

**The Urbana Free Library**  
**VACANCY**  
**Manager of Information Technology**

<b>Application Deadline</b>	Tuesday, August 26, 2014, 5:00 p.m. Application evaluations will begin after this date.
<b>Appointment Timetable</b>	September / October 2014
<b>Salary Range</b>	\$49,682 - \$64,588
<b>Benefits</b>	Paid health coverage. Retirement package. Annual paid leave of 20 days vacation, up to 12 days sick leave, 3 days personal leave, and 9 ½ holidays.
<b>Minimum Requirements</b>	Bachelor's degree in information systems or related field. At least three years professional experience with computers and computer networks in a Windows environment. Prior successful work experience. Passing score on evaluation of credentials/interview (per Civil Service).
<b>General Responsibilities</b>	Manages, maintains, and evaluates library technology services.
<b>Evaluation of Applicants</b>	Applicant must submit all of the following to be considered: <ol style="list-style-type: none"><li>1. Cover letter</li><li>2. The Urbana Free Library application form</li><li>3. Résumé</li><li>4. Official university transcript</li><li>5. Letters of reference from at least three employers or university professors</li></ol> Initial screening is based on examination of submitted credentials. Continuing applicants will be interviewed by phone. Finalists will proceed to interviews/meetings at the library.
<b>Questions</b>	Celeste Choate, Executive Director, 217-367-4058 Kathy Wicks, Associate Director, 217-367-4058
<b>Applications</b>	The Urbana Free Library Administrative Office 210 West Green Street Urbana, IL 61801 <i>administration@tufl.info</i>

## **JOB DESCRIPTION**

<b>Job title:</b>	Manager of Information Technology
<b>Department:</b>	Administration
<b>Evaluated by:</b>	Associate Director
<b>Appointment level:</b>	PG 39
<b>Appointment type:</b>	Full Time; Civil Service

## **JOB SUMMARY**

This person is responsible for the planning, operation, and maintenance of all information technology-supported systems, applications, and services in the library.

## **DUTIES AND RESPONSIBILITIES**

- Maintains all library computer technology, including the critical updates of associated hardware and software.
- Performs the setup, configuration, and maintenance of technology peripherals such as printers, monitors, scanners, mice, and other equipment as necessary.
- Maintains hardware and software related to specialized library services, including the Polaris ILS, Envisionware PC Reservation system, and Bibliotheca self-check system.
- Researches and recommends technology-related purchases to the Associate Director.
- Troubleshoots hardware, software, network and peripheral issues, and provides replacement, repair, or cleaning, as needed.
- Administers the library's network hardware and software.
- Implements and maintains network security, including the routine backup and safe storage of library data, firewalls, and required software to maintain security.
- Communicates with vendors for technical support and program updates as needed to resolve library computer technology and network issues.
- Maintains an accurate inventory of the library's computer hardware and software.
- Performs staff training in the operation of computer hardware and software.
- Maintains an awareness of the developments and innovations in technology that impact public libraries.
- Responsible for special projects, their management, and other duties as assigned.

## **JOB REQUIREMENTS**

### **Training and Experience**

- Bachelor's degree in information systems or related field.
- At least three years professional experience with computers and computer networks in a Windows environment.
- Experience with the implementation and development of open source systems.
- Experience with firewall software.
- Experience with email systems.
- Prior successful work experience.
- Passing score on evaluation of credentials/interview (per Civil Service for FT positions).

### **Skills and Abilities**

- Wide knowledge of computers, networks, hardware, and software.
- Able to problem-solve and arrive at quick solutions.
- Able to work with speed and accuracy.
- Excellent interpersonal, organizational, and time-management skills.
- Able to communicate clearly and effectively, both verbally and in writing.
- Able to establish and maintain good public relations with library staff, vendors, patrons, and other library partners.
- Able to interpret and follow library policies and procedures.
- Dependable, honest, and trustworthy.
- Willingness to work a full range of library hours as necessary; able to respond to library technology emergencies that may occur on evenings and weekends.
- Physical strength and agility sufficient to perform assigned tasks; must be able to climb ladders; must be able to lift and maneuver 50 lbs.

