decisions are made less accurate but not invalidated). Errors may cause injury or discomfort to patients through mistakes in techniques, impair delivery of important services, or considerable inconvenience to individual employees, clients or the public. Errors may result in the loss of time/resources worth a few thousand dollars.</p>	<p>Jobs rated at this level are differentiated from jobs with lower ratings for this factor by the extent to which employee errors have to be traced back to a prior step or phase of a task in their work. Incumbents typically have checks and balances on their work but errors are not without consequences. For example, motor vehicle inspectors are responsible for a unique part of the overall inspection process, thus errors can be detected if one reviews the related inspection steps. Nonetheless, if that same vehicle gets into an accident because of a faulty part which passed inspection (an error), the consequences could include vehicle breakdown or jeopardy to citizens.</p>
<p><u>Level 5</u></p> <p>Consequence of errors match some of level 4 above and/or some of level 6 on the next page.</p>	<p>Examples of jobs rated at this level include math and ESL teachers who are responsible for correctly teaching children. Errors could inhibit future learning ability and could adversely affect the child for many years to follow.</p>

<p><u>Level 6</u></p> <p>Errors are not apparent and usually can only be detected by assessing the effects of work products or services by examining work for unsound reasoning or through audits or re-examinations.</p> <p>For example, misinterpretation of laws, rules or policies; or information, steps or actions that were omitted or not considered. Errors may cause substantial delays in a phase of work, identifiable deterioration in public or employee relations, or affect further operations by providing inaccurate information/ unsound recommendations that invalidate further decisions. Although responsibility may be shared, errors could have a serious impact on patient care, plant or equipment, public relations or agency operations. Errors have the potential for serious bodily injury or health hazard, or cause considerable discomfort or disadvantage for groups of people. Errors may result in the loss of time/resources worth several thousand dollars or individual/ agency liability.</p>	<p>Jobs rated at this level are differentiated from those rated at lower levels by the method of detection required to identify errors. At this level errors can only be detected by assessing the effects of work, not necessarily the work itself. For example, practical nurses who administer physician treatment orders may make errors that can only become apparent after the patient's health noticeably declines. Another example would be the miscellaneous document examiners who are responsible for reviewing inmate documents who pass through the correctional system. The consequences of errors made by these employees could be difficult to detect until an inmate was found to be wrongly transferred or released. In such case, the error could result in associated liability for the city and endangerment to the community.</p>
<p><u>Level 7</u></p> <p>Consequence of errors match some of level 6 above and/or some of level 8 on the next page.</p>	<p>For example, general engineers who design or review a building enhancement plan but who could inadvertently overlook a critical element which might not become apparent until the job was completed; thereby, causing lots of work to be redone and substantial financial loss.</p>
<p><u>Level 8</u></p> <p>Accumulative effect must occur before errors become apparent. Errors seriously disrupt programs and services, causing very large losses of time and resources.</p> <p>For example, errors may cause loss of resources worth tens of thousands of dollars or weeks of delay in service delivery. Errors typically cause situations with considerable probability of bodily harm or health hazard, or errors set erroneous or unfavorable legal precedent. Errors may cause loss of commitment or the withholding of funds or public or employee support.</p>	<p>Jobs rated at this level generally have an greater impact associated with errors made by employees. For example, clinical psychologists who diagnose and recommend treatment plans for forensic psychiatric patients could authorize the pre-release of a patient and if that patient causes harm to a person in the community, agency liability could easily result.</p>

<p><u>Level 9</u></p> <p>Consequence of errors match some of level 8 above and/or some of level 10 below.</p>	
<p><u>Level 10</u></p> <p>Errors are the result of mistakes in judgment as to the weight of alternatives or the advisability of different courses of action; such errors are in principle, not immediately detectable, and may be irreversible.</p> <p>For example, errors may seriously disrupt programs/services and have a continuing adverse influence on major functions, loss of resources worth hundreds of thousands of dollars, several months of delay in service delivery, or situations with high probability of permanent injury or loss of life. Errors may jeopardize the health, safety or welfare of the community at large.</p>	

<p style="text-align: center;">FACTOR 8: WORK PRESSURE</p> <p>This factor measures the likelihood, frequency and intensity of work-related stressors on the job. This factor does not measure the incumbent's ability or inability to tolerate stress; rather it assesses the normal types of stressors associated with the job. Examples may include: uncontrollable deadlines, competing time demands, constant interruptions, exposure to death/human tragedy, dealing with difficult people, long periods of travel, rotating shifts, or being on-call.</p>	
<p style="text-align: center;"><u>WORK PRESSURE</u></p> <p><u>Level 1</u></p> <p>General absence of stressful conditions. Deadlines, conflicting time demands and interruptions are infrequent and controllable. Job content involves only ordinary emotional response, and work requires little or no direct interaction with erratic, aggressive, or abusive individuals. There is limited traveling that requires overnight trips.</p>	<p style="text-align: center;"><u>INTERPRETATION GUIDELINE</u></p> <p>Jobs rated in this evaluation process are presumed to be levels higher than level 1. That is, most jobs have some related stressors.</p>

<p><u>Level 2</u></p> <p>Conditions match some of level 1 above and/or some of level 3 below.</p>	<p>Examples of jobs rated at this level include carpenters and painters who must respond to work orders from supervisors and usually involves limited contact with the general public. In most instances these employees occasionally incur stressful conditions, conflicting priorities and/or non-negotiable deadlines.</p>
<p><u>Level 3</u></p> <p>Stressful conditions occur sometimes due to: Pressure of non-negotiable time deadlines; Conflicting priorities, possibly dictated by multiple sources (working for two or more bosses); Competing time demands and interruptions uncontrollable by employee; Working with emotionally distraught or unhealthy people; Exposure to death and/or human tragedies; Assigned to on-call duty; or Travel requiring overnight trips.</p>	<p>Work-related stressors associated with jobs rated at this level are distinguished from those at lower levels by pressure occurring sometime due to events or circumstances that are beyond the control of the employee. For example, clerk typists and data transcribers are often called upon to meet supervisory and management deadlines, causing them to take the pressure to get the work out against all odds. Similarly, laborers and sanitation workers sometimes experience work-related stress brought on by non-negotiable deadlines and occasional requirement that they balance conflicting priorities caused by large amounts of job orders on a shift.</p>
<p><u>Level 4</u></p> <p>Conditions match some of level 3 above and some of level 5 below, or are due to uncontrollable, weekly or bi-weekly deadlines.</p>	<p>Examples of jobs rated at this level include parking control aides, who must comply with regular daily, weekly or monthly work performance standards which may not be negotiable; and staffing assistants who are responsible for processing personnel actions in a timely manner, and may incur work-related stress to comply with legally mandated deadlines.</p>

<p><u>Level 5</u></p> <p>Stressful conditions as listed in Level 3 occur fairly often or are due to: Predetermined rotating shifts; Intense but intermittent stress during certain periods of the year or day; Timely, correct response to emergency, life-threatening situations; Exposure to violent or hostile individuals; or Work in a protective custody environment for juvenile delinquents, mentally disabled, etc.</p>	<p>Jobs rated at this level are characterized by employees who encounter stressful conditions on the job fairly often rather than just sometimes or because they incur one or more of the stressors identified in the section to the left. For example, parole officers who monitor ex-offender's compliance with parole restrictions; thereby exposing the employee to people who are potentially hostile or violent; or food service workers who prepare regular meals for residential clients and encounter stress resulting from pressure to adhere to tight schedules to prepare meals for large numbers of people three times a day.</p>
<p><u>Level 6</u></p> <p>Conditions match some of level 5 above and/or some of level 7 below.</p>	<p>Examples of jobs rated at this level include inmate finance assistants who work in correctional facilities or compounds and who interact directly with inmates in recording and disbursing funds.</p>
<p><u>Level 7</u></p> <p>Stressful conditions as listed in Level 5 occur regularly or are due to working in a prison or correctional facility where one must remain constantly vigilant and guarded.</p>	<p>Jobs rated at this level are distinguished from jobs rated at lower levels by the inherent pressure or stress associated with the job. For example, forensic psychiatric technicians are responsible for carrying out medical treatment plans to persons charged with being criminally insane or correctional officers who work in a correctional facility and are required to always be alert to danger brought on by inmates.</p>
<p><u>Level 8</u></p> <p>Conditions match some of level 7 above and/or some of level 9 below.</p>	<p>An example of a job that is rated at this level is the correctional cook who routinely works side-by-side with inmates in preparing and serving meals.</p>
<p><u>Level 9</u></p> <p>Stressful conditions as listed in Level 7 occur continuously or are due to the nature of work where the employee must be relieved at frequent intervals in order to assure personal well-being and/or safety.</p>	

FACTOR 9: ENVIRONMENT

This subfactor measures the likelihood, frequency and severity of exposure to undesirable characteristics in the work environment. These elements are inherent to the work; the work could not be performed without subjecting the worker to them. Characteristics to be considered include work surroundings or exposure to: limited ventilation; odors; noise; vibration; dirt; glare; limited illumination; temperature extremes; exposure to adverse environmental and weather conditions; awkward or confining work spaces; other undesirable workplace conditions.

<u>ENVIRONMENT</u>	<u>INTERPRETATION GUIDELINE</u>
<p><u>Level 1</u></p> <p>General absence of disagreeable conditions or elements. Work involves only common, everyday discomforts or unpleasantness. Work is performed primarily in a well lit, ventilated office.</p>	<p>Jobs rated at this level usually represent working conditions that allow the employee to work in a private office or a space which does not require any special measures to control environmental distractions.</p>
<p><u>Level 2</u></p> <p>Conditions match some of level 1 above and/or some of level 3 below.</p>	<p>Examples of jobs rated at this level include secretaries and clerk typists who often work in cubicles, semi-secluded or open spaces. Another example might be police communication officers who often work in radio dispatch rooms where there is some distraction and effort to concentrate.</p>
<p><u>Level 3</u></p> <p>Some discomfort due to occasional exposure to dust, grease, ink, oil, noise, obnoxious odors, temperature variations caused by poor ventilation, or chemical fumes.</p> <p>OR</p> <p>Work in open space that results in distraction and effort to concentrate.</p> <p>OR</p> <p>Work in remote or isolated areas where there is limited contact with others.</p> <p>OR</p> <p>No assigned work station or works in a variety of environments.</p> <p>OR</p> <p>Infrequent exposure to adverse weather conditions.</p>	<p>Jobs rated at this level may be performed outdoors, in shop conditions, they may be clerical in nature such that the employee supports professionals requiring care and special attention to detail. Some examples include medical clerks who might work with large volumes of medical records, inquiring patients and physician orders; thereby resulting in distraction and frequent interruptions; or Recreational Specialists who might work in a variety of settings, many of which are likely to be outdoors in order to facilitate athletic events or other recreational programs.</p>

