Part 1A
proc freq : hdl_hi = age_hi , test for interaction

The FREQ Procedure

Frequency Percent Row Pct Col Pct

Table 1 of age_hi by hdl_hi			
Controlling for gender=0			
	hdl_hi		
age_hi	0	1	Total
0	26 27.37 50.00 47.27	26 27.37 50.00 65.00	52 54.74
1	29 30.53 67.44 52.73	14 14.74 32.56 35.00	43 45.26
Total	55 57.89	40 42.11	95 100.00

Statistics for Table 1 of age_hi by hdl_hi
Controlling for gender=0

Statistic	DF	Value	Prob
Chi-Square	1	2.9374	0.0866
Likelihood Ratio Chi-Square	1	2.9658	0.0850
Continuity Adj. Chi-Square	1	2.2654	0.1323
Mantel-Haenszel Chi-Square	1	2.9064	0.0882
Phi Coefficient		-0.1758	
Contingency Coefficient		0.1732	
Cramer's V		-0.1758	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	26
Left-sided Pr <= F	0.0657
Right-sided Pr >= F	0.9732
Table Probability (P)	0.0390
Two-sided Pr <= P	0.0989

Odds Ratio and Relative Risks			
Statistic	Value	95% Confidence Limits	
Odds Ratio	0.4828	0.2088	1.1161
Relative Risk (Column 1)	0.7414	0.5266	1.0437
Relative Risk (Column 2)	1.5357	0.9233	2.5545

Sample Size = 95

Frequency Percent Row Pct Col Pct

Table 2 of age_hi by hdl_hi			
Controlling for gender=1			
	hdl_hi		
age_hi	0	1	Total
0	25 26.32 51.02	24 25.26 48.98	49 51.58

	60.98	44.44	
1	16 16.84 34.78 39.02	30 31.58 65.22 55.56	46 48.42
Total	41 43.16	54 56.84	95 100.00

Statistics for Table 2 of age_hi by hdl_hi
Controlling for gender=1

Statistic	DF	Value	Prob
Chi-Square	1	2.5501	0.1103
Likelihood Ratio Chi-Square	1	2.5651	0.1092
Continuity Adj. Chi-Square	1	1.9311	0.1646
Mantel-Haenszel Chi-Square	1	2.5232	0.1122
Phi Coefficient		0.1638	
Contingency Coefficient		0.1617	
Cramer's V		0.1638	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	25
Left-sided Pr <= F	0.9647
Right-sided Pr >= F	0.0821
Table Probability (P)	0.0468
Two-sided Pr <= P	0.1472

Odds Ratio and Relative Risks			
Statistic	Value	95% Confidence Limits	
Odds Ratio	1.9531	0.8553	4.4601
Relative Risk (Column 1)	1.4668	0.9063	2.3741
Relative Risk (Column 2)	0.7510	0.5265	1.0714

Sample Size = 95

Part 1A
proc freq : hdl_hi = age_hi , test for interaction

The FREQ Procedure

Summary Statistics for age_hi by hdl_hi
Controlling for gender

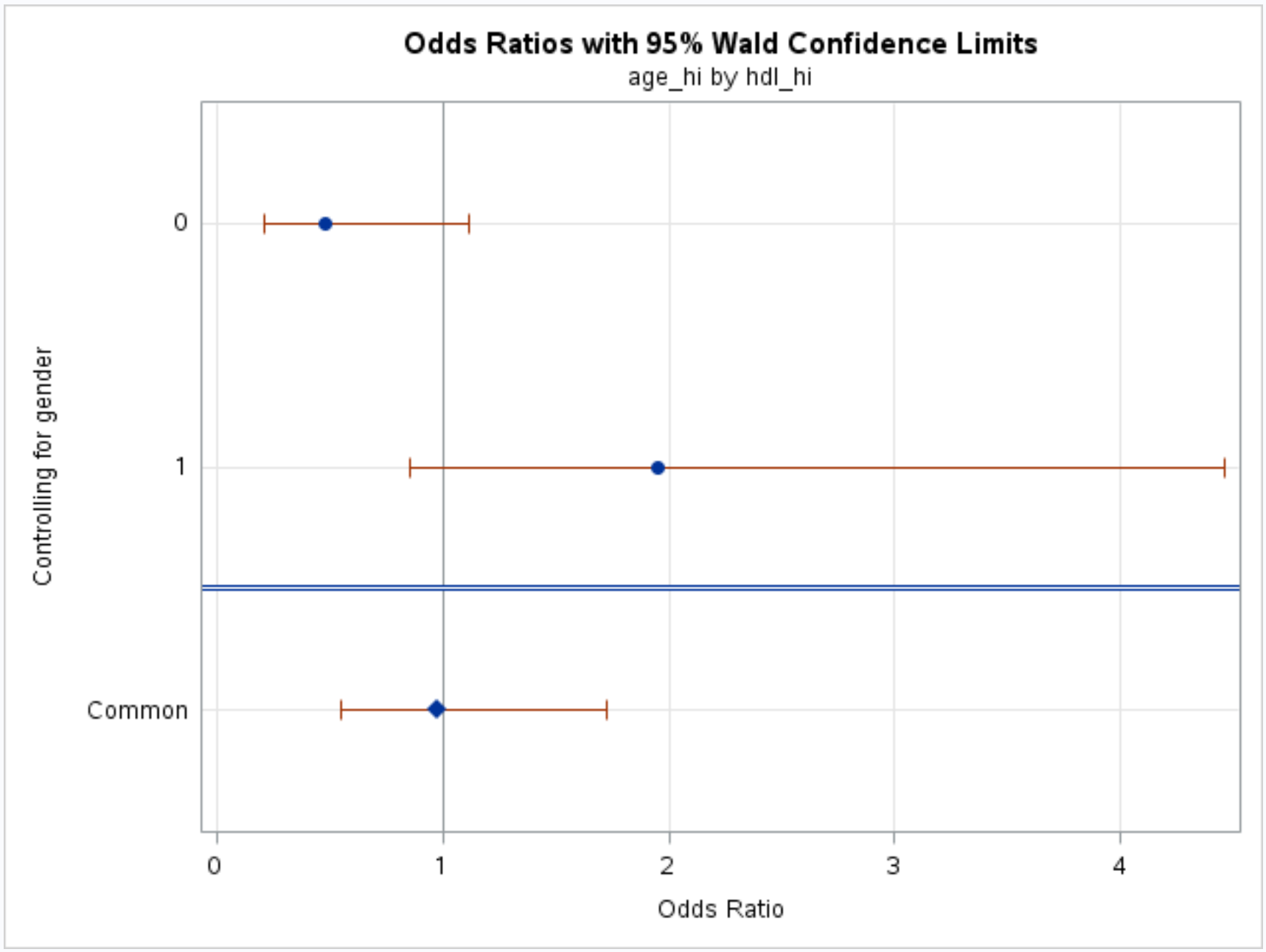
Cochran-Mantel-Haenszel Statistics (Based on Table Scores)				
Statistic	Alternative Hypothesis	DF	Value	Prob
1	Nonzero Correlation	1	0.0055	0.9411
2	Row Mean Scores Differ	1	0.0055	0.9411
3	General Association	1	0.0055	0.9411