### **ADDITIONAL DESIRED EXPERIENCE**

- Database software
- Office suite applications
- SQL
- Programming
- HTML
- Library automation and related software

# Disparate Impact Analysis

(an On-Line Internet based  
application)



**Instructions:** Please fill out the information into the form below. Once you have entered your data below, you may select the types of analysis to be conducted by checking the appropriate boxes. Then press the compute button at the bottom of the form to view the results.

Select the type of employment decision: <input type="text" value="Selection"/>			
Enter a title for your report: <input type="text" value="Manager of Information Technology 2014=30% Pass"/>			
<b>Number of Male</b> <input type="text" value="5"/> Applicants <input type="text" value="3"/> Selected	<b>Number of Non-Minority</b> <input type="text" value="4"/> Applicants <input type="text" value="2"/> Selected	<b>Number of Younger</b> <input type="text" value="0"/> Applicants <input type="text" value="0"/> Selected	<b>Number of Non-Disabled</b> <input type="text" value="4"/> Applicants <input type="text" value="3"/> Selected
<b>Number of Female</b> <input type="text" value="0"/> Applicants <input type="text" value="0"/> Selected	<b>Number of Minority</b> <input type="text" value="1"/> Applicants <input type="text" value="1"/> Selected	<b>Number of Older</b> <input type="text" value="0"/> Applicants <input type="text" value="0"/> Selected	<b>Number of Disabled</b> <input type="text" value="1"/> Applicants <input type="text" value="0"/> Selected
<input checked="" type="checkbox"/> -Adverse Impact <input checked="" type="checkbox"/> -Chi-Square <input checked="" type="checkbox"/> -Standard Deviation <input checked="" type="checkbox"/> -Confidence Intervals <input checked="" type="checkbox"/> -Probability Distribution	Select the Statistical Tests you wish to execute by checking or unchecking the boxes on the left. Then press the 'Compute' button below.		
Display: <input checked="" type="checkbox"/> Description of Statistic <input checked="" type="checkbox"/> Interpretation of Results			

**Manager of Information Technology 2014=30% Passing Score**

**Adverse-Impact Report**

**Adverse Impact** and the "four-fifths rule." - A selection rate for any race, sex, or ethnic group which is less than four-fifths (4/5ths) (or eighty percent) of the rate for the group with the highest rate will generally be regarded by the Federal enforcement agencies as evidence of adverse impact. **Uniform Guidelines on Employee Selection Procedures**

Rate of Females Applicants Selected	Rate of Males Applicants Selected	Adverse Impact Ratio for Females	Adverse Impact Ratio for Males
(0/ 0) = NaN	(3/ 5) = 0.6		

Adverse impact as defined by the 4/5ths rule was not found in the above data.

Rate of Minorities Applicants Selected	Rate of Non-Minorities Applicants Selected	Adverse Impact Ratio for Minorities	Adverse Impact Ratio for Non-Minorities
(1/ 1) = 1	(2/ 4) = 0.5	(1/ 0.5)= 2	(0.5/ 1)= 0.5

The Adverse Impact Ratio for Non-Minorities is less than 0.80.

Non-Minorities Applicants are Selected at a rate less than 80% (4/5ths) of the rate that Minorities Applicants are Selected.

Rate of Disabled Applicants Selected	Rate of Non-Disabled Applicants Selected	Adverse Impact Ratio for Disabled	Adverse Impact Ratio for Non-Disabled
(0/ 1) = 0	(3/ 4) = 0.75		

Adverse impact as defined by the 4/5ths rule was not found in the above data.

## Chi-Square Report

Observed Expected	Selected	Not Selected	Row Totals
Males	3 3	2 2	5
Females	0 0	0 0	0
Column Total	3	2	5

Chi-Square = NaN

The value of the statistic is less than 3.841. This indicates that there is a 95 percent chance that these results have been obtained absent any form of bias. Therefore, you may conclude that these results fall within normal random variations and are not the result of bias.

Observed Expected	Selected	Not Selected	Row Totals
Non-Minorities	2 2.4	2 1.6	4
Minorities	1 0.6	0 0.4	1
Column Total	3	2	5

Chi-Square = 0.8333

The value of the statistic is less than 3.841. This indicates that there is a 95 percent chance that these

results have been obtained absent any form of bias. Therefore, you may conclude that these results fall within normal random variations and are not the result of bias.