<p><u>Level 4</u></p> <p>Conditions match some of level 3 above and/or some of level 5 on the next page.</p>	<p>Examples of jobs at this level include civil engineering technicians and civil engineers who routinely work in a variety of locations and who may have more intense exposure to dusty, dirty environments, many of which may be outdoors.</p>
<p><u>Level 5</u></p> <p>More intense exposure to dust, grease, ink, oil, noise, obnoxious odors, temperature variations caused by poor ventilation, or chemical fumes. Work is restricted by location or available replacement.</p> <p style="text-align: center;">OR</p> <p>Work in crowded office that results in distraction and increased effort to concentrate.</p> <p style="text-align: center;">OR</p> <p>Regular exposure to adverse weather conditions.</p>	<p>This level is characterized by work that is unpleasant due to an employee's intense exposure to disagreeable working conditions. Examples include abandoned vehicle inspectors who are, by necessity, always outdoors, but who are also frequently exposed to vehicles that are covered with dirt, dust, grease, oil, etc. Another example would be parole officers who frequently work in a variety of unpredictable environments where they are likely to be exposed to adverse weather conditions and/or dirty buildings and homes.</p>
<p><u>Level 6</u></p> <p>Conditions match some of level 5 above and some of level 7 below.</p>	<p>Examples of jobs at this level include housing inspectors who inspect public housing for safety; and sewer disposal plant operators who work in constant isolation and often in limited space.</p>
<p><u>Level 7</u></p> <p>Continuous presence of dust, grease, ink, oil, noise, obnoxious odors, temperature variations caused by poor ventilation, or chemical fumes.</p> <p style="text-align: center;">OR</p> <p>Considerable noise from power machines.</p> <p style="text-align: center;">OR</p> <p>Some contact with animal or human blood, urine or excrement.</p> <p style="text-align: center;">OR</p> <p>Continuous exposure to adverse weather conditions through performance of duties performed exclusively outdoors.</p>	<p>Work at this level is typified by an employee's continuous exposure to unpleasant conditions. Examples include employees who work in hospital or clinic settings where they are exposed to human blood, urine or excrement, such as medical clerks, and emergency medical technicians who are also continuously exposed to adverse weather conditions as well. carpenters, painters and automotive mechanics who are continuously exposed to fumes and adverse weather conditions. Finally, parking control aides, by virtue of the fact that their job requires that they be exposed to adverse weather conditions.</p>

<p><u>Level 8</u></p> <p>Conditions match some of level 7 above and/or some of level 9 below.</p>	<p>Examples of jobs rated at this level include correctional treatment specialists and teachers who work in correctional facilities and who have direct contact with inmates. Their surroundings are continuously adverse and unpleasant because they work in a jail. They do not, however, have to remain constantly vigilant because their actual work environment is not always intense.</p>
<p><u>Level 9</u></p> <p>Extreme or severe adverse conditions or surroundings. Work requires a high degree of individual tolerance to combinations or intensity of extremely unpleasant elements despite protective efforts.</p> <p style="text-align: center;">OR</p> <p>Considerable contact with animal or human blood, urine or excrement.</p>	<p>Examples of jobs at this level include sanitation workers who are constantly outdoors, exposed to adverse weather conditions and exposed to obnoxious odors, dirt, grease, human and animal excrement, etc. Correctional cooks, correctional officers and inmate finance assistants would all be rated at this level because they are confined to work within the jail setting without relief. Conditions within jail settings pose unique challenges for employee tolerance to adverse environments.</p>

FACTOR 10: HAZARDS

This subfactor measures the risks **inherent** in the job over and above those found in ordinary life; the work could not be performed without subjecting the incumbent to them. The measurement is made according to the likelihood, frequency and severity of the hazard(s) or injury and not the actual occurrence.

<u>HAZARDS</u>	<u>INTERPRETATION GUIDELINE</u>
<p><u>Level 1</u></p> <p>The work presents risks common to ordinary working life; there is no potential for job-related accidental injury or exposure to hazards.</p>	<p>This level typically represents jobs that are generally hazard free.</p>
<p><u>Level 2</u></p> <p>Risks match some of level above and/or some of level below, and/or the work exposes the incumbent to significant eye strain, such as from prolonged work at a microscope, in a darkroom, or at a VDT.</p>	<p>Examples of jobs that fall at this level only have a minimal likelihood of exposure to hazards. Jobs rated at this level include computer programmers, communication operators and library technicians, each of whom are generally not exposed to hazards beyond those which would be expected during a normal work day.</p>

<p><u>Level 3</u></p> <p>The work generally does not involve risk; however, failure to follow established procedures and safety practices could result in minor injury, e.g., abrasions, slight cuts, needle punctures, chemical or heat burns, bruises from falls, back injury sustained while assisting in moving, lifting, or positioning patients, equipment or materials.</p>	<p>Jobs at this level might include supply technicians whose work is generally hazard free except in those instances where injury is possible from incorrect handling of heavy supplies; and educational technicians who provide day care services may occasionally incur some risk from lifting small children and or/equipment.</p>
<p><u>Level 4</u></p> <p>Risks match some of level 3 above and/or some of level 5 below.</p>	<p>An example of a job at this level would be recreational specialist whose job-related health and safety risks could emanate from having to assist senior citizens on and off buses or managing disputes among youths.</p>
<p><u>Level 5</u></p> <p>The work poses some health and safety risks, which are fairly predictable and controllable. May require special procedures, safety precautions and/or the use of special equipment. There may be occasional exposure to situations where violence is possible, some potential for muscular or nerve strain (e.g., repetitive motion injuries), or disabling injuries resulting in loss of time from work.</p>	<p>Certain jobs which require execution of skilled trades might be rated at this level. For example, carpenters, plumbers and automotive mechanics have risk of personal injury such as dropping heavy equipment on hands and feet or getting fingers caught in high-speed machines with sharp edges. Housekeeping aides and warehouse workers may be at some risk of injury from exposure to toxic chemicals used in cleaning and repair.</p>
<p><u>Level 6</u></p> <p>Risks match some of level 5 above and/or some of level 7 below.</p>	<p>An example of a job at this level includes behavioral technicians who may be at risk to physical injury from having to work with and control patients who are undergoing some form of medical or psychological treatment.</p>
<p><u>Level 7</u></p> <p>The work exposes incumbents to physical hazards and/or health and safety risks that may not be easily predictable and controllable. There is continuous exposure to danger requiring that special procedures, safety precautions and/or the use of special equipment be followed closely. There is the potential for serious disabling injuries resulting in loss of or impairment to major bodily functions, e.g., sight, speech, hearing, use of limb(s), etc.</p>	<p>Jobs that would typically fall at this level involve exposure to the employee to risks due to the nature of persons being served, e.g., forensic psychiatric technicians who deal with persons who are criminally insane and therefore present a constant risk.</p>

<p><u>Level 8</u></p> <p>Risks match some of level 7 above and/or some of level 9 below.</p>	<p>Examples of jobs rated at this level include those that are located in a correctional facility where the employee has responsibility for and indirect access to inmates. This situation possesses a risk which is sometimes avoidable.</p>
<p><u>Level 9</u></p> <p>The work is subject to major physical hazards or severe health and safety risks where there is no ability to predict or control. Despite strict adherence to special procedures, safety precautions and/or the use of special equipment distinct possibilities exist for injury or occupational disease. Accidents or contamination could result in impairment to or permanent loss of major bodily functions, incapacitating occupational disease, or death.</p>	<p>Examples of jobs rated at this level include correctional officers who work in a correctional facility where the employee has responsibility for and direct access to inmates. This situation possesses unavoidable, inherent risks and associated hazards.</p>

FACTOR WEIGHTING FOR MODIFIED FES SYSTEM

<u>FACTORS</u>	<u>LEVELS</u>									
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
Knowledge	232	272	321	377	444	522	614	723	850	1000
Contacts	139	163	192	226	266	313	368	434	510	600
Mental Work	93	109	128	151	177	209	246	289	340	400
Independence	93	109	128	151	177	209	246	289	340	400
Physical/Sensory	54	64	75	89	104	123	145	170	200	
Responsibilities	109	128	151	177	209	246	289	340	400	
Impact	93	109	128	151	177	209	246	289	340	400
Work Pressure	54	64	75	89	104	123	145	170	200	
Environment	54	64	75	89	104	123	145	170	200	
Hazards	54	64	75	89	104	123	145	170	200	

APPENDIX IV
DIAGNOSTIC EVALUATION SYSTEM AND WEIGHTS

DIAGNOSTIC JOB EVALUATION SYSTEM AND WEIGHTS

This system was developed for use in limited, diagnostic studies of pay equity. It reflects current standards of gender-neutrality and is customized for use in the public sector of Hawaii. Because the current use of this system is for jobs in bargaining units one and ten, many of the unused levels are only sketched. The system is not currently suitable for implementation for all state jobs.

Factors measuring skill:

- Skills and Knowledge Required
- Interpersonal Skills
- Complexity
- Licensure and Continuing Education Requirements

Factors measuring effort:

- Physical Demands
- Sensory Demands
- Emotional Demands

Factors measuring responsibility:

- Material Resources and Information
- Programs, Policies, Finances
- Direct Public Service
- Work of Others

Factors measuring working conditions:

- Environment
- Hazards

Skills and Knowledge Required

This factor measures the kinds of skill, the level of knowledge, and the specific abilities required for the performance of the job. The factor does not measure how the skills and knowledge were acquired.

- Level 1:** Basic knowledge required to comprehend instructions, follow well-defined procedures, operate simple equipment. Skills may include reading of instructions, simple arithmetic, filling in forms, two-finger typing.
- Level 2:** Proficiency in job-related techniques and procedures, sufficient to work with standard methods and/or operate more complex equipment. Skills may include some writing for documentation purposes, daily maintenance of simple equipment, basic knowledge of regulations.
- Level 3:** Proficiency in occupational field. Skills may include extensive knowledge of departmental organization, operating procedures for technical instruments or administrative methods, operation of complex machinery (computer hardware, power tools, specialized motor vehicles), integrating a variety of methods.
- Level 4:** Broad knowledge of specialized field, requiring an understanding of the principles and concepts of the job, including the field's specific methods and procedures. Skills may involve making repairs on specialized equipment, classifying material using complex systems, interpreting technical information, using large and complex specialized vehicles, using complex computer applications.
- Level 5:** Thorough knowledge of specialized field, requiring understanding of theories and principles. Skills may involve the application of theories to specific issues.
- Level 6:** Mastery of highly technical or scientific field. Skills may involve original research, high-level interpretation of data, statistical analysis.

Interpersonal Skills

This factor measures the interactional skills required to provide successful public service. Consideration is given to the complexity of the interaction, its intensity and duration, and the sensitivity of the subject matter. Do not assume that having organizational authority requires interpersonal skills, or vice versa.

- Level 1:** Basic interpersonal skills required. Communications are straightforward in nature and involve obtaining or giving facts or operational information. Contacts are not intensive and involve primarily coworkers and supervisors. Interaction with the public is incidental to the job.
- Level 2:** Some interactive interpersonal skills are required. Skill in presenting ideas or information, providing limited guidance to others (including other employees) on policies or procedures. Contacts are intended to expedite, coordinate or explain a process, function or activity, often involving the exchange of straightforward information. Interaction is still secondary to overall job function.
- Level 3:** Frequent contacts require considerable interactive interpersonal skills. Contact with the public or with other jurisdiction offices is an integral part of the job to provide information or explain and discuss procedures, or make complicated arrangements. Each contact is typically of short duration. Contact may be required in more than one language.
- Level 4:** Interpersonal interaction with the public or with other jurisdiction offices is an integral part of the job. Interaction is at times sensitive, requiring careful listening and the provision of support. Contact is often of longer duration. Persuasion skills may be required. Information exchanged is often technical.
- Level 5:** Interaction is a key component of the job. Interactions are in situations that may be emotional, hostile, sensitive, or volatile. These may involve negotiation, counseling, or mediation. Contact is often of long duration.

Complexity

This factor measures the skills and knowledge involved in problem solving, including the steps, processes or methods, the variety of problems, and the speed with which solutions must be found.