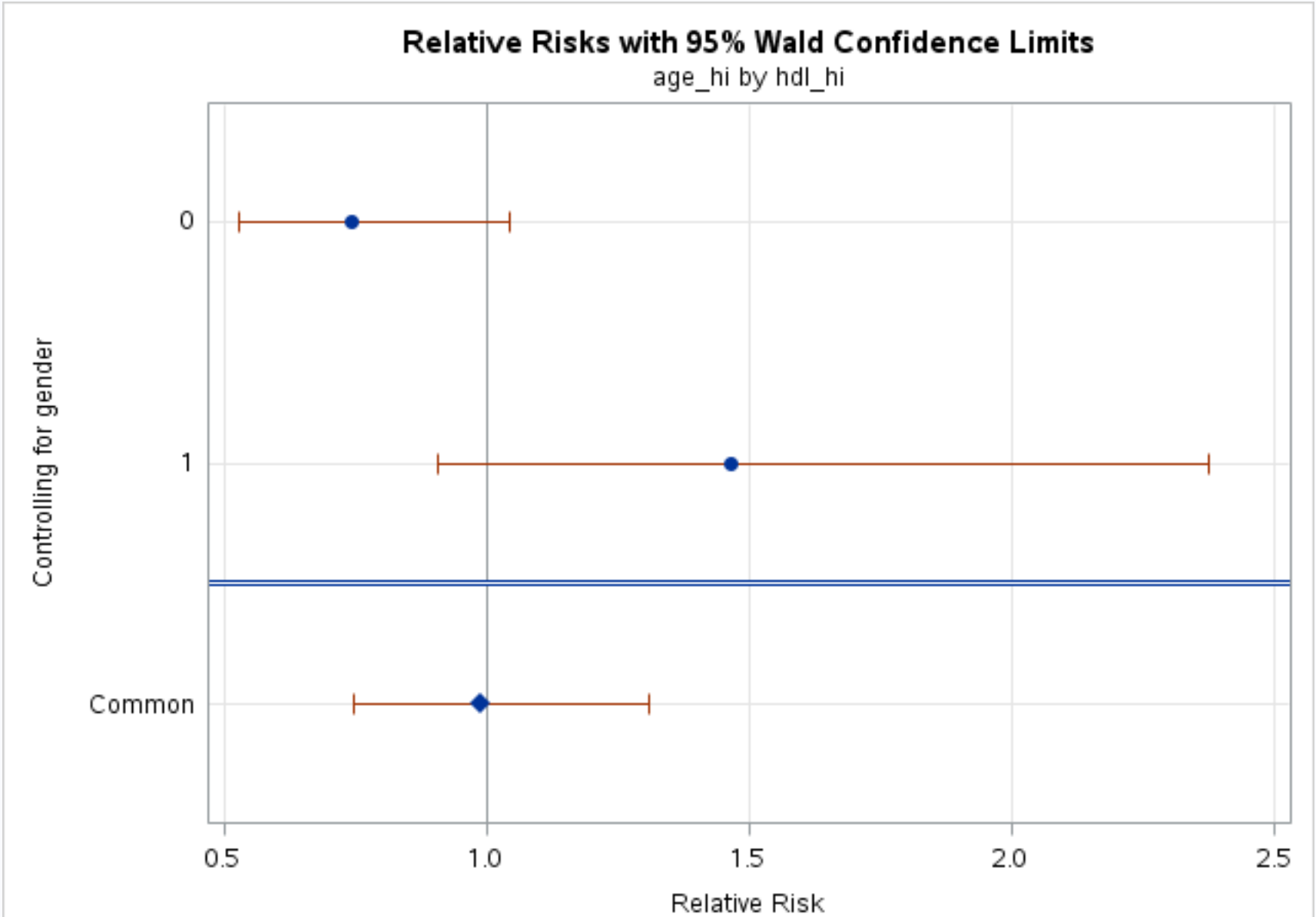
Common Odds Ratio and Relative Risks				
Statistic	Method	Value	95% Confidence Limits	
Odds Ratio	Mantel-Haenszel	0.9789	0.5540	1.7298
	Logit	0.9811	0.5448	1.7667
Relative Risk (Column 1)	Mantel-Haenszel	0.9895	0.7482	1.3087

