SAS Output for Problem 2

The FREQ Procedure

Frequency	Table of gender by accept		
	accept		
gender	yes	no	Total
male	1469	1444	2913
fema	216	559	775
Total	1685	2003	3688

Statistics for Table of gender by accept

Statistic	DF	Value	Prob
Chi-Square	1	125.5333	<.0001
Likelihood Ratio Chi-Square	1	129.9566	<.0001

Odds Ratio and Relative Risks			
Statistic	Value	95% Confidence Limits	
Odds Ratio	2.6328	2.2145	3.1300
Relative Risk (Column 1)	1.8094	1.6066	2.0377
Relative Risk (Column 2)	0.6873	0.6491	0.7276

Sample Size = 3688

Frequency	Table 1 of gender by accept		
	Controlling for program=plumbing		
	accept		
gender	yes	no	Total
male	848	519	1367
fema	148	31	179
Total	996	550	1546

Statistics for Table 1 of gender by accept
Controlling for program=plumbing

Statistic	DF	Value	Prob
Chi-Square	1	29.4416	<.0001
Likelihood Ratio Chi-Square	1	32.5969	<.0001

Odds Ratio and Relative Risks			
Statistic	Value	95% Confidence Limits	
Odds Ratio	0.3422	0.2289	0.5117
Relative Risk (Column 1)	0.7503	0.6934	0.8118
Relative Risk (Column 2)	2.1923	1.5805	3.0408

Frequency	Table 2 of gender by accept		
	Controlling for program=welding		
	accept		
gender	yes	no	Total
male	585	343	928
fema	28	13	41
Total	613	356	969

Statistics for Table 2 of gender by accept
Controlling for program=welding

Statistic	DF	Value	Prob
Chi-Square	1	0.4663	0.4947
Likelihood Ratio Chi-Square	1	0.4760	0.4902

Odds Ratio and Relative Risks			
Statistic	Value	95% Confidence Limits	
Odds Ratio	0.7919	0.4047	1.5493
Relative Risk (Column 1)	0.9231	0.7450	1.1437
Relative Risk (Column 2)	1.1657	0.7381	1.8411

Frequency	Table 3 of gender by accept		
	Controlling for program=cosmetol		
	accept		
gender	yes	no	Total
male	36	582	618
fema	40	515	555
Total	76	1097	1173

Statistics for Table 3 of gender by accept
Controlling for program=cosmetol

Statistic	DF	Value	Prob
Chi-Square	1	0.9216	0.3370
Likelihood Ratio Chi-Square	1	0.9200	0.3375

Odds Ratio and Relative Risks			
Statistic	Value	95% Confidence Limits	
Odds Ratio	0.7964	0.4999	1.2687
Relative Risk (Column 1)	0.8083	0.5229	1.2493
Relative Risk (Column 2)	1.0149	0.9845	1.0462

Cochran-Mantel-Haenszel Statistics (Based on Table Scores)				
Statistic	Alternative Hypothesis	DF	Value	Prob
1	Nonzero Correlation	1	23.8134	<.0001

Common Odds Ratio and Relative Risks				
Statistic	Method	Value	95% Confidence Limits	
Odds Ratio	Mantel-Haenszel	0.5118	0.3903	0.6712
	Logit	0.5327	0.4037	0.7029
Relative Risk (Column 1)	Mantel-Haenszel	0.7830	0.7196	0.8520
	Logit	0.7701	0.7159	0.8284

Breslow-Day Test for Homogeneity of the Odds Ratios	
Chi-Square	9.0481
DF	2
Pr > ChiSq	0.0108

Total Sample Size = 3688

SAS Output for Problem 3

Output for Model A

Criteria For Assessing Goodness Of Fit			
Criterion	DF	Value	Value/DF
Deviance	909	1634.3710	1.7980
Scaled Deviance	909	1634.3710	1.7980
Pearson Chi-Square	909	1662.5466	1.8290
Scaled Pearson X2	909	1662.5466	1.8290
Log Likelihood		-642.0261	
Full Log Likelihood		-1651.0563	
AIC (smaller is better)		3314.1126	
AICC (smaller is better)		3314.2051	
BIC (smaller is better)		3343.0262	

Algorithm converged.