- Level 1:** Job activities involve clearly related steps that require the application of detailed and well-defined instructions. Problems are straightforward and difficulties are easily identified and simple to resolve.
- Level 2:** There are typically several related job activities that are performed according to detailed instructions which allow for some choice of action. Problems are apparent but precise identification requires some inquiry and selection from a limited number of alternative procedures or methods. Time is available to choose a solution carefully.
- Level 3:** Job activities are somewhat varied and involve some different and unrelated processes and methods. Problems solving requires assessment of the circumstances and interpretation of data from a variety of sources. May be regularly required to make quick decisions.
- Level 4:** Job activities are highly varied and involve different and unrelated processes and methods, requiring the use of a variety of skills and knowledge. Problems involve uncertainty and problem solving requires original thought and/or analytical methods based on abstract principles. Solutions are not pre-determined, they must be developed. May involve rapid assessment in emergency situations.
- Level 5:** Job activities are highly varied, requiring the application of many different and unrelated processes and methods to a broad range of activities. A detailed assessment of the appropriate methods and processes is required to perform work activities. Problem solving requires advanced analytical skills and/or creative thinking for elaborating original and unprecedented solutions. Problems are difficult to identify and define, and relevant information may be difficult to interpret. Problems may not be resolvable on the basis of past experience. May involve response to emergency where appropriate interventions are not apparent and there is little time to search for answers.

Licensure and Continuing Education Requirements

This factor measures the requirement for certification and licensure, and for on-going education. These requirements reflect levels of skill required.

- Level 1:** No specialized licensure required. Skill updating is acquired as a routine, informal part of the job.
- Level 2:** Specific vocational training or apprenticeship without formal recognition. Skill updating is acquired as a routine, informal part of the job.
- Level 3:** Recognized licensure or certification in a vocational field. Skill updating is acquired as a routine, informal part of the job.
- Level 4:** Recognized licensure or certification in a semi-professional field. Formal methods of skill updating are required to maintain certification.
- Level 5:** Licensure or certification in a professional field. Formal methods of skill updating are required to maintain certification.

Physical Demands

This factor measures the degree to which the job, per se, requires the incumbent to perform work which is demanding in terms of physical activities. Consideration is given to intensity, severity, frequency, and duration of effort.

- Level 1:** Typically the employee sits comfortably with opportunity to move about. However, there may be some walking, standing, bending, carrying light items, such as files or small parts, use of computer terminal, and other similar activities. These activities would typically be short in duration.
- Level 2:** Light physical effort is required, such as periods of standing, use of light hand tools, work in awkward body positions for short periods, longer but still limited use of VDT.
- Level 3:** Moderate physical effort is required, such as frequent periods of standing or sitting which may be restricted, working in awkward positions for longer periods where precision may be important, frequent lifting of somewhat heavy objects or people, intensive use of keyboard and VDT.
- Level 4:** Significant physical effort such as ongoing, production-oriented use of keyboards and VDTs requiring accuracy and speed, lifting heaving objects or people, constant working in awkward positions, turning patients attached to medical equipment.
- Level 5:** Heavy physical effort on a continuous basis. A demanding work pace, or unusual physical strength required.

Sensory Demands

This factor measures the nature and intensity of sensory attention required to perform the job. Consideration is given to the intensity, severity, frequency, and duration of demands. Sensory demands include visual concentration, hand-eye coordination, auditory concentration, and use of smell and touch.

- Level 1:** Light sensory attention required for occasionally driving an automobile, using a VDT, reading, performing calculations, monitoring straightforward indicators on equipment or devices, or similar activities. These activities would typically be short in duration.
- Level 2:** Periodic monitoring of machinery or equipment, operation of hand, power, or shop equipment requiring the operation of multiple controls, driving a vehicle, concentrated attention on detailed information and/or VDT. These activities may involve some sustained periods of sensory attention.
- Level 3:** Regular concentrated attention on detailed and often complex materials or VDT; monitoring or operating complex machinery or equipment; routine monitoring of patients' condition.
- Level 4:** Consistent monitoring of complex machinery or equipment; attention to detailed and complex documents or VDT; operating complex or heavy machinery for sustained periods; attention is often simultaneously on two or more machines or activities, or is divided between a patient and monitors; production-oriented use of keyboard where accuracy is important.
- Level 5:** Heavy sensory demand, requiring regular shift of attention and continuous attention to details, sustained concentration on complicated or multiple tasks. May occur in emergency or life-critical conditions.

Emotional Demands

This factor measures emotional effort required to perform the job. This is not a measure of individual ability to cope under pressure, but measures job requirements to expend emotional effort. "People" may refer to the public or to other employees, but not to direct subordinates.

- Level 1:** Emotional effort is equal to that of daily living.
- Level 2:** Incumbent is occasionally required to deal with angry or difficult people in delivering services, or providing sensitive or unwelcome information.
- Level 3:** Incumbent is regularly required to deal with angry or difficult people in delivering services, or providing sensitive or unwelcome information.
- Level 4:** Moderate emotional energy is required to serve (teach, advise, counsel, care for) people in distress.
- Level 5:** Considerable emotional energy is required to serve (teach, care for, advise, counsel) people in physical or psychological pain, or with great impairment. May involve, for example, routinely caring for dying patients or seriously ill children.

Material Resources and Information

This factor measures accountability for material resources and information. These include equipment, machinery, instruments, cash, buildings, computerized data, written reports, and so on. Focus should be on the job well-done, rather than on the consequence of error.

- Level 1:** Limited responsibility for careful handling of materials used on the job. No handling of confidential information.
- Level 2:** Some responsibility for resources or information. There may be a requirement for cleaning and/or daily maintenance of equipment or machinery; responsibility for petty cash; access to confidential information.
- Level 3:** Moderate responsibility for information or material resources. There may be requirements for maintaining record-keeping systems; direct handling of confidential information; repairing equipment; maintaining inventories; regular use of expensive materials, equipment, or cash.
- Level 4:** Significant responsibility for material resources and/or information. There may be requirements for assuring the quality of information or reporting systems; repairing expensive machinery at specific intervals or on emergency basis; dispensing controlled substances.

Programs, Policies, Budgets

This factor measures the degree to which incumbents are responsible for developing, monitoring, administering, or implementing programs, policies, or budgets. Consideration is given to the scope of the program/budget, and to the length of forecasting necessary. Focus should be on the job well-done, rather than on the consequence of error.

- Level 1:** No responsibility for developing, monitoring, or administering budgets, programs, or policies. Implementation responsibilities are limited to carrying out directives, without interpretation.
- Level 2:** Minimal responsibility. May include file maintenance or processing of work orders; operational support; logging of expenditures.
- Level 3:** Some responsibility for interpreting policies or programs for implementation. Budget responsibility may include monitoring of expenditures. Scope of decisions is small.
- Level 4:** Moderate responsibility for interpreting policies or programs for implementation with larger scope. Some forecasting of community need or of budget needs. May make purchasing decisions. Scope of decisions is moderate.
- Level 5:** Significant responsibility for developing, monitoring, administering, or implementing programs, policies, or budgets of greater scope.
- Level 6:** Primary responsibility for developing, monitoring, administering, or implementing programs, policies, or budgets of jurisdiction-wide scope.

Direct Public Service, Public Welfare

This factor measures the degree to which incumbents are directly responsible for the welfare of the public. Welfare includes physical, economic, psycho-social elements. This factor does not measure responsibility for program development; it does measure hands-on care-giving. Note: skill involved in service delivery is measured elsewhere; here credit only responsibility for welfare.

- Level 1:** No hands-on service to the public.
- Level 2:** Responsibility for public service to the public involves giving and receiving information not directly related to health or economic need.
- Level 3:** Responsibility for public service involves giving and/or receiving information about services related to health or economic need.
- Level 4:** Responsibility for public service involves assessing client needs (physical, psycho-social, economic) from a short interview and making referrals for services offered by the jurisdiction.
- Level 5:** Responsibility for public service involves the delivery of health care (e.g. administering medications), psycho-social counseling (short-term), or economic assistance, where assessment has been done by others or need is obvious.
- Level 6:** Responsibility for public service involves both the assessment of client need over a longer period of time and the delivery of services. This may include comprehensive monitoring of patient's condition and making recommendations for treatment to treatment team; longer-term counseling or analysis; detailed assessment of economic need and provision of assistance.

Work of Others

This factor measures the degree to which incumbent is held responsible for the work others do.

- Level 1:** No responsibility for the work of others.
- Level 2:** Incumbent participates in the work and acts (officially or unofficially) as lead worker by assigning work activities to peers, workers less senior in the same work unit, seasonal workers, or students. May serve as supervisor in latter's absence.
- Level 3:** Incumbent assigns, directs, and evaluates the work of other employees in the same section. Incumbent may participate in the work as well as provide supervision of the work of others. (First-line supervisors)
- Level 4:** Incumbent assigns, directs, and evaluates the work of subordinate first-line supervisors and employees. Incumbent recommends personnel actions.
- Level 5:** Incumbent directs the work of more than one section. Primary activity is staffing and coordination of work.

Environment

This factor measures the discomfort or unpleasantness of the work environment. These elements are inherent to the work itself; the work could not be performed without subjecting the worker to them.

For this factor, "occasional or frequent exposure" refers to situations where an incumbent's work requires visiting areas where unpleasant conditions exist; "regular exposure" refers to situations in an incumbent's work stations(s).

- Level 1:** Work involves common, everyday discomforts or unpleasantness.
- Level 2:** Occasional exposure to dust, grease, oil, noise, weather conditions (heat, rain), work in open-office or confined space, isolation.
-OR-
Occasional work under pressure of time deadlines uncontrollable by worker.
- Level 3:** Frequent exposure to elements in Level 2, or occasional exposure to human or animal waste or body fluid.
-OR-
Frequent exposure to work under pressure of time deadlines uncontrollable by worker, or work with competing time demands and frequent interruptions (clerical, nursing).
- Level 4:** Regular exposure to one or more nuisance factor listed in Level 2 or Level 3.
- Level 5:** Regular exposure to either extreme levels of a nuisance factor or to more than one nuisance factor.

Hazards

This factor measures the risks inherent in the job. Credit is given for risks to which the incumbent is necessarily subjected. Some consideration is given to frequency of risk, but credit is also given to infrequent, significant risk.

Risk factors include (but are not limited to): exposure to disease, toxic substances, dangerous equipment and machinery, violence, VDT screens, open exposure to public, radiation, wet surfaces, visits to clients' homes or commercial establishments.

- Level 1:** Work presents risks common to everyday life.
- Level 2:** Occasional hazards, predictable and mostly controllable. May involve, e.g., visits to construction sites (where protective measures are taken).
- Level 3:** Regular exposure to hazards which are less predictable and controllable. May involve, e.g., working in an area open to the public where violence is possible but unforeseeable; working on construction sites (where protective measures are taken).
- Level 4:** Continual exposure to significant hazards (where protective measures are taken). May involve working with contaminated needles; operating heavy vehicles (such as backhoes); regular use of hazardous chemicals; working among an inmate population.
- Level 5:** Very significant hazards, though the frequency of encountering risks may be less than Level 4. Firefighting, patrol-policing.