Observed Expected	Selected	Not Selected	Row Totals
Non-Disabled	3 2.4	1 1.6	4
Disabled	0 0.6	1 0.4	1
Column Total	3	2	5

**Chi-Square = 1.875**

The value of the statistic is less than 3.841. This indicates that there is a 95 percent chance that these results have been obtained absent any form of bias. Therefore, you may conclude that these results fall within normal random variations and are not the result of bias.

## Standard-Deviation Report

The difference between the proportion of the protected class Selected and the proportion of all Applicants Selected has a normal distribution with a mean and standard deviation. The statistic is shown below:

$$(r / n) - p$$

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$$\text{sqrt}(p * (1-p) / n) * \text{sqrt}(1-q)$$

*Analysis of proportion of Females Selected*  
where:

- **r = number of Females Selected.**
- **n = number of Selected (Females and Males).**
- **p = proportion of Applicants that are Females.**
- **q = proportion of Applicants Selected.**

•	Selected	Not Selected	Row Totals
Males	3	2	5
Females	0	0	0
Column Total	3	2	5

$$r = 0$$

$$n = 3$$

$$p = 0 / 5 = 0$$

$$q = (0 + 3) / (0 + 5) = 0.6$$

**Standard Deviation Statistic = NaN**

These results show that the proportion of Females Selected is NaN standard deviations below the proportion of Applicants Selected. A result of less than 2 standard deviations is generally considered non-significant.

*Analysis of proportion of Minorities Selected where:*

- **r = number of Minorities Selected.**
- **n = number of Selected (Minorities and Non-Minorities).**
- **p = proportion of Applicants that are Minorities.**
- **q = proportion of Applicants Selected.**

•	Selected	Not Selected	Row Totals
Non-Minorities	2	2	4
Minorities	1	0	1
Column Total	3	2	5

$$r = 1$$

$$n = 3$$

$$p = 1 / 5 = 0.2$$

$$q = (1 + 2) / (1 + 4) = 0.6$$

**Standard Deviation Statistic = 0.913**

These results show that the proportion of Minorities Selected is 0.913 standard deviations above the proportion of Applicants Selected. A result of less than 2 standard deviations is generally considered non-significant.

*Analysis of proportion of Disabled Selected where:*

- **r = number of Disabled Selected.**
- **n = number of Selected (Disabled and Non-Disabled).**
- **p = proportion of Applicants that are Disabled.**
- **q = proportion of Applicants Selected.**

•	Selected	Not Selected	Row Totals
Non-Disabled	3	1	4
Disabled	0	1	1
Column Total	3	2	5

$$r = 0$$

$$n = 3$$

$$p = 1 / 5 = 0.2$$

$$q = (0 + 3) / (1 + 4) = 0.6$$

**Standard Deviation Statistic = -1.369**

These results show that the proportion of Disabled Selected is -1.369 standard deviations below the proportion of Applicants Selected. A result of less than 2 standard deviations is generally considered non-significant.

## Confidence Interval Report

The proportion of the protected class Selected has an expected value that would fall within a specified confidence interval. The statistic is shown below:

Observed value =  $(r / n)$

Expected value =  $p$

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Standard Deviation =  $\sqrt{p * (1-p) / n} * \sqrt{1-q}$

Confidence Interval:

Lower Bound =  $p - 1.96 * \text{Std Dev}$

Upper Bound =  $p + 1.96 * \text{Std Dev}$

*Analysis of proportion of Females Applicants Selected where:*

- $r$  = number of Females Selected.
- $n$  = number of Applicants Selected.
- $p$  = proportion of Females among those Selected.
- $q$  = proportion of Applicants Selected.

$r = 0$

$n = 3$

$p = (0/(0+5))=0$

$q = ((0 + 3)/(0 + 5))=0.6$

$(r/n)=0/3=0$

The lower bound of the confidence interval is:  $0 - (1.96 * 0) = 0$

The upper bound of the confidence interval is:  $0 + (1.96 * 0) = 0$

Confidence Interval = 0 to 0

These results show that the proportion of Applicants Selected who were Females ( $r/n=0$ ) is not contained in the confidence interval. Therefore a finding of disparate impact is supported by this data.

*Analysis of proportion of Minorities Applicants Selected where:*

- $r$  = number of Minorities Selected.
- $n$  = number of Applicants Selected.
- $p$  = proportion of Minorities among those Selected.