	Logit	0.9320	0.7052	1.2318
Relative Risk (Column 2)	Mantel-Haenszel	1.0109	0.7552	1.3533
	Logit	0.9494	0.7095	1.2704

Breslow-Day Test for Homogeneity of the Odds Ratios	
Chi-Square	5.4828
DF	1
Pr > ChiSq	0.0192

Total Sample Size = 190





Risks computed for column 1 (hdl_hi = 0)

Part 1B
proc logistic : hdl_hi = age_hi , test for interaction

The LOGISTIC Procedure

Model Information	
Data Set	WORK.CHOL_CATS
Response Variable	hdl_hi
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	190
Number of Observations Used	190

Response Profile		
Ordered Value	hdl_hi	Total Frequency
1	0	96
2	1	94

Probability modeled is hdl_hi=1.

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	265.375	261.702
SC	268.622	274.690
-2 Log L	263.375	253.702

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	9.6728	3	0.0216
Score	9.4938	3	0.0234
Wald	9.1337	3	0.0276

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	2.03E-15	0.2774	0.0000	1.0000
age_hi	1	-0.7281	0.4276	2.8994	0.0886
gender	1	-0.0408	0.3982	0.0105	0.9184
age_hi*gender	1	1.3975	0.6003	5.4197	0.0199

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	49.9	Somers' D	0.237
Percent Discordant	26.2	Gamma	0.312
Percent Tied	24.0	Tau-a	0.119
Pairs	9024	c	0.618

Part 1B
proc logistic: hdl_hi = age_hi (females only)

The LOGISTIC Procedure

Model Information	
Data Set	WORK.CHOL_CATS
Response Variable	hdl_hi
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	95
Number of Observations Used	95

Response Profile		
Ordered Value	hdl_hi	Total Frequency
1	0	41
2	1	54

Probability modeled is hdl_hi=1.

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	265.375	261.702
SC	268.622	274.690
-2 Log L	263.375	253.702

Criterion	Intercept Only	Intercept and Covariates
AIC	131.913	131.348
SC	134.467	136.456
-2 Log L	129.913	127.348

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	2.5651	1	0.1092
Score	2.5501	1	0.1103
Wald	2.5246	1	0.1121

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-0.0408	0.2858	0.0204	0.8864
age_hi	1	0.6694	0.4213	2.5246	0.1121

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
age_hi	1.953	0.855	4.460

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	33.9	Somers' D	0.165
Percent Discordant	17.3	Gamma	0.323
Percent Tied	48.8	Tau-a	0.082
Pairs	2214	c	0.583

Part 1B
proc logistic: hdl_hi = age_hi (males only)

The LOGISTIC Procedure

Model Information	
Data Set	WORK.CHOL_CATS
Response Variable	hdl_hi
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	95
Number of Observations Used	95

Response Profile		
Ordered Value	hdl_hi	Total Frequency
1	0	55
2	1	40

Probability modeled is hdl_hi=1.

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	131.320	130.354
SC	133.873	135.462
-2 Log L	129.320	126.354

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	2.9658	1	0.0850
Score	2.9374	1	0.0866
Wald	2.9002	1	0.0886

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-2.64E-8	0.2774	0.0000	1.0000
age_hi	1	-0.7282	0.4276	2.9002	0.0886

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
age_hi	0.483	0.209	1.116

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	34.3	Somers' D	0.177
Percent Discordant	16.5	Gamma	0.349
Percent Tied	49.2	Tau-a	0.087
Pairs	2200	c	0.589

Part 2A
proc freq: tg_hi = bmi_hi , tests for confounding

The FREQ Procedure

Frequency
Percent
Row Pct
Col Pct

Table of bmi_hi by tg_hi			
	tg_hi		
bmi_hi	0	1	Total
0	55 28.95 57.89 56.12	40 21.05 42.11 43.48	95 50.00
1	43 22.63 45.26 43.88	52 27.37 54.74 56.52	95 50.00
Total	98 51.58	92 48.42	190 100.00

Statistics for Table of bmi_hi by tg_hi

Statistic	DF	Value	Prob
Chi-Square	1	3.0346	0.0815
Likelihood Ratio Chi-Square	1	3.0428	0.0811
Continuity Adj. Chi-Square	1	2.5499	0.1103

Mantel-Haenszel Chi-Square	1	3.0186	0.0823
Phi Coefficient		0.1264	
Contingency Coefficient		0.1254	
Cramer's V		0.1264	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	55
Left-sided Pr <= F	0.9706
Right-sided Pr >= F	0.0550
Table Probability (P)	0.0256
Two-sided Pr <= P	0.1101

Odds Ratio and Relative Risks			
Statistic	Value	95% Confidence Limits	
Odds Ratio	1.6628	0.9369	2.9511
Relative Risk (Column 1)	1.2791	0.9669	1.6921
Relative Risk (Column 2)	0.7692	0.5708	1.0367