FACTOR WEIGHTING FOR DIAGNOSTIC SYSTEM

	Factor Weights/Points						% of Total
	Level						
	1	2	3	4	5	6	
Skills and Knowledge Required	250	350	450	550	650	750	15
Interpersonal Skills	50	100	150	200	250		05
Complexity	60	170	280	390	500		10
Licensure and Continuing Education Requirements	0	55	120	185	250		05
Physical Demands	50	100	150	200	250		05
Sensory Demands	50	100	150	200	250		05
Emotional Demands	50	100	150	200	250		05
Material Resources and Information	200	300	400	500			10
Programs, Policies, Finances	250	350	450	550	650	750	15
Direct Public Service	0	100	200	300	400	500	05
Work of Others	0	55	120	185	250		05
Environment	50	100	150	200	250		05
Hazards	0	50	150	200	250		10
							100%

APPENDIX V
DETAILS OF MODIFIED FES AND
DIAGNOSTIC SYSTEM RATINGS OF
JOBS IN SAMPLE

MODIFIED FES SYSTEM EVALUATION LEVELS

Title	Know	Cont	MWk	Ind	P/S	Res	Imp	Prs	Env	Haz
Auto Mech II	5	3	5	5	6	3	5	3	6	5
Dietary Aid	3	3	3	3	4	3	4	4	4	3
Groundskpr I	1	1	2	2	7	2	3	3	4	4
Groundskpr II	2	2	3	3	7	3	4	3	4	4
Janitor II	1	1	2	2	7	2	3	2	7	5
Janitor III	2	2	2	3	7	3	3	3	7	5
Kitchen Helper	1	2	2	2	5	2	3	3	4	4
Heavy Tr Dr I	3	2	4	3	7	3	4	3	6	5
Light Truck Dr	2	2	3	3	6	3	3	3	4	4
Juven Det Wk	6	6	5	6	7	5	6	6	8	8
Laundry Helper	1	1	1	2	6	1	2	2	5	3
Laundry Wrk I	4	3	4	5	6	4	4	3	6	4
Landfill Att	3	3	3	3	6	3	4	3	8	6
Forest Wkr II	3	1	4	3	6	3	5	5	5	6
Food Serv Dr	2	2	2	3	4	3	3	2	4	3
Warehs Wkr	3	2	3	3	6	3	3	3	4	5
Painter	5	3	4	5	6	3	3	2	6	6
Equip Op II	3	2	4	5	6	3	4	3	7	6
WstWtr Tr Op I	4	2	6	6	6	5	6	5	8	6
LPN II	6	6	5	6	7	5	6	6	8	9
EMT	5	6	5	6	7	5	6	7	7	7
School Baker	4	2	4	5	5	4	5	4	4	4
Refuse Coll	1	2	1	2	8	2	2	2	9	6
Genl Lab I	1	1	1	2	7	2	3	3	8	6
Genl Lab II	2	1	2	2	8	2	3	3	8	7
LPN I	5	5	4	5	7	5	5	6	8	9
LPN III	7	6	6	7	7	6	7	6	8	9
Cafet Helper	1	2	1	2	4	2	3	3	4	4
Carpet Clr I	2	1	2	2	6	2	3	3	4	5
Elect Helper	4	2	4	4	7	2	4	4	6	6
Elect I	5	2	5	5	7	3	5	5	6	6
Elect II	5	3	6	6	7	4	6	5	6	6
Youth Corr IV	5	6	6	7	7	6	6	7	8	8
Youth Corr III	4	5	5	6	7	5	6	7	8	8
Sch Cook II	4	2	4	5	5	4	5	4	4	4
Cook I	3	2	4	4	5	4	5	4	4	4
Bldg Maint I	4	2	4	4	6	4	4	3	6	6
Bldg Maint II	5	2	4	5	6	5	5	4	6	6
Vect Ctr WkrII	3	2	4	4	6	3	4	3	7	6
Adult Corr Rec	4	5	4	4	6	3	5	7	9	9
Adult Corr III	5	5	5	6	7	4	6	7	9	9
Adult Corr IV	5	5	6	6	7	4	6	7	9	9
Adult Corr V	6	6	6	7	7	5	6	7	9	9
Rsp Thr TechIV	6	6	5	6	6	6	5	4	8	5
Occ Ther AstII	6	6	5	6	6	5	4	4	7	6
Park Caretk II	3	3	3	4	6	3	4	3	4	4
Para Med AstI	3	4	3	4	6	4	4	5	7	5
Para Med AstII	4	5	4	5	6	5	5	5	8	6
Para Med AstIII	4	5	4	5	6	5	5	5	8	7
Para Med AstIV	4	6	5	6	6	6	5	6	8	7

DIAGNOSTIC SYSTEM EVALUATION LEVELS

Title	Know	Cont	Cmp	Lic	Phy	Sen	Emot	Matl	Prg	Pub	Sup	Env	Haz
WstWt Trt Opl	3	2	3	3	3	4	1	3	2	1	2	5	4
LPN II	4	4	3	5	3	4	5	3	2	5	2	5	4
EMT	3	4	4	4	4	5	5	3	2	5	3	5	4
LPN I	3	3	3	5	3	3	5	3	2	5	1	5	4
LPN III	5	4	4	5	3	4	5	4	2	6	3	5	4
Genl Lab I	1	1	1	1	5	2	1	2	1	1	1	5	4
Genl Lab II	2	1	2	2	5	3	1	2	1	1	1	5	4
Refuse Coll	1	2	1	1	5	2	1	2	1	1	1	5	4
School Baker	3	2	3	2	3	3	1	3	3	1	3	3	2
Dietary Aid	2	2	2	1	2	3	2	2	1	2	2	3	2
Food Serv Drv	2	2	2	1	3	2	1	3	1	1	2	2	2
Juv Det Wkr	4	5	4	2	3	5	4	2	2	5	3	4	4
Kitchen Helper	1	2	1	1	3	2	1	2	1	2	2	3	2
Laundry Wkr II	3	2	2	2	3	2	1	3	4	1	3	3	2
Laundry Helper	1	1	1	1	3	1	1	2	1	1	1	3	2
Forestry Wkr	3	1	3	2	4	3	1	3	1	2	1	4	4
Landfill Att	2	3	2	1	3	3	2	2	1	2	1	5	4
Auto Mech II	3	2	3	2	4	3	1	3	2	1	3	5	3
Painter II	3	2	2	2	3	3	1	3	2	1	3	4	4
Warehs Wkr	2	1	2	1	3	3	1	3	2	1	1	3	3
Equip Op II	3	2	2	2	4	4	1	3	2	1	2	4	4
Light Trk Dr	2	1	2	1	4	3	1	3	2	1	1	4	3
Heavy Trk Dr	3	2	3	2	4	4	1	3	2	1	2	5	4
Groundskpr	1	1	2	1	4	2	1	2	2	1	1	4	3
Groundskpr II	2	2	3	1	4	2	1	3	2	1	3	4	3
Janitor II	1	1	2	1	3	2	1	2	1	1	1	4	4
Janitor III	2	2	2	1	3	2	1	3	2	1	3	4	4
Cafet Helper	1	2	1	1	2	2	1	2	1	2	2	3	2
Carpet Clnr I	2	1	2	1	4	2	1	2	1	1	1	3	3
Elect Helper	2	1	2	1	3	2	1	2	1	1	1	4	4
Elect I	3	2	3	3	3	3	1	3	2	1	2	4	4
Elect II	4	2	4	3	3	3	1	4	3	1	3	4	4
Youth Corr IV	4	5	5	2	3	5	4	3	2	5	3	4	4
Youth Corr III	3	5	5	2	3	5	4	2	2	5	3	4	4
School Cook II	3	2	3	3	3	3	1	3	2	2	3	3	2
Cook I	2	2	2	2	3	3	1	2	1	2	2	3	2
Bldg Main Wkl	3	1	3	2	4	3	1	2	2	1	2	4	4
Bldg Main Wkll	4	2	3	2	4	3	1	3	2	1	3	4	4
Park Caretk II	3	3	3	2	3	3	1	2	2	2	2	4	3
Vect Ctrl Wkll	2	2	3	2	3	2	1	2	2	2	2	4	4
Res Thr TechIV	5	4	4	4	3	4	4	2	3	5	2	4	3
Occ Thr Ast II	5	4	4	4	3	4	4	2	3	5	2	4	3
Adult Corr Rct	3	4	3	3	4	5	3	3	2	4	1	5	5
Adult Corr III	4	5	4	3	4	5	4	3	2	5	2	5	5
Adult Corr IV	4	5	4	3	4	5	4	4	2	5	2	5	5
Adult Corr V	5	5	5	4	4	5	4	4	3	5	3	5	5
Para Med Astl	3	3	2	2	3	3	4	2	2	4	1	5	3
Para Med All	4	4	3	3	3	4	4	2	2	4	2	5	3
Para Med Alll	4	4	3	4	3	4	5	3	3	5	2	5	4
Para Med AllV	4	5	4	4	3	4	5	3	3	5	3	5	4

APPENDIX VI
JOBS IN SAMPLE SORTED BY WORTH POINTS AND PAY

Jobs sorted by evaluation points

TABLE 1: All Jobs Sorted by FES Total Points
(with current pay and gender predominance)

<u>TITLE</u>	<u>FES Pts</u>	<u>Pay</u>	<u>Sex</u>
Laundry Helper	1157.00	1679	X
Cafet Helper	1195.00	1679	F
Kitchen Helper	1226.00	1679	X
Groundskpr I	1243.00	1679	M
Food Serv Dr	1268.00	1729	F
Carpet Clr I	1276.00	1799	M
Janitor II	1303.00	1679	X
Genl Lab I	1342.00	1679	M
Light Truck Dr	1346.00	1799	M
Groundskpr II	1391.00	1781	M
Refuse Coll	1391.00	1949	M
Warehs Wkr	1410.00	1799	M
Dietary Aid	1413.00	1729	F
Janitor III	1420.00	1781	F
Genl Lab II	1445.00	1729	M
Park Caretk II	1470.00	1799	M
Cook I	1511.00	1873	X
Heavy Tr Dr I	1512.00	2029	M
Forest Wkr II	1521.00	1873	M
Vect Ctr WkrII	1554.00	1834	M
Landfill Att	1562.00	1873	M
Equip Op II	1580.00	1949	M
School Baker	1593.00	1949	F
Sch Cook II	1593.00	1949	F
Elect Helper	1601.00	1873	M
Bldg Maint I	1614.00	2243	M
Para Med AstI	1630.00	1767	X
Laundry Wrk II	1635.00	1834	M
Painter II	1676.00	2380	M
Auto Mech II	1743.00	2470	M
Bldg Maint II	1779.00	2380	M
Elect I	1784.00	2329	M
Para Med AstII	1877.00	1896	F
WstWtr Tr Opl	1896.00	2329	M
Para Med AstIII	1899.00	2053	F
Elect II	1935.00	2470	M
Adult Corr Rec	1941.00	2413	M
ParaMed AstIV	2060.00	2222	X
Occ Ther AstII	2061.00	2222	F
LPN I	2062.00	2053	F
Youth Corr III	2077.00	2512	M
RspThr TechIV	2130.00	2618	X
EMT	2141.00	2413	M
Adult Corr III	2172.00	2618	M
Adult Corr IV	2204.00	2850	M
Juven Det Wk	2247.00	2413	X
LPN II	2277.00	2222	F
Youth Corr IV	2297.00	2731	X
Adult Corr V	2398.00	3102	M
LPN III	2512.00	2413	F