- $q$  = proportion of Applicants Selected.

$$r = 1$$

$$n = 3$$

$$p = (1/(1+4))=0.2$$

$$q = ((1 + 2)/(1 + 4))=0.6$$

$$(r/n)=1/3=0.3333$$

The lower bound of the confidence interval is:  $0.2 - (1.96 * 0.146) = -0.0863$

The upper bound of the confidence interval is:  $0.2 + (1.96 * 0.146) = 0.4863$

Confidence Interval = -0.0863 to 0.4863

These results show that the proportion of Minorities Minorities ( $r/n=0.3333$ ) is contained in the confidence interval. Therefore a finding of disparate impact is not supported by this data.

*Analysis of proportion of Disabled Applicants Selected where:*

- $r$  = number of Disabled Selected.
- $n$  = number of Applicants Selected.
- $p$  = proportion of Disabled among those Selected.
- $q$  = proportion of Applicants Selected.

$$r = 0$$

$$n = 3$$

$$p = (1/(1+4))=0.2$$

$$q = ((0 + 3)/(1 + 4))=0.6$$

$$(r/n)=0/3=0$$

The lower bound of the confidence interval is:  $0.2 - (1.96 * 0.146) = -0.0863$

The upper bound of the confidence interval is:  $0.2 + (1.96 * 0.146) = 0.4863$

Confidence Interval = -0.0863 to 0.4863

These results show that the proportion of Disabled Disabled ( $r/n=0$ ) is contained in the confidence interval. Therefore a finding of disparate impact is not supported by this data.

## Probability Distribution Report

Number Females Selected	Number Males Selected	Rate of Females Applicants Selected	Rate of Males Applicants Selected	Adverse Impact Ratio of Females	Adverse Impact against Females ?	Probability	Cumulative Probability
Selected-> 0	3	(0/0)	(3/5)	NaN	NO	1	1

Given that 3 were Selected from a pool of 5 Males and 0 Females it was possible to have Selected from 0 to 0 Females.

Adverse Impact would be found if you Selected 0 or fewer Females.

The probability of Adverse Impact occurring even if the employment decisions were random (i.e. unbiased) is 0 (the sum of the probabilities of having Selected 0 or fewer Females).

Since the probability of Adverse Impact occurring even if the selection was random (i.e. unbiased) is less than 10%, an observed Adverse Impact may be significant since there is a low probability that Adverse Impact would have occurred by chance.

## **Probability Distribution of the variable: Number of Females Selected.**

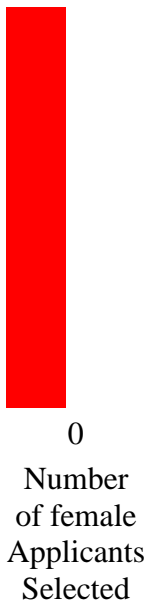


The probability distribution of having Selected from 0 to 0 Females is displayed above. As can be seen, the most likely event (highest probability) to have occurred by chance (or decisions not affected by any form of bias) is to have Selected 0 female Applicants. This represents the mean of the probability distribution. Approximately half of the probability distribution is above this point and approximately half is below this point. The total area contained in the probability distribution is equal to 1. Thus, probabilities for each number of female Applicants Selected are a fraction of the total probability distribution. The larger areas of the distribution represent higher probabilities of occurrence. Adding the individual probabilities up to a certain point enable you to compute the probability of having Selected that many or fewer female Applicants. Adding the individual probabilities from a certain point and higher enable you to compute the probability of having Selected that many or more female Applicants.

The characteristics of the probability distribution--its mean and standard deviation--are a function of the number of female and male Applicants and the number of Applicants to be Selected. Though it is possible to have Selected from 0 to 0 female Applicants, the individual probabilities of having Selected each number of female Applicants can be computed and accumulated. As noted before, these individual probabilities are a function of the number of female and male Applicants and the number of Applicants to be Selected.

Using the distribution above, a 90 percent confidence interval on the variable 'Number of Females Selected' would have a lower bound of 0 and an upper bound of 0.

The significance of having Selected 0 or fewer Females is graphically displayed below.



As noted earlier, Adverse Impact, according to the 4/5ths rule, would be found if you Selected 0 or fewer female Applicants.