Sample Size = 190

Frequency
Percent
Row Pct
Col Pct

Table 1 of bmi_hi by tg_hi			
Controlling for age_hi=0			
	tg_hi		
bmi_hi	0	1	Total
0	47 46.53 64.38 68.12	26 25.74 35.62 81.25	73 72.28
1	22 21.78 78.57 31.88	6 5.94 21.43 18.75	28 27.72
Total	69 68.32	32 31.68	101 100.00

Statistics for Table 1 of bmi_hi by tg_hi
Controlling for age_hi=0

Statistic	DF	Value	Prob
Chi-Square	1	1.8821	0.1701
Likelihood Ratio Chi-Square	1	1.9719	0.1602
Continuity Adj. Chi-Square	1	1.2837	0.2572
Mantel-Haenszel Chi-Square	1	1.8634	0.1722
Phi Coefficient		-0.1365	
Contingency Coefficient		0.1353	
Cramer's V		-0.1365	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	47
Left-sided Pr <= F	0.1277
Right-sided Pr >= F	0.9495
Table Probability (P)	0.0771

Two-sided Pr <= P	0.2333

Odds Ratio and Relative Risks			
Statistic	Value	95% Confidence Limits	
Odds Ratio	0.4930	0.1774	1.3698
Relative Risk (Column 1)	0.8194	0.6331	1.0605
Relative Risk (Column 2)	1.6621	0.7669	3.6020

Sample Size = 101

Frequency
Percent
Row Pct
Col Pct

Table 2 of bmi_hi by tg_hi			
Controlling for age_hi=1			
	tg_hi		
bmi_hi	0	1	Total
0	8 8.99 36.36 27.59	14 15.73 63.64 23.33	22 24.72
1	21 23.60 31.34 72.41	46 51.69 68.66 76.67	67 75.28
Total	29 32.58	60 67.42	89 100.00

Statistics for Table 2 of bmi_hi by tg_hi
Controlling for age_hi=1

Statistic	DF	Value	Prob
Chi-Square	1	0.1900	0.6629
Likelihood Ratio Chi-Square	1	0.1877	0.6648
Continuity Adj. Chi-Square	1	0.0302	0.8620
Mantel-Haenszel Chi-Square	1	0.1879	0.6647
Phi Coefficient		0.0462	
Contingency Coefficient		0.0462	
Cramer's V		0.0462	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	8
Left-sided Pr <= F	0.7597
Right-sided Pr >= F	0.4252
Table Probability (P)	0.1849
Two-sided Pr <= P	0.7938

Odds Ratio and Relative Risks			
Statistic	Value	95% Confidence Limits	
Odds Ratio	1.2517	0.4557	3.4382
Relative Risk (Column 1)	1.1602	0.6017	2.2371
Relative Risk (Column 2)	0.9269	0.6500	1.3218

Sample Size = 89

Part 2A

proc freq: tg_hi = bmi_hi , tests for confounding

The FREQ Procedure

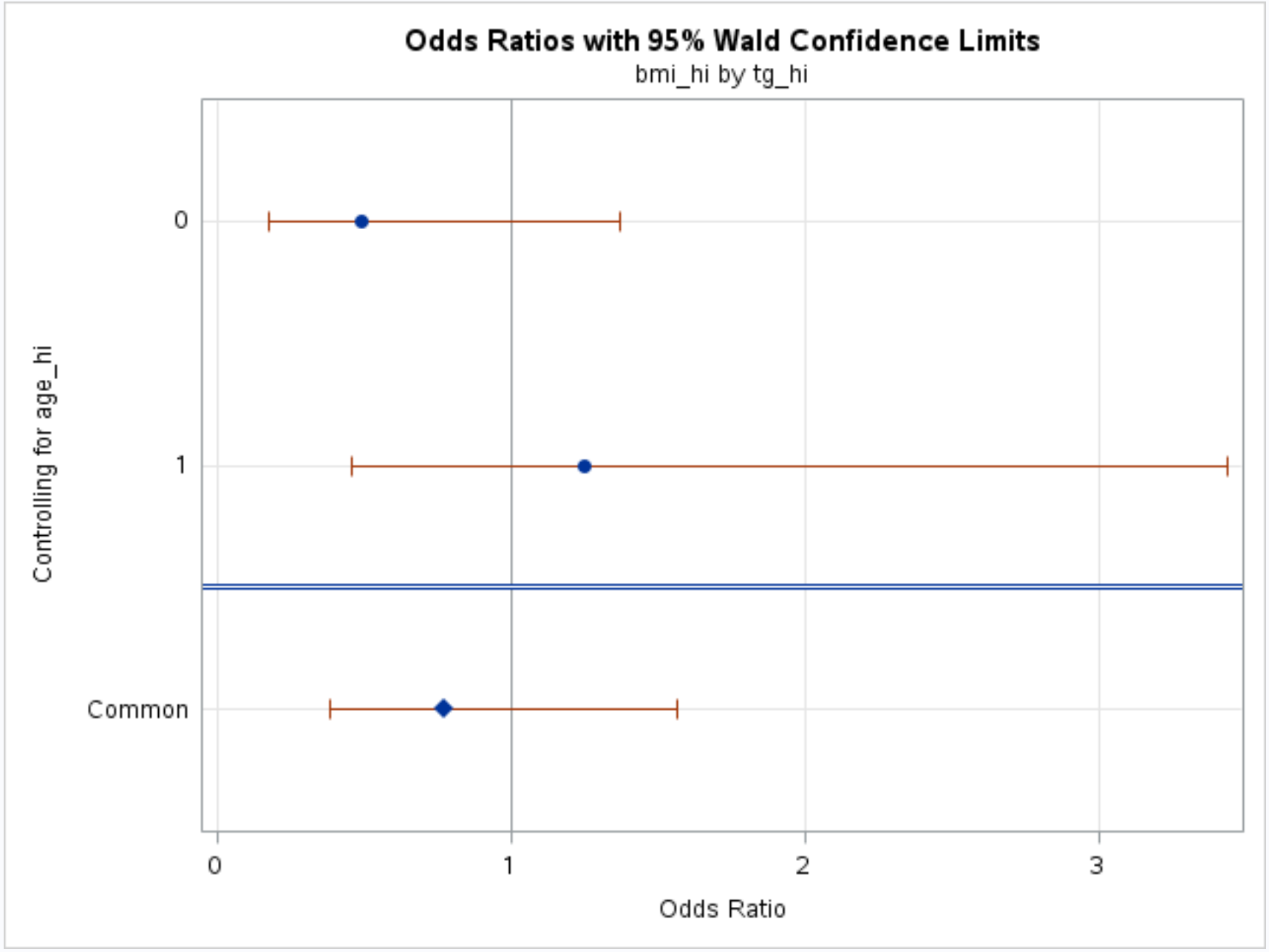
Summary Statistics for bmi_hi by tg_hi
Controlling for age_hi