**TABLE 2: All Jobs Sorted by Diagnostic System Total Points
(with current pay and gender predominance)**

<u>TITLE</u>	<u>Diagnostic</u>	<u>Pay</u>	<u>Sex</u>
Laundry Helper	1360.00	1679	X
Cafet Helper	1565.00	1679	F
Kitchen Helper	1615.00	1679	X
Janitor II	1720.00	1679	X
Genl Lab I	1760.00	1679	M
Carpet Clr I	1770.00	1799	M
Food Serv Dr	1775.00	1729	F
Refuse Coll	1810.00	1949	M
Groundskpr I	1820.00	1679	M
Elect Helper	1820.00	1873	M
Dietary Aid	1875.00	1729	F
Cook I	1930.00	1873	X
Warehs Wkr	1970.00	1799	M
Light Truck Dr	2070.00	1799	M
Genl Lab II	2075.00	1729	M
Landfill Att	2170.00	1873	M
Janitor III	2190.00	1781	F
Vect Ctr WkrII	2290.00	1834	M
Groundskpr II	2300.00	1781	M
Bldg Maint I	2340.00	2243	M
Laundry Wrk II	2345.00	1834	M
Forest Wkr II	2385.00	1873	M
Painter II	2395.00	2380	M
School Baker	2405.00	1949	F
Equip Op II	2430.00	1949	M
Park Caretk II	2440.00	1799	M
Sch Cook II	2470.00	1949	F
Elect I	2505.00	2329	M
Auto Mech II	2555.00	2470	M
Heavy Tr Dr I	2590.00	2029	M
WstWtr TrOp I	2605.00	2329	M
Bldg Maint II	2655.00	2380	M
Para Med AstI	2675.00	1767	X
Elect II	2980.00	2470	M
Para Med AstII	3105.00	1896	F
Adult Corr Rec	3200.00	2413	M
LPN I	3280.00	2053	F
Juven Det Wk	3415.00	2413	X
Youth Corr III	3425.00	2512	M
Occ Ther AstII	3530.00	2222	F
RspThr TechIV	3530.00	2618	X
LPN II	3535.00	2222	F
ParaMed AstIII	3570.00	2053	F
Youth Corr IV	3625.00	2731	X
EMT	3645.00	2413	M
Adult Corr III	3665.00	2618	M
Adult Corr IV	3765.00	2850	M
ParaMed AstIV	3795.00	2222	X
LPN III	4010.00	2413	F
Adult Corr V	4205.00	3102	M

TABLE 3: All Jobs Sorted by Current Pay (with evaluation points and gender predominance)

TITLE	PAY	SEX	FES	DIAGNOSTIC
Laundry Helper	1679	X	1157.00	1360.00
Cafet Helper	1679	F	1195.00	1565.00
Kitchen Helper	1679	X	1226.00	1615.00
Janitor II	1679	X	1303.00	1720.00
Genl Lab I	1679	M	1342.00	1760.00
Groundskpr I	1679	M	1243.00	1820.00
Food Serv Dr	1729	F	1268.00	1775.00
Dietary Aid	1729	F	1413.00	1875.00
Genl Lab II	1729	M	1445.00	2075.00
Para Med AstI	1767	X	1630.00	2675.00
Janitor III	1781	F	1420.00	2190.00
Groundskpr II	1781	M	1391.00	2300.00
Carpet Clr I	1799	M	1276.00	1770.00
Warehs Wkr	1799	M	1410.00	1970.00
Light Truck Dr	1799	M	1346.00	2070.00
Park Caretk II	1799	M	1470.00	2440.00
Vect Ctr WkrII	1834	M	1554.00	2290.00
Laundry Wrk II	1834	M	1635.00	2345.00
Elect Helper	1873	M	1601.00	1820.00
Cook I	1873	X	1511.00	1930.00
Landfill Att	1873	M	1562.00	2170.00
Forest Wkr II	1873	M	1521.00	2385.00
Para Med AstII	1896	F	1877.00	3105.00
Refuse Coll	1949	M	1391.00	1810.00
School Baker	1949	F	1593.00	2405.00
Equip Op II	1949	M	1580.00	2430.00
Sch Cook II	1949	F	1593.00	2470.00
Heavy Tr Dr I	2029	M	1512.00	2590.00
LPN I	2053	F	2062.00	3280.00
Para Med AstIII	2053	F	1899.00	3570.00
Occ Ther AstII	2222	F	2061.00	3530.00
LPN II	2222	F	2277.00	3535.00
Para Med AstIV	2222	X	2060.00	3795.00
Bldg Maint I	2243	M	1614.00	2340.00
Elect I	2329	M	1784.00	2505.00
WstWtr Tr Op I	2329	M	1896.00	2605.00
Painter II	2380	M	1676.00	2395.00
Bldg Maint II	2380	M	1779.00	2655.00
Adult Corr Rec	2413	M	1941.00	3200.00
Juven Det Wk	2413	X	2247.00	3415.00
EMT	2413	M	2141.00	3645.00
LPN III	2413	F	2512.00	4010.00
Auto Mech II	2470	M	1743.00	2555.00
Elect II	2470	M	1935.00	2980.00
Youth Corr III	2512	M	2077.00	3425.00
Rsp Thr TechIV	2618	X	2130.00	3530.00
Adult Corr III	2618	M	2172.00	3665.00
Youth Corr IV	2731	X	2297.00	3625.00
Adult Corr IV	2850	M	2204.00	3765.00
Adult Corr V	3102	M	2398.00	4205.00

APPENDIX VII
TECHNICAL DISCUSSION OF REGRESSION AND
COMPARATOR GROUP ANALYSIS

Technical Discussion of Regression & Comparator Group Analysis

As a first analysis, we made a simple plot of the current pay and the evaluated worth points for each job (Figures 1-6). Jobs on these plots are indicated by their gender predominance -- female-dominated, male-dominated, and mixed gender. By examining the plots, we can readily see any patterns of worth-to-pay and whether those patterns differ by the gender predominance of jobs.

A next step is to compute statistics which more precisely describe the worth-to-pay patterns observable in the plots. We use regression, the standard procedure for such computations. The regression procedure basically fits a line to the kinds of scatter plots in Figures 1-6. The statistics yielded form the equation of the average wage line. We get an intercept or constant (where the wage line hits the Y-axis) and metric regression coefficients which measure the slope or how steep the line is. If there are two or more variables thought to affect wages (such as worth points and sex predominance), the procedure produces regression coefficients for each of those independent variables. These statistics measure the effect of each independent variable on wages given the other variables. Standardized regression coefficients are derived from the metric coefficients, and allow us to directly compare the size of the effects.

The legislation authorizing the 1986 Arthur Young study in Hawaii specified that "female-dominated jobs" would be defined as those with 70% or more female incumbents. Similarly, male jobs were defined as those 70% or more male. These figures are typical in pay equity studies, but essentially arbitrary. Given that specification, though, we used a categorical (or dummy) variable for gender predominance in the regression equation, equal to one if the job was female-

dominated and to zero otherwise. Thus, the regression coefficient for the dummy measures the overall effect of being in a female-dominated job, net of job worth.

Finally, because we have used a sample of the jobs in the two bargaining units, we must take into consideration the probability that the sample is unlike the whole population of jobs. This is done by measuring the statistical significance of coefficients. When a coefficient is not statistically significant, this means that the probability is too high that it could have occurred by chance, and it is not sufficiently different from zero to accept it. Thus, when a coefficient is not statistically significant, we reject it as important statistically. We would nevertheless seek to account for the difference and the small size.

Bargaining Unit 1

In Figures 1 and 2, jobs are arrayed by current pay and by each of the gender-neutral job evaluation system total points. On both plots, it is clear that there is a group of male-dominated jobs at the very top of the graph, with both higher pay and higher worth points. These jobs are those commonly known as "skilled trades" -- electricians, painters, automotive mechanics. Note that some of these jobs are paid much more than other jobs with similar evaluation points. However, this seems to be true for both male- and female-dominated jobs which are relatively lower paid. There is no apparent pattern which differs according to gender. Nevertheless, the trade jobs with the highest "pay for point ratio" are historically and actually male-dominated, and there is no similar grouping of high paid female-dominated jobs.

The regression analysis confirms this observation. Tables 1 and 2 show a small, negative effect of being in a female-dominated job, though the effect is not statistically significant.

FIGURE 1: Scatter Plot of Worth Points (modified FES) and Current Pay for Bargaining Unit 1 Jobs (with average pay line)

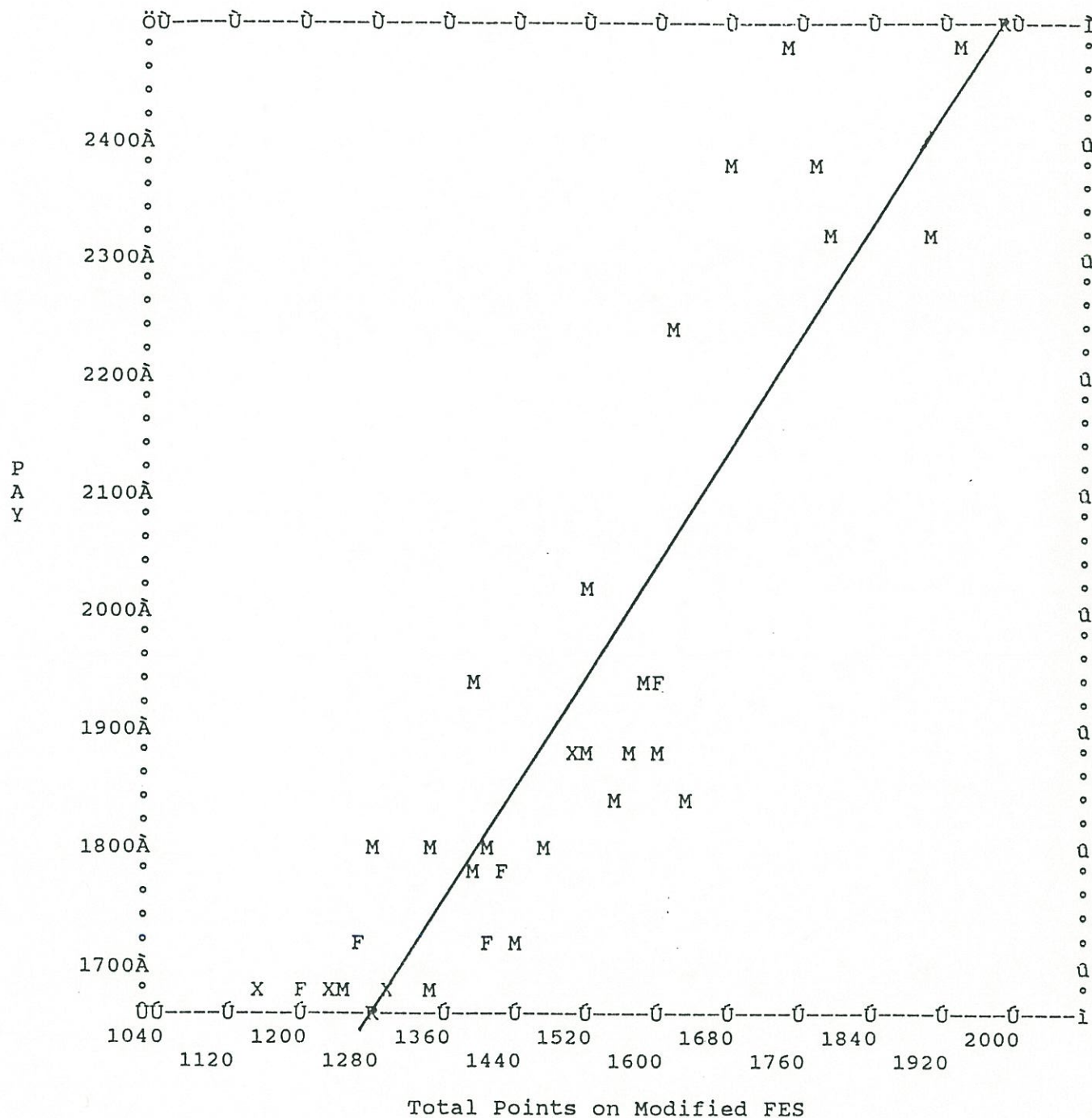
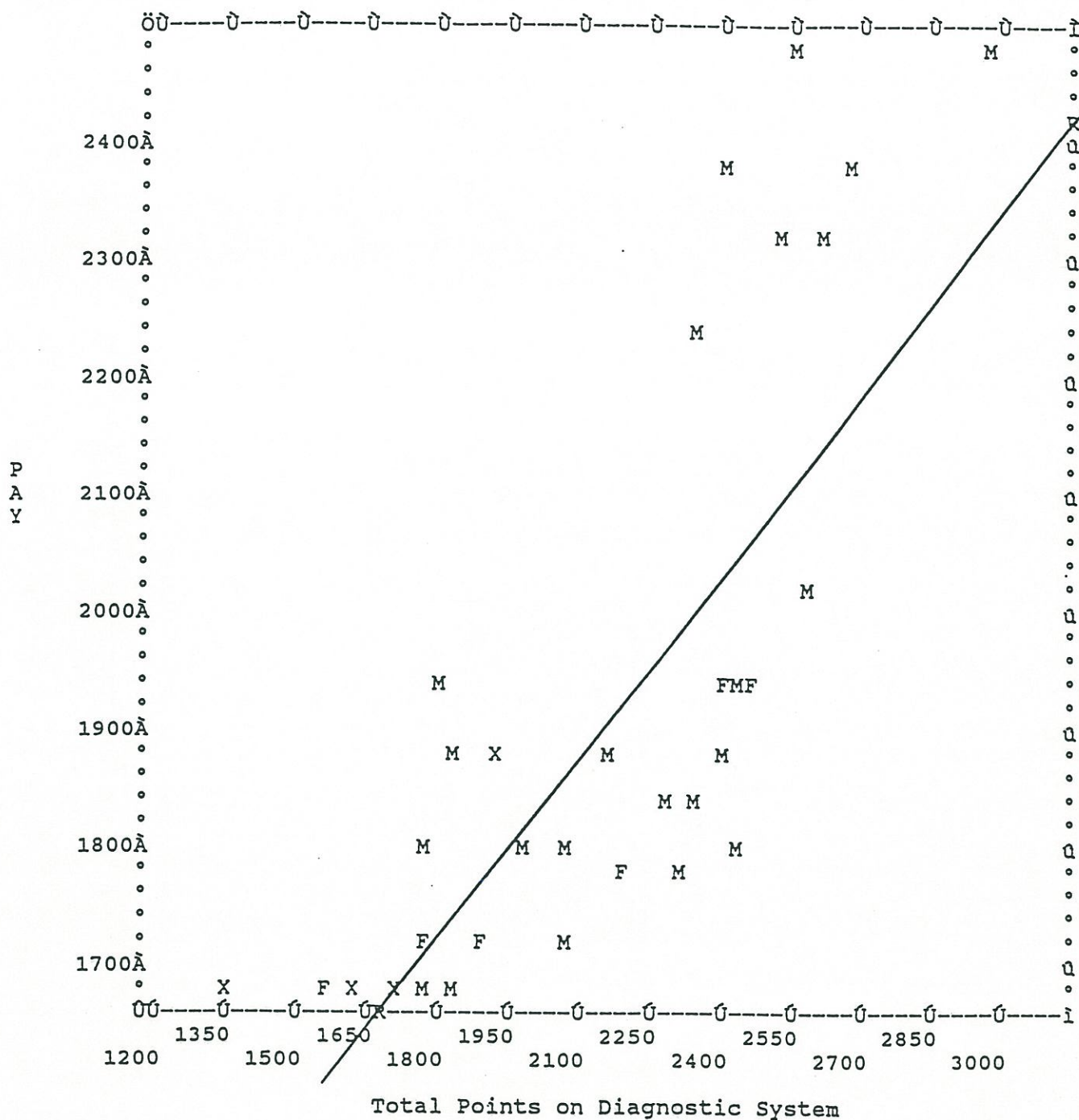