You have Selected 0 female Applicants. The probability of having Selected 0 or fewer Females is equal to the cumulative probability for having Selected 0 Females Applicants. The cumulative probability of having Selected 0 female Applicants is 1 and is graphically displayed, in red, above.

Since the probability is greater than 10%, we are unable to reject the hypothesis that the decisions occurred due to chance. Therefore, we must conclude that it is entirely possible that having Selected 0 or fewer female Applicants is an event that occurred due to chance and not from discriminatory actions by the employer.

Number Minorities Selected	Number Non-Minorities Selected	Rate of Minorities Applicants Selected	Rate of Non-Minorities Applicants Selected	Adverse Impact Ratio of Minorities	Adverse Impact against Minorities ?	Probability	Cumulative Probability
0	3	(0/1)	(3/4)	0	YES	0.4	0.4
Selected-> 1	2	(1/1)	(2/4)	2	NO	0.6	1

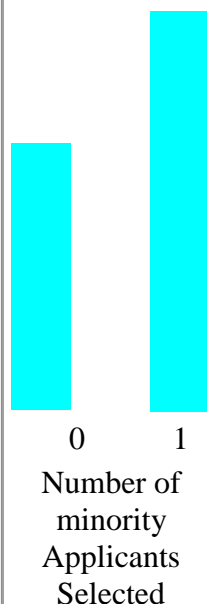
Given that 3 were Selected from a pool of 4 Non-Minorities and 1 Minorities it was possible to have Selected from 0 to 1 Minorities.

Adverse Impact would be found if you Selected 0 or fewer Minorities.

The probability of Adverse Impact occurring even if the employment decisions were random (i.e. unbiased) is 0.4 (the sum of the probabilities of having Selected 0 or fewer Minorities).

Since the probability of Adverse Impact occurring even if the employment decisions were random (i.e. unbiased) is greater than 10%, an observed Adverse Impact may be not significant since the probability is greater than 1 in 10 that Adverse Impact would have occurred due to chance.

## Probability Distribution of the variable: Number of Minorities Selected.

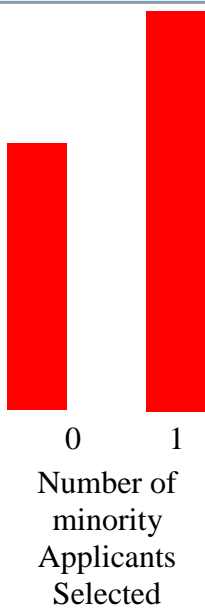


The probability distribution of having Selected from 0 to 1 Minorities is displayed above. As can be seen, the most likely event (highest probability) to have occurred by chance (or decisions not affected by any form of bias) is to have Selected 1 minority Applicants. This represents the mean of the probability distribution. Approximately half of the probability distribution is above this point and approximately half is below this point. The total area contained in the probability distribution is equal to 1. Thus, probabilities for each number of minority Applicants Selected are a fraction of the total probability distribution. The larger areas of the distribution represent higher probabilities of occurrence. Adding the individual probabilities up to a certain point enable you to compute the probability of having Selected that many or fewer minority Applicants. Adding the individual probabilities from a certain point and higher enable you to compute the probability of having Selected that many or more minority Applicants.

The characteristics of the probability distribution--its mean and standard deviation--are a function of the number of minority and non-minority Applicants and the number of Applicants to be Selected. Though it is possible to have Selected from 0 to 1 minority Applicants, the individual probabilities of having Selected each number of minority Applicants can be computed and accumulated. As noted before, these individual probabilities are a function of the number of minority and non-minority Applicants and the number of Applicants to be Selected.

Using the distribution above, a 90 percent confidence interval on the variable 'Number of Minorities Selected' would have a lower bound of 0 and an upper bound of 1.

The significance of having Selected 1 or fewer Minorities is graphically displayed below.



As noted earlier, Adverse Impact, according to the 4/5ths rule, would be found if you Selected 0 *or fewer* minority Applicants.

You have Selected 1 minority Applicants. The probability of having Selected 1 *or fewer* Minorities is equal to the cumulative probability for having Selected 1 Minorities Applicants. The cumulative probability of having Selected 1 minority Applicants is 1 and is graphically displayed, in red, above.