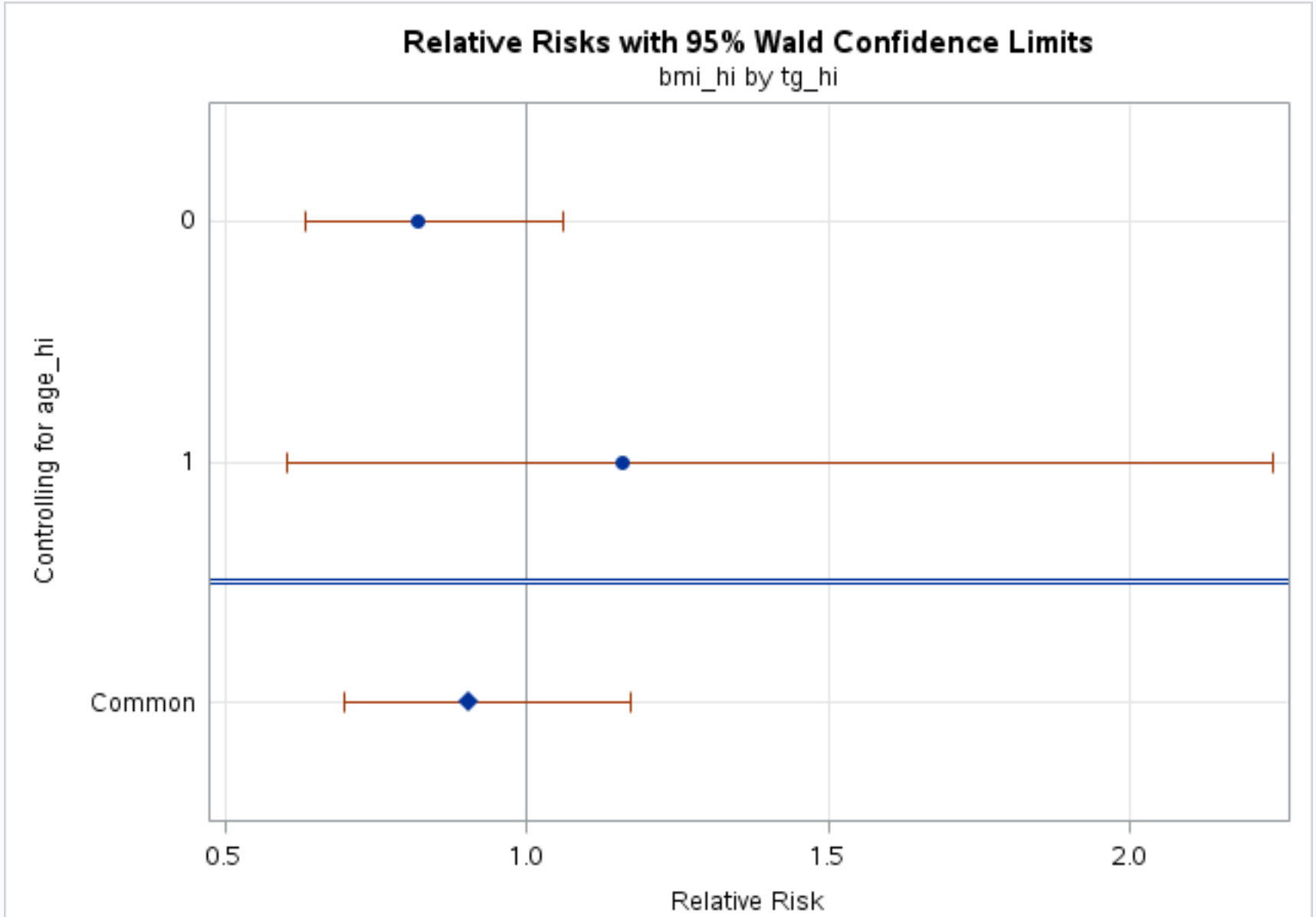
Cochran-Mantel-Haenszel Statistics (Based on Table Scores)				
Statistic	**Alternative Hypothesis**	**DF**	**Value**	**Prob**
1	**Nonzero Correlation**	1	0.5135	0.4736
2	**Row Mean Scores Differ**	1	0.5135	0.4736
3	**General Association**	1	0.5135	0.4736