FIGURE 2: Scatter Plot of Worth Points (Diagnostic System) and Current Pay for Bargaining Unit 1 Jobs (with average pay line)



**TABLE 1: Regression Statistics, Bargaining Unit 1,
FES Evaluations**

Variable	Metric Coefficient	Standardized Coefficient	
Points	1.0999	.86030	(p=.0000)
Sex	-41.105	-.06347	(p=.4868)
(Constant)	288.86		
$r^2=.75037$			

**TABLE 2: Regression Statistics, Bargaining Unit 1,
Diagnostic System Evaluations**

Variable	Metric Coefficient	Standardized Coefficient	
Points	.50306	.74976	(p=.0000)
Sex	-88.295	-.13633	(p=.2466)
(Constant)	861.38		
$r^2=.58160$			

Bargaining Unit 10

In examining Figures 3 and 4, the plots of current wages and evaluated worth points for Bargaining Unit 10, it is clear that the female-dominated jobs are paid less than equivalent male-dominated jobs. The female jobs in the lower half of the plots are the health-care related jobs of licensed practical nurse, paramedical assistant, and occupational therapist. The male jobs in the upper half are corrections officers and workers.

Tables 3 and 4 show that the gender predominance of jobs is a statistically significant predictor of wages in BU10. The regression coefficient is negative, meaning that female-dominated jobs in BU10 are paid less than male-dominated jobs of comparable value. The metric coefficient for each job evaluation system indicates the difference in overall wages between male- and female-dominated jobs. The standardized coefficients show that gender predominance is nearly as strong a predictor of relative pay as worth.

FIGURE 3: Scatter Plot of Worth Points (Modified FES) and Current Pay for Bargaining Unit 10 Jobs (with average pay line)

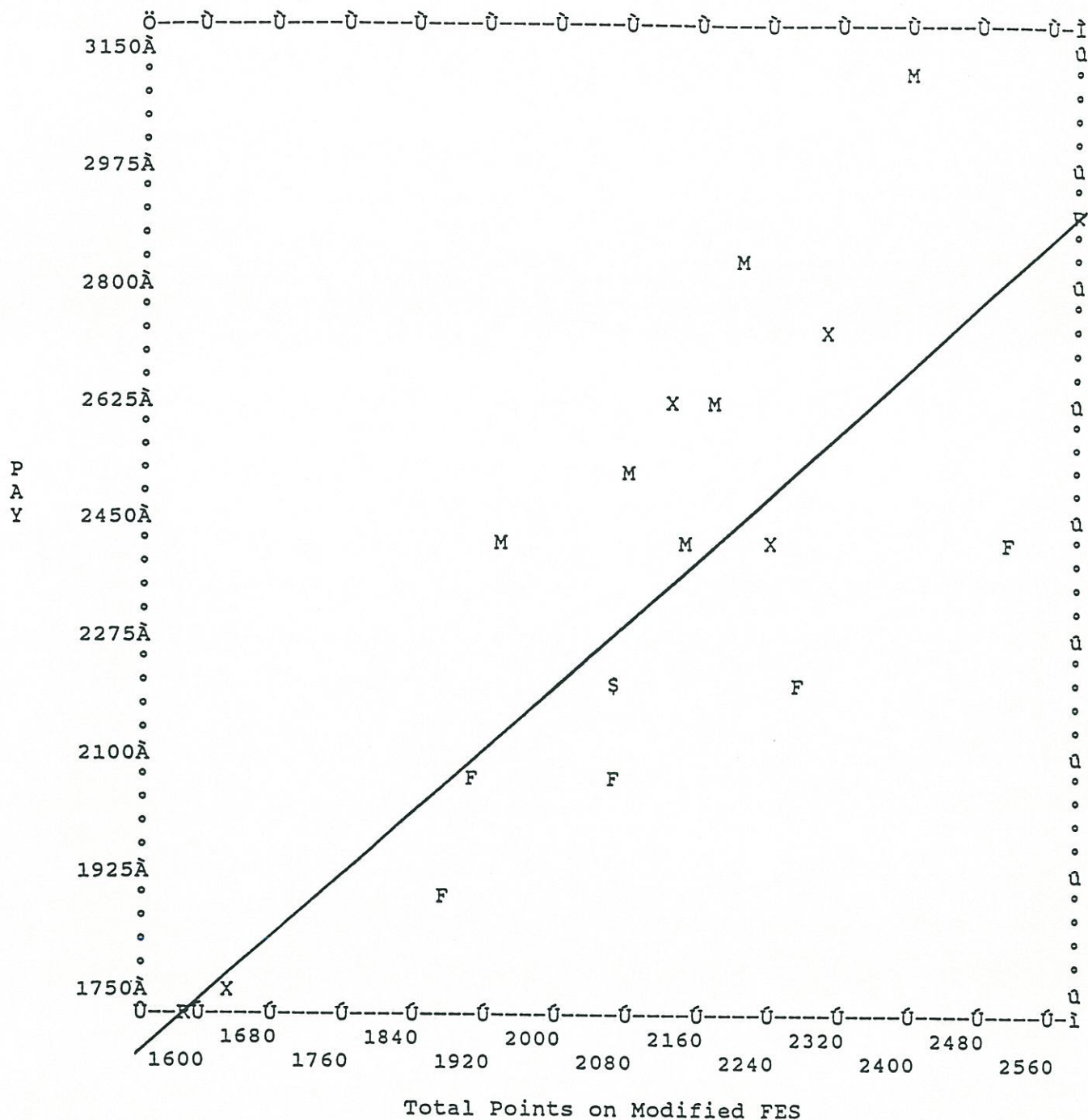
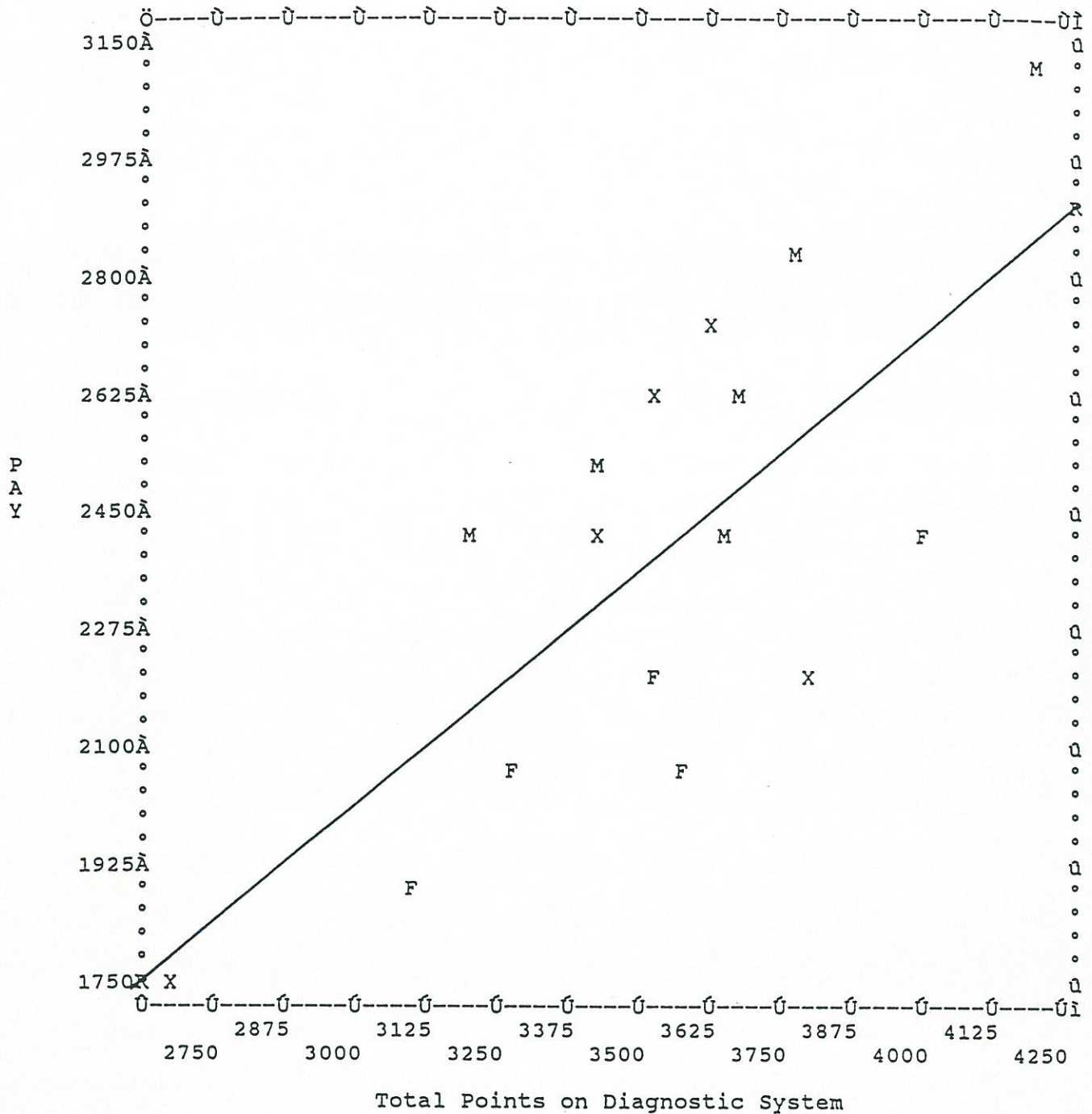


