

TEST 1
STAT 320
Fall 1997

Name _____

Instructions: Show all work for partial credit. Mark your answers clearly.

A company is being sued for gender and race discriminatory practices in determining salaries. A survey of current employees is carried out by an independent accounting firm to determine if the claim has merit. The following variables were recorded on 51 employees:

Salary	in dollars
Years of experience	in years
Years with company	in years
Performance	(0 to 1, with 0 low and 1 high)
Administrative level	(1 to 9, with 1 low and 9 high)
Sex	(0=female, 1=male)
Educational level	(1 to 5, with 1 low and 5 high)
Race	(0=white, 1=nonwhite)

Keep in mind that the judge, and the attorneys are not well versed in statistical jargon, so try to answer the questions as plainly as possible.

a) The company's lawyer (defense) presents the analysis on p. 4. What can be argued based on these results?

b) If you were the plaintiff's lawyer how would you attack the analysis on p. 4?

c) The defense uses the exhibit on p. 5. Explain these results.

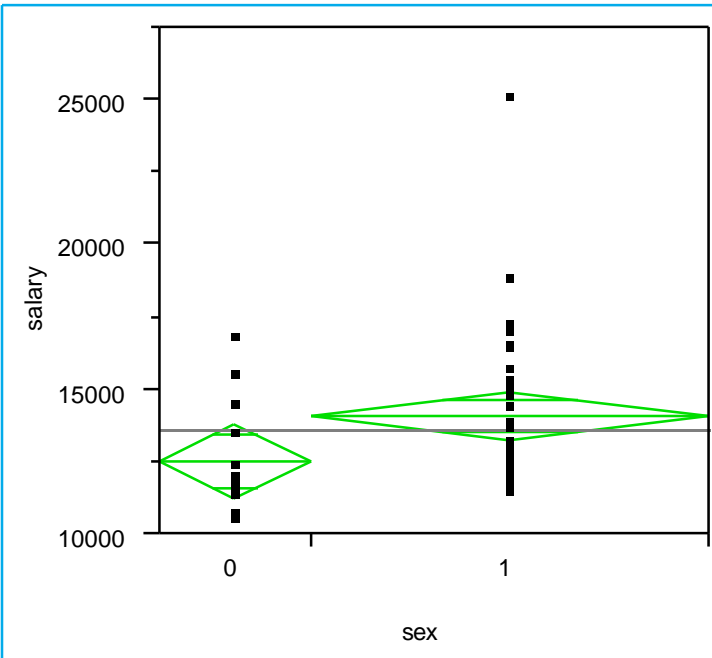
d) The plaintiff's lawyer argues that the exhibit on p. 5 does not tell the whole story. Explain her reasoning.

e) Explain the results on p. 6. Be as thorough as possible.

f) Who do the results on p. 6 favor, the plaintiff or the company?

g) If you were the judge, what would your decision be based on these data? Justify your answer

salary By sex



Oneway Anova

Summary of Fit

t-Test

	Difference	t-Test	DF	Prob> t
Estimate	-1515.17	-1.891	48	0.0646
Std Error	801.20			
Lower 95%	-3126.08			
Upper 95%	95.73			

Assuming equal variances

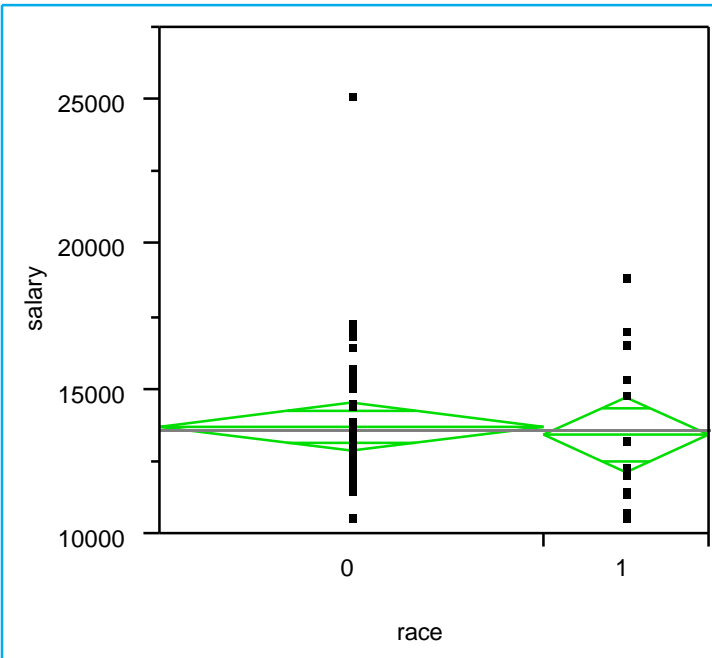
Analysis of Variance

Means for Oneway Anova

Level	Number	Mean	Std Error
0	14	12561.7	679.84
1	36	14076.9	423.95

Std Error uses a pooled estimate of error variance

salary By race



Oneway Anova

Summary of Fit

t-Test

	Difference	t-Test	DF	Prob> t
Estimate	329.01	0.405	48	0.6873
Std Error	812.34			
Lower 95%	-1304.31			
Upper 95%	1962.33			

Assuming equal variances

Analysis of Variance

Means for Oneway Anova

Level	Number	Mean	Std Error
0	35	13751.3	444.94
1	15	13422.3	679.65

Std Error uses a pooled estimate of error variance

Response: salary

Summary of Fit

RSquare	0.896979
RSquare Adj	0.879808
Root Mean Square Error	904.7603
Mean of Response	13652.64
Observations (or Sum Wgts)	50

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	6970.7067	557.9517	12.49	<.0001
yrs exp	-13.65151	38.46348	-0.35	0.7244
yrs comp	172.36325	25.84714	6.67	<.0001
perform	230.98576	415.9375	0.56	0.5816
level	983.86629	96.23704	10.22	<.0001
sex[0-1]	44.797037	158.2153	0.28	0.7785
educ	-17.32367	100.543	-0.17	0.8640
race[0-1]	-75.58685	143.7815	-0.53	0.6019

Effect Test

Source	Nparm	DF	Sum of Squares	F Ratio	Prob>F
yrs exp	1	1	103117	0.1260	0.7244
yrs comp	1	1	36402526	44.4697	<.0001
perform	1	1	252453	0.3084	0.5816
level	1	1	85556842	104.5172	<.0001
sex	1	1	65625	0.0802	0.7785
educ	1	1	24302	0.0297	0.8640
race	1	1	226232	0.2764	0.6019

Whole-Model Test

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob>F
Model	7	299344383	42763483	52.2403	
Error	42	34380831	818591.2		
C Total	49	333725214			<.0001

yrs exp

yrs comp

perform

level

sex

educ

race