Common Odds Ratio and Relative Risks				
Statistic	**Method**	**Value**	**95% Confidence Limits**	
Odds Ratio	Mantel-Haenszel	0.7725	0.3810	1.5663
	Logit	0.7897	0.3850	1.6200
Relative Risk (Column 1)	Mantel-Haenszel	0.9033	0.6962	1.1721
	Logit	0.8584	0.6752	1.0913
Relative Risk (Column 2)	Mantel-Haenszel	1.1299	0.7977	1.6004
	Logit	1.0260	0.7431	1.4165

Breslow-Day Test for Homogeneity of the Odds Ratios	
Chi-Square	1.6342
DF	1
Pr > ChiSq	0.2011

Total Sample Size = 190


Odds Ratios with 95% Wald Confidence Limits
bmi_hi by tg_hi
Controlling for age_hi
0
1
Common
0
1
2
3
Odds Ratio



Risks computed for column 1 (tg_hi = 0)

Frequency
Percent
Row Pct
Col Pct

Table 1 of bmi_hi by tg_hi

Controlling for gender=0

bmi_hi	tg_hi 0	tg_hi 1	Total
0	28 29.47 66.67 56.00	14 14.74 33.33 31.11	42 44.21
1	22 23.16 41.51 44.00	31 32.63 58.49 68.89	53 55.79
Total	50 52.63	45 47.37	95 100.00

Statistics for Table 1 of bmi_hi by tg_hi
Controlling for gender=0

Statistic	DF	Value	Prob
Chi-Square	1	5.9483	0.0147
Likelihood Ratio Chi-Square	1	6.0296	0.0141
Continuity Adj. Chi-Square	1	4.9820	0.0256
Mantel-Haenszel Chi-Square	1	5.8857	0.0153
Phi Coefficient		0.2502	
Contingency Coefficient		0.2427	
Cramer's V		0.2502	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	28
Left-sided Pr <= F	0.9961
Right-sided Pr >= F	0.0125
Table Probability (P)	0.0086
Two-sided Pr <= P	0.0225

Odds Ratio and Relative Risks			
Statistic	Value	95% Confidence Limits	
Odds Ratio	2.8182	1.2134	6.5455
Relative Risk (Column 1)	1.6061	1.0934	2.3592
Relative Risk (Column 2)	0.5699	0.3512	0.9248

Sample Size = 95

Frequency
Percent
Row Pct
Col Pct

Table 2 of bmi_hi by tg_hi			
Controlling for gender=1			
	tg_hi		
bmi_hi	0	1	Total
0	27 28.42 50.94 56.25	26 27.37 49.06 55.32	53 55.79
1	21 22.11 50.00 43.75	21 22.11 50.00 44.68	42 44.21
Total	48 50.53	47 49.47	95 100.00

Statistics for Table 2 of bmi_hi by tg_hi
Controlling for gender=1

Statistic	DF	Value	Prob
Chi-Square	1	0.0083	0.9272
Likelihood Ratio Chi-Square	1	0.0083	0.9272
Continuity Adj. Chi-Square	1	0.0000	1.0000
Mantel-Haenszel Chi-Square	1	0.0083	0.9276
Phi Coefficient		0.0094	
Contingency Coefficient		0.0094	
Cramer's V		0.0094	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	27
Left-sided Pr <= F	0.6170
Right-sided Pr >= F	0.5458
Table Probability (P)	0.1629
Two-sided Pr <= P	1.0000

Odds Ratio and Relative Risks			
Statistic	Value	95% Confidence Limits	

Odds Ratio	1.0385	0.4620	2.3340
Relative Risk (Column 1)	1.0189	0.6819	1.5224
Relative Risk (Column 2)	0.9811	0.6522	1.4759