FIGURE 4: Scatter Plot of Worth Points (Diagnostic System) and Current Pay for Bargaining Unit 10 Jobs (with average pay line)



**TABLE 3: Regression Statistics, Bargaining Unit 10,
FES Evaluations**

Variable	Metric Coefficient	Standardized Coefficient	
Points	1.1653	.71024	(p=.0001)
Sex	-367.51	-.52547	(p=.0008)
(Constant)	46.558		
$r^2=.75570$			

**TABLE 4: Regression Statistics, Bargaining Unit 10,
Diagnostic System Evaluations**

Variable	Metric Coefficient	Standardized Coefficient	
Points	.69492	.70613	(p=.0001)
Sex	-346.65	-.49565	(p=.0015)
(Constant)	54.135		
$r^2=.74766$			

Cross-BU Analysis

Figures 5 and 6 are plots of worth and pay¹ for all the jobs. Notice that some female-dominated jobs (mostly from bargaining unit 10) are clearly below the rest of the jobs, in the lower right of the plots.

We conducted the same regression analysis on all jobs in both bargaining units, testing for gender effects across units. Tables 5 and 6 show that for all jobs, there is a statistically significant effect of gender predominance on wages. Again, the metric coefficient for "sex" is the dollar amount of lower wages for female-dominated jobs after differences in job content are considered.

FIGURE 5: Scatter Plot of Worth Points (Modified FES) and Current Pay for All Jobs (with average pay line)

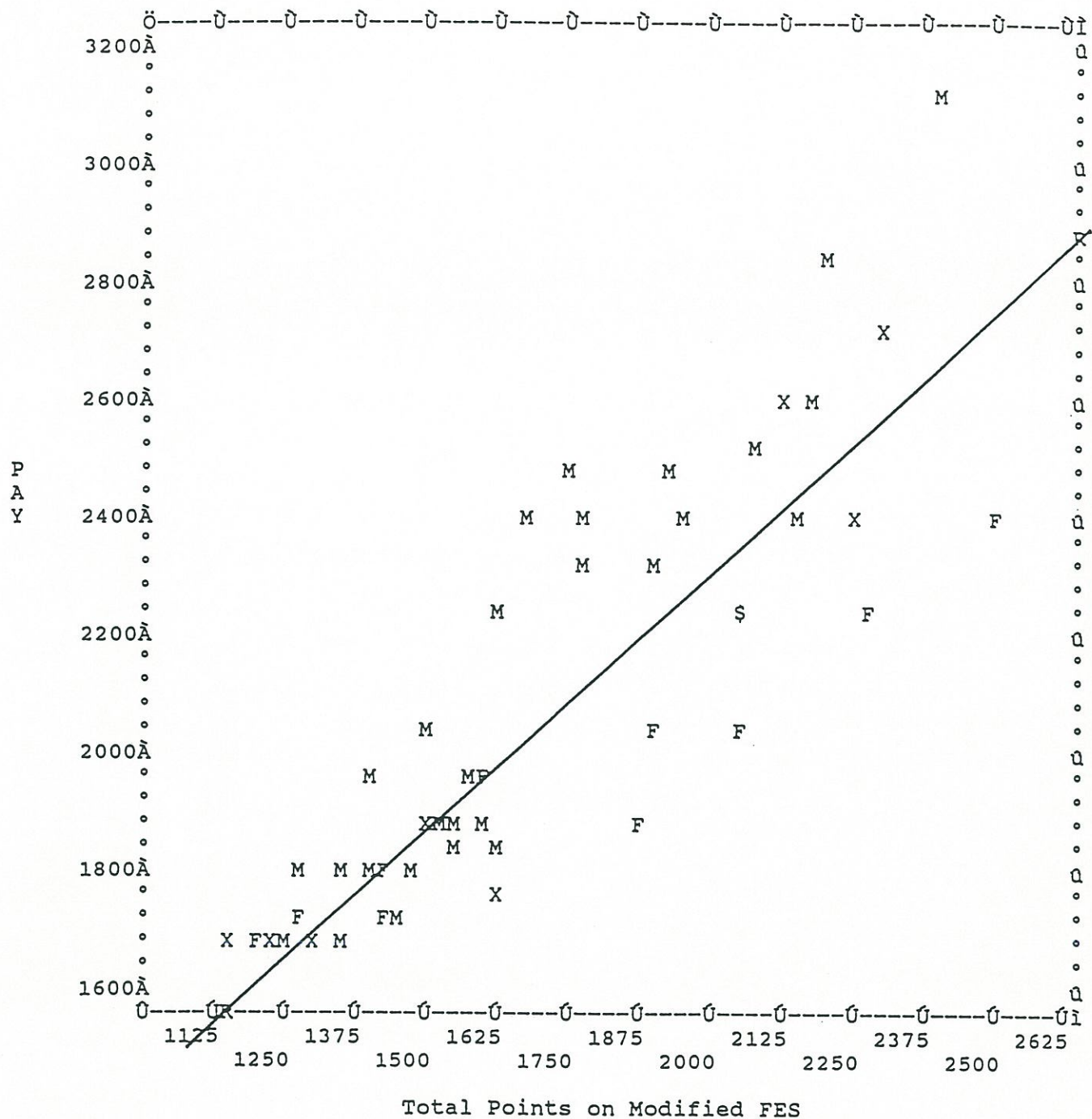
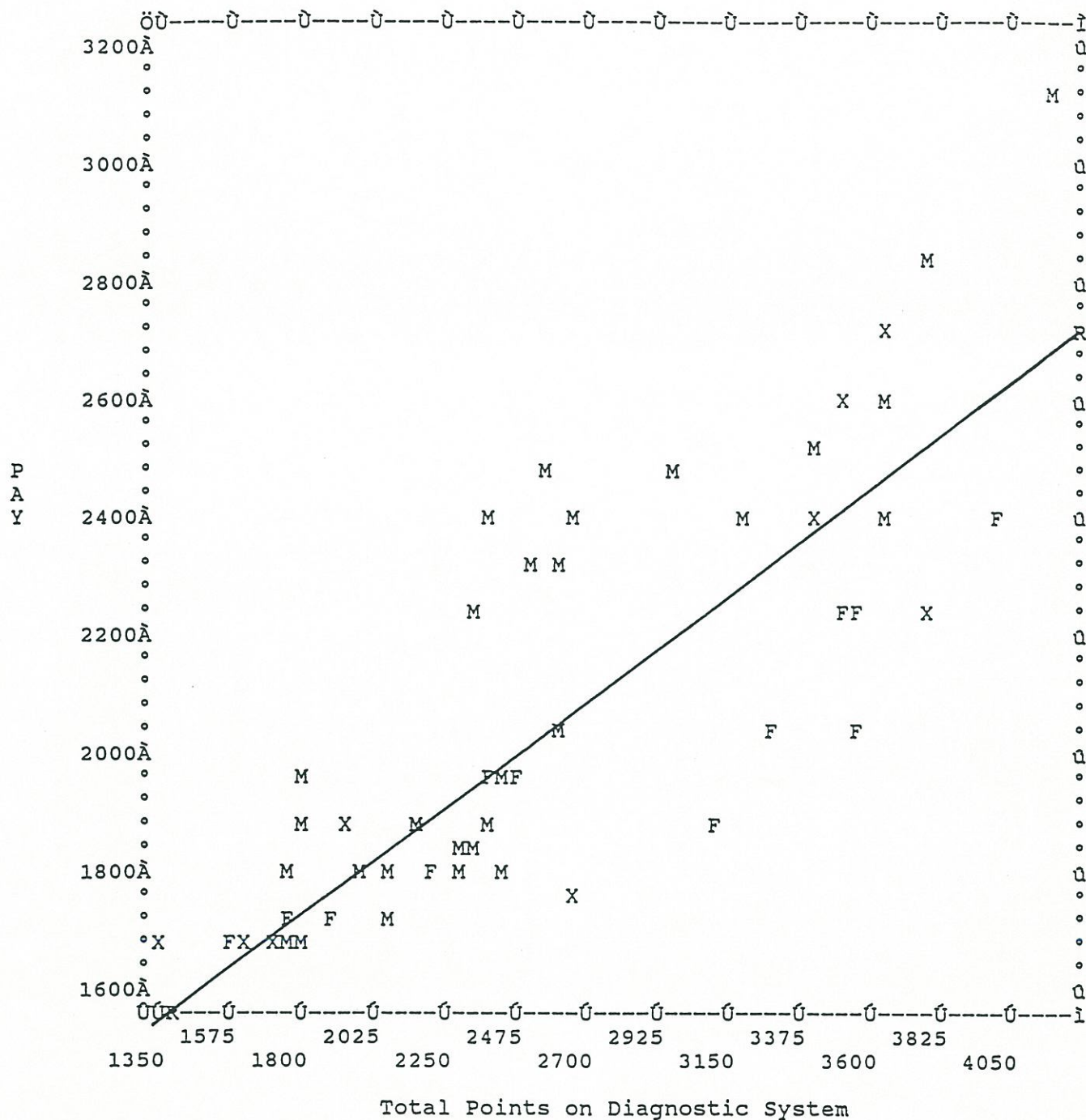


FIGURE 6: Scatter Plot of Worth Points (Diagnostic System) and Current Pay for All Jobs (with average pay line)



**TABLE 5: Regression Statistics, All Jobs,
FES Evaluations**

Variable	Metric Coefficient	Standardized Coefficient	
Points	.88339	.88273	(p=.0000)
Sex	-210.12	-.25299	(p=.0003)
(Constant)	624.58		
 $r^2=.79463$			

**TABLE 6: Regression Statistics, All Jobs,
Diagnostic System Evaluations**

Variable	Metric Coefficient	Standardized Coefficient	
Points	.40418	.84972	(p=.0000)
Sex	-227.44	-.27383	(p=.0006)
(Constant)	1078.42		
 $r^2=.73111$			

In order to test whether the effect observed in Tables 5 and 6 was due primarily to differences in gender predominance or to differences between bargaining unit 1 and 10 *per se*, we constructed another dummy variable for bargaining unit -- equal to one for BU 10 and zero for BU 1. The coefficient for this dummy would estimate the overall effect of being in one bargaining unit or another. Including the variable in the equation with sex will show the relative influence of differential bargaining strength and gender predominance.

As Tables 7 and 8 show, gender predominance is still an important predictor of wages, though the negative coefficient for BU 10 indicates that the pay-for-worth payoff is greater for BU 1.