Since the probability is greater than 10%, we are unable to reject the hypothesis that the decisions occurred due to chance. Therefore, we must conclude that it is entirely possible that having Selected 1 or fewer minority Applicants is an event that occurred due to chance and not from discriminatory actions by the employer.

Number Disabled Selected	Number Non-Disabled Selected	Rate of Disabled Applicants Selected	Rate of Non-Disabled Applicants Selected	Adverse Impact Ratio of Disabled	Adverse Impact against Disabled ?	Cumulative Probability	Cumulative Probability
Selected-> 0	3	(0/1)	(3/4)	0	YES	0.4	0.4
1	2	(1/1)	(2/4)	2	NO	0.6	1

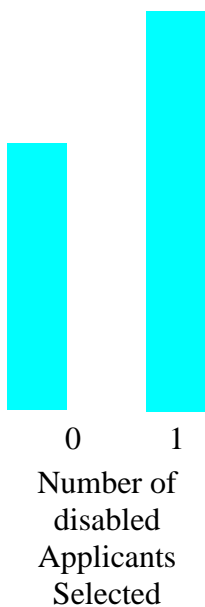
Given that 3 were Selected from a pool of 4 Non-Disabled and 1 Disabled it was possible to have Selected from 0 to 1 Disabled.

Adverse Impact would be found if you Selected 0 or fewer Disabled.

The probability of Adverse Impact occurring even if the employment decisions were random (i.e. unbiased) is 0.4 (the sum of the probabilities of having Selected 0 or fewer Disabled).

Since the probability of Adverse Impact occurring even if the employment decisions were random (i.e. unbiased) is greater than 10%, an observed Adverse Impact may be not significant since the probability is greater than 1 in 10 that Adverse Impact would have occurred due to chance.

## Probability Distribution of the variable: Number of Disabled Selected.

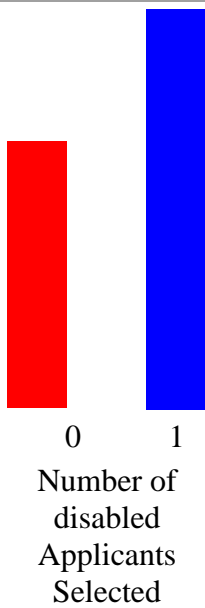


The probability distribution of having Selected from 0 to 1 Disabled is displayed above. As can be seen, the most likely event (highest probability) to have occurred by chance (or decisions not affected by any form of bias) is to have Selected 1 disabled Applicants. This represents the mean of the probability distribution. Approximately half of the probability distribution is above this point and approximately half is below this point. The total area contained in the probability distribution is equal to 1. Thus, probabilities for each number of disabled Applicants Selected are a fraction of the total probability distribution. The larger areas of the distribution represent higher probabilities of occurrence. Adding the individual probabilities up to a certain point enable you to compute the probability of having Selected that many or fewer disabled Applicants. Adding the individual probabilities from a certain point and higher enable you to compute the probability of having Selected that many or more disabled Applicants.

The characteristics of the probability distribution--its mean and standard deviation--are a function of the number of disabled and non-disabled Applicants and the number of Applicants to be Selected. Though it is possible to have Selected from 0 to 1 disabled Applicants, the individual probabilities of having Selected each number of disabled Applicants can be computed and accumulated. As noted before, these individual probabilities are a function of the number of disabled and non-disabled Applicants and the number of Applicants to be Selected.

Using the distribution above, a 90 percent confidence interval on the variable 'Number of Disabled Selected' would have a lower bound of 0 and an upper bound of 1.

The significance of having Selected 0 or fewer Disabled is graphically displayed below.



As noted earlier, Adverse Impact, according to the 4/5ths rule, would be found if you Selected 0 *or fewer* disabled Applicants.

You have Selected 0 disabled Applicants. The probability of having Selected 0 *or fewer* Disabled is equal to the cumulative probability for having Selected 0 Disabled Applicants. The cumulative probability of having Selected 0 disabled Applicants is 0.4 and is graphically displayed, in red, above.

Since the probability is greater than 10%, we are unable to reject the hypothesis that the decisions occurred due to chance. Therefore, we must conclude that it is entirely possible that having Selected 0 or fewer disabled Applicants is an event that occurred due to chance and not from discriminatory actions by the employer.