Sample Size = 95

Part 2A
proc freq: tg_hi = bmi_hi , tests for confounding

The FREQ Procedure

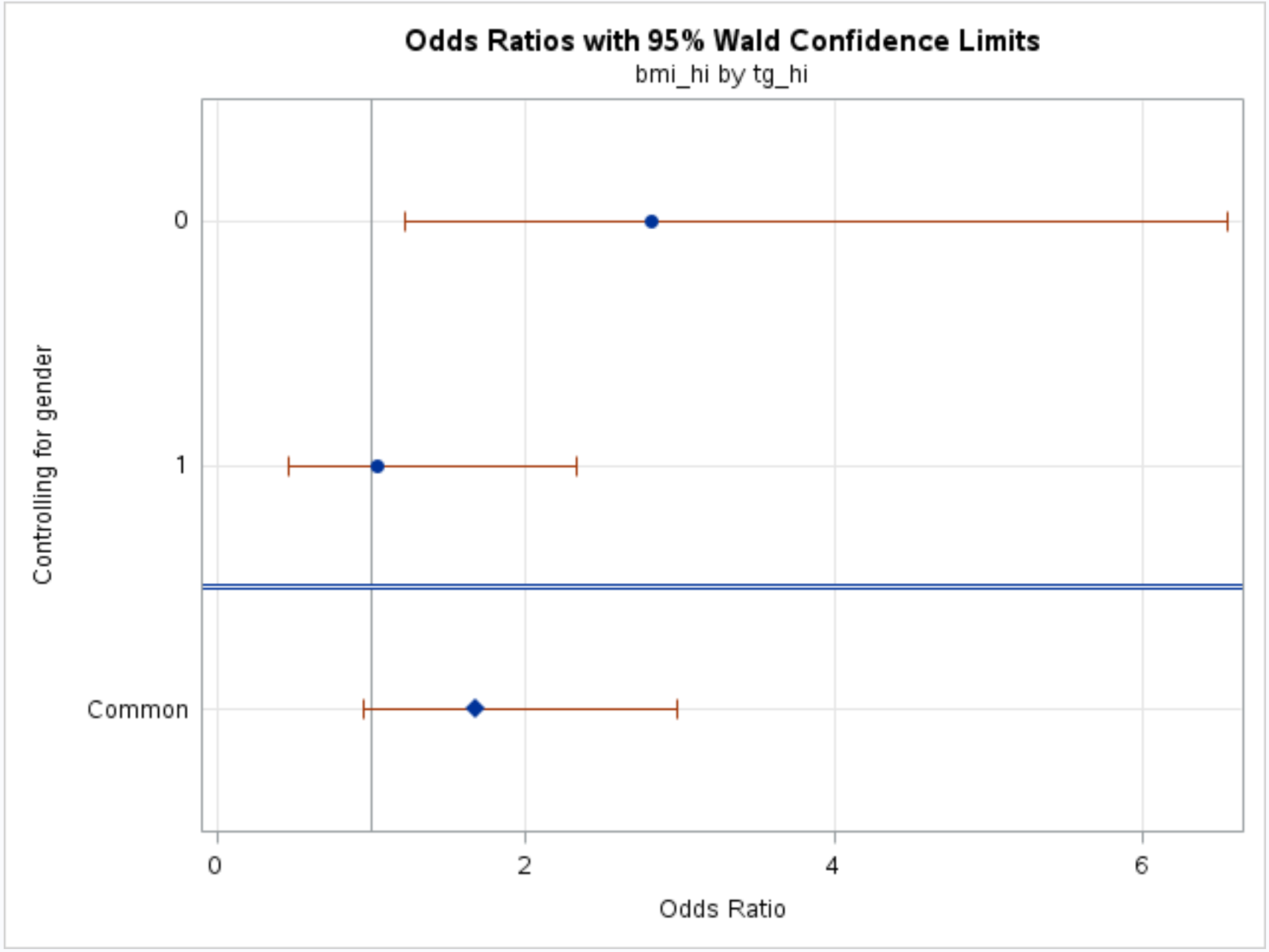
Summary Statistics for bmi_hi by tg_hi
Controlling for gender

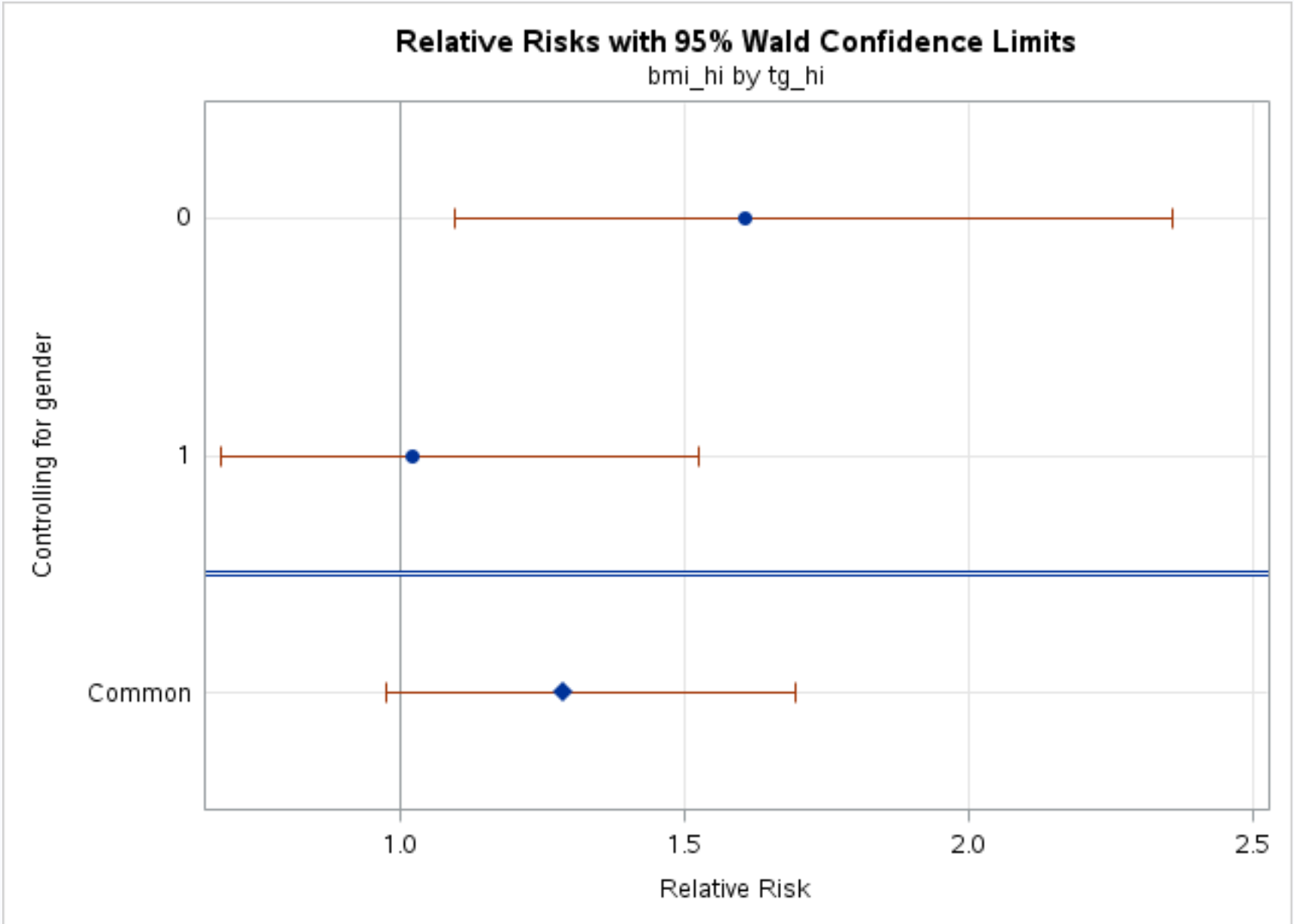
Cochran-Mantel-Haenszel Statistics (Based on Table Scores)				
Statistic	**Alternative Hypothesis**	**DF**	**Value**	**Prob**
1	**Nonzero Correlation**	1	3.1635	0.0753
2	**Row Mean Scores Differ**	1	3.1635	0.0753
3	**General Association**	1	3.1635	0.0753