**TABLE 7: Regression Statistics, All Jobs,
FES Evaluations
(with variable for bargaining unit)**

Variable	Metric Coefficient	Standardized Coefficient	
Points	1.0879	1.08705	(p=.0000)
Sex	-186.04	-.22399	(p=.0010)
BU	-186.93	-.24963	(p=.0333)
(Constant)	333.23		

$r^2=.81005$

**TABLE 8: Regression Statistics, All Jobs,
Diagnostic System Evaluations
(with variable for bargaining unit)**

Variable	Metric Coefficient	Standardized Coefficient	
Points	.55288	.1162	(p=.0000)
Sex	-201.06	-.24208	(p=.0016)
BU	-270.86	-.36171	(p=.0182)
(Constant)	774.704		

$r^2=.75696$

In regression analyses on all jobs in both bargaining units, there is a negative effect of the gender predominance of jobs -- women's jobs are, on average, paid less than men's jobs of comparable worth across the two bargaining units.

Findings From Comparator Group Analysis

To do the comparator group analysis, we prepared two lists of the 50 jobs, ranked from the lowest number of total points to the highest. One list was prepared for each evaluation system. These lists are provided in Appendix VI.

We then created bands (or comparator groups), where jobs that fell within a specific point range were grouped together. In essence, each comparator group includes jobs that are of approximately equal value, with similar total evaluation points. A total of four comparator groups were established for each system by defining natural point clusters of the job classes. This provided a sufficient number of male and female-dominated jobs in each group. In the modified FES system, the comparator groups span approximately 400 points; in the diagnostic system, the comparator groups span approximately 800 points. These point spreads reflect natural clusters of the job classes.

We then returned to an analysis of each of the comparator groups. Specifically, we calculated the average current pay of the male-dominated jobs, the average current pay of the female-dominated jobs within each comparator group, and then determined the difference between these two numbers. In all cases, the pay reflects a monthly salary. This analysis allowed the consultants to determine whether there is a discrepancy in pay between male- and female-dominated jobs in the same comparator group.

Given the relatively low number of female jobs to use as comparators, the comparator group analysis was conducted using the full set of jobs, that is jobs from both BU1 and BU10. Average current pay of gender-neutral jobs was calculated, but not included in the final analysis of effect by gender.

In every comparator group in both evaluation systems, we found female-dominated jobs to be paid lower, on average, than comparable male-dominated jobs. In essence, women do not get the same dollars for the same evaluation points. The comparator group results reinforce the findings of the regression analysis. Both job evaluation systems show similar trends in the pay gap between male and female jobs with comparable ratings.

**COMPARATOR GROUP ANALYSIS - COMPARATOR GROUP 1
within FES SYSTEM**

Job Title	FES Points	Current Salary	M/F Dominance
Laundry Helper	1157	1679	X
Cafeteria Helper	1195	1679	F
Kitchen Helper	1226	1679	X
Groundskeeper I	1243	1679	M
Food Service Driver	1268	1729	F
Carpet Cleaner I	1276	1799	M
Janitor II	1303	1679	X
General Laborer I	1342	1679	M
Light Truck Driver	1346	1799	M
Groundskeeper II	1391	1781	M
Refuse Collector	1391	1949	M
Warehouse Worker	1410	1799	M
Dietary Aid	1413	1729	F
Janitor III	1420	1781	F
General Laborer II	1445	1729	M
Park Caretaker II	1470	1799	M
Cook I	1511	1873	X
Heavy Truck Driver I	1512	2029	M
Forestry Worker II	1521	1873	M

Female Average = \$1730

Male Average = \$1810

Neutral Average = \$1728 Difference between M/F = \$-80

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Example of comparison of male- and female-dominated jobs in comparator group 1 with equivalent points but different pay:

Warehouse Worker (M): 1410 points = \$1799

Dietary Aide (F): 1413 points = \$1729 (\$70 less/month)

**COMPARATOR GROUP ANALYSIS - COMPARATOR GROUP 2
within FES SYSTEM**

Job Title	FES Points	Current Salary	M/F Dominance
Vector Control Worker II	1554	1834	M
Landfill Attendant	1562	1873	M
Equipment Operator II	1580	1949	M
School Baker	1593	1949	F
School Cook II	1593	1949	F
Electrician Helper	1601	1873	M
Building Maintenance Wkr I	1614	2243	M
Paramedical Assistant I	1630	1767	X
Laundry Worker II	1635	1834	M
Painter II	1676	2380	M
Auto Mechanic II	1743	2470	M
Building Maintenance Wkr II	1779	2380	M
Electrician I	1784	2329	M
Paramedical Assistant II	1877	1896	F
Wastewater Treatment Op I	1896	2329	M
Paramedical Assistant III	1899	2053	F
Electrician II	1935	2470	M
Adult Corrections Recruit	1941	2413	M

Female Average = \$1962

Male Average = \$2183

Neutral Average = \$1767 Difference between M/F = \$-221

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Example of comparison of male- and female-dominated jobs in comparator group 2 with equivalent points but different pay:

Wastewater Treatment Op 1 (M): 1896 points = \$2329

Paramedical Assistant III (F): 1899 points = \$2053 (\$276less/mo)

**COMPARATOR GROUP ANALYSIS - COMPARATOR GROUP 3
within FES SYSTEM**

Job Title	FES Points	Current Salary	M/F Dominance
Paramedical Assistant IV	2060	2222	X
Occupational Ther Ast II	2061	2222	F
LPN I	2062	2053	F
Youth Corrections III	2077	2512	M
Respiratory Ther Tech IV	2130	2618	X
EMT	2141	2413	M
Adult Corrections Off III	2172	2618	M
Adult Corrections Off IV	2204	2850	M
Juvenile Det Worker	2247	2413	X
LPN II	2277	2222	F
Youth Corrections IV	2297	2731	X

Female Average = \$2166

Male Average = \$2598

Neutral Average = \$2496 Difference between M/F = \$-432

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Example of comparison of male- and female-dominated jobs in comparator group 3 with equivalent points but different pay:

Youth Corrections (M): 2077 points = \$2512

LPN I (F): 2062 points = \$2053 (\$459 less/mo)

**COMPARATOR GROUP ANALYSIS - COMPARATOR GROUP 4
within FES SYSTEM**

<u>Job Title</u>	<u>FES Points</u>	<u>Current Salary</u>	<u>M/F Dominance</u>
Adult Corrections Off V	2398	3102	M
LPN III	2512	2413	F

Female Average = \$2413

Male Average = \$3102

Neutral Average = N/A

Difference Between M/F = \$-689

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Example of comparison of male- and female-dominated jobs in comparator group 4 with similar points but different pay:

Adult Corr. Officer V (M): 2398 points = \$3102

LPN III (F): 2512 points = \$2413 (\$689 less/mo)

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Overall Average Difference between Female- and Male-Dominated Jobs as Predicted by Comparator Group Analysis for FES system: = \$ -356/month

**COMPARATOR GROUP ANALYSIS - COMPARATOR GROUP 1
within DIAGNOSTIC SYSTEM**

Job Title	Diagnostic Points	Current Salary	M/F Dominance
Laundry Helper	1360	1679	X
Cafeteria Helper	1565	1679	F
Kitchen Helper	1615	1679	X
Janitor II	1720	1679	X
General Laborer I	1760	1679	M
Carpet Cleaner I	1770	1799	M
Food Service Driver	1775	1729	F
Refuse Collector	1810	1949	M
Groundskeeper I	1820	1679	M
Electrician Helper	1820	1873	M
Dietary Aid	1875	1729	F
Cook I	1930	1873	X
Warehouse Worker	1970	1799	M
Light Truck Driver	2070	1799	M
General Laborer II	2075	1729	M

Female Average = \$1712

Male Average = \$1788

Neutral Average = \$1728

Difference between M/F = \$- 76

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Example of comparison of male- and female-dominated jobs in comparator group 1 with similar points but different pay:

Carpet Cleaner I (M): 1770 points = \$1799

Food Service Driver (F): 1775 points = \$1729 (\$70 less/mo)

**COMPARATOR GROUP ANALYSIS - COMPARATOR GROUP 2
within DIAGNOSTIC SYSTEM**

Job Title	Diagnostic Points	Current Salary	M/F Dominance
Landfill Attendant	2170	1873	M
Janitor III	2190	1781	F
Vector Control Worker II	2290	1834	M
Groundskeeper II	2300	1781	M
Building Maintenance Wkr I	2340	2243	M
Laundry Worker II	2345	1834	M
Forestry Worker II	2385	1873	M
Painter II	2395	2380	M
School Baker	2405	1949	F
Equipment Operator II	2430	1949	M
Park Caretaker II	2440	1799	M
School Cook II	2470	1949	F
Electrician I	2505	2329	M
Auto Mechanic II	2555	2470	M
Heavy Truck Driver I	2590	2029	M
Wastewater Treatment Op I	2605	2329	M
Building Maintenance Wkr II	2655	2380	M
Paramedical Assistant I	2675	1767	X

Female Average = \$1893

Male Average = \$2079

Neutral Average = \$1767 Difference Between M/F= \$-186

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Example of comparison of male- and female-dominated jobs in comparator group 2 with similar points but different pay:

Landfill Attendant (M): 2170 points = \$1873

Janitor (F): 2190 points = \$1781 (\$92 less/mo)

**COMPARATOR GROUP ANALYSIS - COMPARATOR GROUP 3
within DIAGNOSTIC SYSTEM**

<u>Job Title</u>	<u>Diagnostic Points</u>	<u>Current Salary</u>	<u>M/F Dominance</u>
Electrician II	2980	2470	M
Paramedical Assistant II	3105	1896	F
Adult Corrections Recruit	3200	2413	M
LPN I	3280	2053	F
Juvenile Det Worker	3415	2413	X
Youth Corrections III	3425	2512	M
Occupational Ther Ast II	3530	2222	F
Respiratory Ther Tech IV	3530	2618	X
LPN II	3535	2222	F
Paramedical Assistant III	3570	2053	F
Youth Corrections IV	3625	2731	X
EMT	3645	2413	M
Adult Corrections Off III	3665	2618	M
Adult Corrections Off IV	3765	2850	M
Paramedical Assistant IV	3795	2222	X

Female Average = \$2089

Male Average = \$2546

Neutral Average = \$2496

Difference between M/F = \$-457

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Example of comparison of male- and female-dominated jobs within comparator group 3 with similar points but different pay:

Adult Corr. Recruit (M): 3200 points = \$2413

LPN I (F): 3280 points = \$2053 (\$360 less/mo)

**COMPARATOR GROUP ANALYSIS - COMPARATOR GROUP 4
within DIAGNOSTIC SYSTEM**

<u>Job Title</u>	<u>Diagnostic Points</u>	<u>Current Salary</u>	<u>M/F Dominance</u>
LPN III	4010	2413	F
Adult Corrections Off V	4205	3102	M

Female Average = \$2413

Male Average = \$3102

Neutral Average = \$N/A Difference between M/F = \$-689

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Example of comparison of male- and female-dominated jobs in comparator group 4 with similar points but different pay:

Adult Corr. Off. V (M): 4205 points = \$3102

LPN III (F): 4010 points = \$2413 (\$689 less/mo)

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**Overall Average Difference between Female- and Male-Dominated Jobs as
Predicted by Comparator Group Analysis: = \$ -352**

Footnotes

1. In combining the two bargaining units, we continued to use current pay as the dependent variable. In BU 1, there are no steps in grade, all incumbents being paid the same. In BU 10, there are steps in grade. Our conversations with union and management in Hawaii indicated that the pay level in BU 1 was the top step in grade before steps were eliminated. Thus, we used the top step in grade in BU 10 as the wage. Note that any other step would have increased the negative effect we later found.