Analysis Of Maximum Likelihood Parameter Estimates							
Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi-Square	Pr > ChiSq
Intercept	1	0.3046	0.1030	0.1028	0.5065	8.75	0.0031
fem	1	-0.2246	0.0546	-0.3316	-0.1176	16.91	<.0001
mar	1	0.1552	0.0614	0.0350	0.2755	6.40	0.0114
kid5	1	-0.1849	0.0401	-0.2635	-0.1062	21.23	<.0001
phd	1	0.0128	0.0264	-0.0389	0.0646	0.24	0.6271
ment	1	0.0255	0.0020	0.0216	0.0295	162.12	<.0001
Scale	0	1.0000	0.0000	1.0000	1.0000		

Note: The scale parameter was held fixed.

LR Statistics For Type 3 Analysis			
Source	DF	Chi-Square	Pr > ChiSq
fem	1	17.08	<.0001
mar	1	6.43	0.0112
kid5	1	22.08	<.0001
phd	1	0.24	0.6270
ment	1	131.87	<.0001

Output for Model B

Criteria For Assessing Goodness Of Fit			
Criterion	DF	Value	Value/DF
Deviance	911	1640.8514	1.8012
Scaled Deviance	911	1640.8514	1.8012
Pearson Chi-Square	911	1668.8420	1.8319
Scaled Pearson X2	911	1668.8420	1.8319
Log Likelihood		-645.2663	
Full Log Likelihood		-1654.2965	
AIC (smaller is better)		3316.5930	
AICC (smaller is better)		3316.6370	
BIC (smaller is better)		3335.8687	

Analysis Of Maximum Likelihood Parameter Estimates							
Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi-Square	Pr > ChiSq
Intercept	1	0.4367	0.0468	0.3450	0.5285	86.99	<.0001
fem	1	-0.2431	0.0542	-0.3494	-0.1369	20.11	<.0001
kid5	1	-0.1438	0.0366	-0.2155	-0.0721	15.46	<.0001
ment	1	0.0256	0.0020	0.0218	0.0295	172.56	<.0001
Scale	0	1.0000	0.0000	1.0000	1.0000		

Note: The scale parameter was held fixed.

LR Statistics For Type 3 Analysis			
Source	DF	Chi-Square	Pr > ChiSq
fem	1	20.31	<.0001
kid5	1	16.15	<.0001
ment	1	140.66	<.0001

Output for Model C

Criteria For Assessing Goodness Of Fit			
Criterion	DF	Value	Value/DF
Deviance	909	1004.2815	1.1048
Scaled Deviance	909	1004.2815	1.1048
Pearson Chi-Square	909	944.5494	1.0391
Scaled Pearson X2	909	944.5494	1.0391
Log Likelihood		-551.9281	
Full Log Likelihood		-1560.9583	
AIC (smaller is better)		3135.9167	
AICC (smaller is better)		3136.0402	
BIC (smaller is better)		3169.6491	

LR Statistics For Type 3 Analysis			
Source	DF	Chi-Square	Pr > ChiSq
fem	1	8.82	0.0030
mar	1	3.35	0.0670
kid5	1	11.08	0.0009
phd	1	0.18	0.6718
ment	1	71.22	<.0001

Analysis Of Maximum Likelihood Parameter Estimates							
Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi-Square	Pr > ChiSq
Intercept	1	0.2561	0.1386	-0.0154	0.5277	3.42	0.0645
fem	1	-0.2164	0.0727	-0.3589	-0.0740	8.87	0.0029
mar	1	0.1505	0.0821	-0.0104	0.3114	3.36	0.0668
kid5	1	-0.1764	0.0531	-0.2804	-0.0724	11.05	0.0009
phd	1	0.0153	0.0360	-0.0554	0.0859	0.18	0.6718
ment	1	0.0291	0.0035	0.0223	0.0359	70.24	<.0001
Dispersion	1	0.4416	0.0530	0.3491	0.5587		

Note: The negative binomial dispersion parameter was estimated by maximum likelihood.