Common Odds Ratio and Relative Risks				
Statistic	**Method**	**Value**	**95% Confidence Limits**	
Odds Ratio	Mantel-Haenszel	1.6803	0.9458	2.9852
	Logit	1.6772	0.9354	3.0072
Relative Risk (Column 1)	Mantel-Haenszel	1.2852	0.9752	1.6938
	Logit	1.2919	0.9786	1.7055
Relative Risk (Column 2)	Mantel-Haenszel	0.7594	0.5563	1.0367
	Logit	0.7828	0.5729	1.0696

Breslow-Day Test for Homogeneity of the Odds Ratios	
Chi-Square	2.8187
DF	1
Pr > ChiSq	0.0932

Total Sample Size = 190


Odds Ratios with 95% Wald Confidence Limits
bmi_hi by tg_hi
Controlling for gender
0
1
Common
0
2
4
6
Odds Ratio



Risks computed for column 1 (tg_hi = 0)

Part 2B
proc logistic: tg_hi = bmi_hi

The LOGISTIC Procedure

Model Information	
Data Set	WORK.CHOL_CATS
Response Variable	tg_hi
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	190
Number of Observations Used	190

Response Profile		
Ordered Value	tg_hi	Total Frequency
1	0	98
2	1	92

Probability modeled is tg_hi=1.

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	265.206	264.164
SC	268.453	270.658
-2 Log L	263.206	260.164

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	3.0428	1	0.0811
Score	3.0346	1	0.0815
Wald	3.0183	1	0.0823

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-0.3185	0.2078	2.3485	0.1254
bmi_hi	1	0.5085	0.2927	3.0183	0.0823

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
bmi_hi	1.663	0.937	2.951

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	31.7	Somers' D	0.126
Percent Discordant	19.1	Gamma	0.249
Percent Tied	49.2	Tau-a	0.063
Pairs	9016	c	0.563

Part 2B
proc logistic: tg_hi = bmi_hi age_hi

The LOGISTIC Procedure

Model Information	
Data Set	WORK.CHOL_CATS
Response Variable	tg_hi
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	190
Number of Observations Used	190

Response Profile		
Ordered Value	tg_hi	Total Frequency
1	0	98
2	1	92

Probability modeled is tg_hi=1.

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	265.206	243.966
SC	268.453	253.707
-2 Log L	263.206	237.966

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	25.2403	2	<.0001
Score	24.6396	2	<.0001
Wald	23.3807	2	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-0.6987	0.2336	8.9458	0.0028
bmi_hi	1	-0.2607	0.3625	0.5174	0.4720
age_hi	1	1.6243	0.3630	20.0186	<.0001

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
bmi_hi	0.770	0.379	1.568
age_hi	5.075	2.491	10.338

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	55.5	Somers' D	0.380
Percent Discordant	17.5	Gamma	0.521
Percent Tied	27.0	Tau-a	0.191
Pairs	9016	c	0.690

Part 2B
proc logistic: tg_hi = bmi_hi gender

The LOGISTIC Procedure

Model Information	
Data Set	WORK.CHOL_CATS
Response Variable	tg_hi
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	190
Number of Observations Used	190

Response Profile		
Ordered Value	tg_hi	Total Frequency
1	0	98
2	1	92

Probability modeled is tg_hi=1.

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	**Intercept Only**	**Intercept and Covariates**
AIC	265.206	265.914
SC	268.453	275.655
-2 Log L	263.206	259.914

Testing Global Null Hypothesis: BETA=0			
Test	**Chi-Square**	**DF**	**Pr > ChiSq**
Likelihood Ratio	3.2924	2	0.1928
Score	3.2800	2	0.1940
Wald	3.2552	2	0.1964

Analysis of Maximum Likelihood Estimates					
Parameter	**DF**	**Estimate**	**Standard Error**	**Wald Chi-Square**	**Pr > ChiSq**
Intercept	1	-0.4011	0.2663	2.2680	0.1321
bmi_hi	1	0.5263	0.2952	3.1778	0.0746
gender	1	0.1474	0.2952	0.2493	0.6176

Odds Ratio Estimates			
Effect	**Point Estimate**	**95% Wald Confidence Limits**	
bmi_hi	1.693	0.949	3.019
gender	1.159	0.650	2.067

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	44.9	**Somers' D**	0.144
Percent Discordant	30.5	**Gamma**	0.191
Percent Tied	24.6	**Tau-a**	0.072
Pairs	9016	**c**	0.572