4.15

(a)

Cochran-Mantel-Haenszel Statistics (Based on Table Scores)				
Statistic	Alternative Hypothesis	DF	Value	Prob
1	Nonzero Correlation	1	7.8149	0.0052
2	Row Mean Scores Differ	1	7.8149	0.0052
3	General Association	1	7.8149	0.0052

(b)

Type 3 Analysis of Effects			
Effect	DF	Wald Chi-Square	Pr > ChiSq
dis	4	0.5110	0.9724
race	1	7.6914	0.0055

(c)

Analysis of Maximum Likelihood Estimates						
Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept		1	0.7539	0.3639	4.2918	0.0383
dis	1	1	-0.00445	0.3849	0.0001	0.9908
dis	2	1	0.2539	0.4367	0.3381	0.5609
dis	3	1	0.1339	0.4162	0.1035	0.7476
dis	4	1	0.1164	0.3950	0.0869	0.7682
race		1	0.7913	0.2853	7.6914	0.0055

4.20

(a)

Type 3 Analysis of Effects			
Effect	DF	Wald Chi-Square	Pr > ChiSq
center	7	58.4897	<.0001
trt	1	6.4174	0.0113

Analysis of Maximum Likelihood Estimates						
Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept		1	0.8859	0.6755	1.7201	0.1897
center	1	1	-2.2079	0.7195	9.4166	0.0022
center	2	1	-0.1525	0.7381	0.0427	0.8363
center	3	1	-1.0550	0.7457	2.0015	0.1571
center	4	1	-3.6264	0.9071	15.9813	<.0001
center	5	1	-2.7278	0.8184	11.1104	0.0009
center	6	1	-4.3548	1.2293	12.5499	0.0004
center	7	1	-3.0056	1.0200	8.6836	0.0032
trt		1	0.7769	0.3067	6.4174	0.0113

(b)

Cochran-Mantel-Haenszel Statistics (Based on Table Scores)				
Statistic	Alternative Hypothesis	DF	Value	Prob
1	Nonzero Correlation	1	6.3841	0.0115
2	Row Mean Scores Differ	1	6.3841	0.0115
3	General Association	1	6.3841	0.0115

4.24

(a)

Analysis Of Maximum Likelihood Parameter Estimates								
Parameter		DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi-Square	Pr > ChiSq
Intercept		1	-3.0763	1.2455	-5.5174	-0.6351	6.10	0.0135
D		1	0.0687	0.0264	0.0169	0.1204	6.76	0.0093
T	0	1	1.6589	0.9229	-0.1498	3.4677	3.23	0.0722
T	1	0	0.0000	0.0000	0.0000	0.0000	.	.
Scale		0	1.0000	0.0000	1.0000	1.0000		

(c)

Analysis Of Maximum Likelihood Parameter Estimates								
Parameter		DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi-Square	Pr > ChiSq
Intercept		1	-4.4225	1.9818	-8.3066	-0.5383	4.98	0.0256
D		1	0.1031	0.0465	0.0120	0.1942	4.92	0.0266
T	0	1	4.4722	2.4671	-0.3631	9.3076	3.29	0.0699
T	1	0	0.0000	0.0000	0.0000	0.0000	.	.
D*T	0	1	-0.0746	0.0578	-0.1878	0.0386	1.67	0.1966
D*T	1	0	0.0000	0.0000	0.0000	0.0000	.	.
Scale		0	1.0000	0.0000	1.0000	1.0000		

(d)

LR Statistics For Type 3 Analysis			
Source	DF	Chi-Square	Pr > ChiSq
D	1	8.47	0.0036
T	1	3.95	0.0470
D*T	1	1.82	0.1777

Code:
4.15

```
data agr;
input dis race cou col;
datalines;
…
;

proc freq data = agr order=data;
weight cou;
tables dis*race*col/nopercent norow nocol cmh;
run;

data agr;
input dis race col1 col2;
n= col1+col2;
datalines;
…
;

proc logistic;
class dis/ param=ref;
model col1/n = dis race /selection=f include=1 slentry=1;
run;
```

4.20

```
data inf;
input center trt suc fail;
n= suc + fail;
datalines;
…
;

proc logistic;
class center/ param=ref;
model suc/n = center trt /selection=f include=1 slentry=1;
run;

data inf1; set inf;
count=suc;
drop fail;
suc=1;
run;
```

```
data inf2; set inf;
count=fail;
drop suc;
suc=0;
run;

data inf3; set inf1 inf2;
drop n;
run;

proc freq data = inf3 order=data;
weight count;
tables center*trt*suc/nopercent norow nocol cmh;
run;

4.24
data score;
input D T Y;
datalines;
…
;

proc genmod data=score descending;
class T;
model Y = D T /dist=bin link=logit type3;
run;

proc genmod data=score descending;
class T;
model Y = D T D*T /dist=bin link=logit type3;
run;
```